

**Final  
Environmental Impact Statement**

**for the**

**Proposed Rule on  
Environmental Impact Assessment of  
Nongovernmental Activities in  
Antarctica**



**August 2001**

**United States  
Environmental  
Protection Agency**

**Office of  
Federal Activities**

**FINAL  
ENVIRONMENTAL IMPACT STATEMENT  
for the**

***Proposed Rule on  
Environmental Impact Assessment of  
Nongovernmental Activities in Antarctica***



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**August 2001**

## *Abstract*

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**Final Environmental Impact Statement  
for the Proposed Rule on  
Environmental Impact Assessment of  
Nongovernmental Activities in Antarctica**

**Abstract**

The U.S. Environmental Protection Agency (EPA) proposes to promulgate final regulations that provide for assessment of the potential environmental impacts of nongovernmental activities in Antarctica and for coordination of the review of information regarding environmental impact assessments (EIAs) received from other Parties under the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The final rule will be promulgated as required by Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1998, 16 U.S.C. 2401 *et seq.*, to provide for domestic implementation of the Protocol. The purpose of this Final Environmental Impact Statement (EIS) is to summarize the analysis of the proposed alternatives for the final rule to be promulgated by EPA that will amend 40 CFR Part 8, Environmental Impact Assessment of Nongovernmental Activities in Antarctica. Five alternatives for the rule-making were developed based on EPA's experience with the Interim Final Rule at 40 CFR Part 8 and consideration of the comments and information received during scoping:

**Alternative 1: No Action Alternative - Promulgate the Interim Final Rule as the Final Rule.** The Interim Final Rule would be promulgated as the final rule without modification, except for changing the effective date of the rule and making necessary edits including: changing the mailing address to be used for submitting EIA documentation, removing the schedule for CEEs for the 1998-1999 season (Section 8.8(b)(1)), and updating the paperwork projections based on the current number of operators (Preamble VII).

**Alternative 2: Preferred Alternative - Interim Final Rule with Certain Procedural and Administrative Modifications.** The Interim Final Rule would be promulgated as the final rule modified to include: (1) necessary technical modifications and edits, (2) adding a definition so that "more than minor or transitory impact" is equivalent to "significantly" as defined by NEPA (40 CFR §1508.27), thereby ensuring consistency between the nongovernmental and the governmental EIA requirements for Antarctic activities, and (3) adding a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five austral summer seasons.

**Alternative 3: Interim Final Rule with Modifications Beyond Those Considered to be Procedural or Administrative.** The Interim Final Rule would be promulgated as the final rule modified to include: (1) incorporating all three of the procedural and administrative modifications proposed under Alternative 2, (2) broadening the definition of operator to include foreign operators "doing business in the United States," or, if this is not feasible, then apply the final rule to all U.S. citizens going to Antarctica on nongovernmental expeditions,

and (3) requiring that EIA documentation address compliance with other applicable provisions of the Protocol and relevant U.S. statutes.

**Alternative 4: “Substantive” Rule.** The Interim Final Rule would be promulgated as the final rule modified to include: (1) incorporating all three of the procedural and administrative modifications proposed under Alternative 2; (2) incorporating the two additional modifications proposed in Alternative 3; (3) adding a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation; (4) adding a provision which would allow the federal government to prevent an activity from proceeding if anticipated impacts are determined to be unacceptable, or, if this is not feasible, include a provision to require insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause actual environmental harm; (5) adding a provision for public notice and comment on IEEs similar to the process for CEEs; and (6) adding a provision to require a CEE when any new landing sites are included, or are proposed as possible landing sites, in the itinerary of expeditions by nongovernmental operators.

**Alternative 5: “Discretionary” Rule.** The Interim Final Rule would be promulgated as the final rule modified to include: (1) incorporating all three of the procedural and administrative modifications proposed under Alternative 2, (2) eliminating provisions that provide for EPA to make a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations, (3) eliminating the enforcement provision, (4) eliminating the preliminary environmental review provision, (5) adding a provision to provide for an automatic reciprocity when environmental documentation prepared for other Parties is submitted by a U.S.-based operator, and (6) adding a provision for “Categorical Exclusions” including a categorical exclusion for Antarctic ship-based tourism conducted according to the “Lindblad Model.”

The Draft EIS was released in February 2001. Chapter 6 identifies the commentors and summarizes EPA’s assessment of the comments. The comment letters are reproduced in Appendix 28 and annotated with EPA’s specific responses to comments. Appendix 29 identifies the changes between the Draft and Final EISs.

## *Summary*

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**Final Environmental Impact Statement  
for the U.S. Environmental Protection Agency's  
Proposed Rule on  
Environmental Impact Assessment of  
Nongovernmental Activities in Antarctica**

**SUMMARY**

Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act), amends the Antarctic Conservation Act of 1978, 16 U.S.C. 2401 *et seq.*, to implement the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The Act provides that EPA promulgate regulations to provide for:

... the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty, and

... coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol.

On April 30, 1997, the Environmental Protection Agency (EPA) promulgated an Interim Final Rule that establishes requirements for the environmental impact assessment of nongovernmental activities and coordination of the review of information regarding environmental impact assessment received by the United States, as specified above. EPA issued the Interim Final Rule without public notice or an opportunity for public comment. In doing so, EPA stated its plans for public comment in the development of the final regulations. The final rule will be proposed and promulgated in accordance with the provisions of the Administrative Procedure Act (5 U.S.C. 553) which requires notice to the public, description of the substance of the proposed rule and an opportunity for public comment. Further, EPA committed to prepare an Environmental Impact Statement (EIS) to consider the environmental impacts of the proposed rule and alternatives, and that would address the environmental and regulatory issues raised by interested agencies, organizations, groups and individuals. The purpose of this EIS is to describe and analyze the alternatives for the final rule including EPA's preferred alternative.

EPA has identified five alternatives for the final rule based on its experience with the Interim Final Rule and the comments and information received during scoping. The five alternatives for the final rule described and analyzed by EPA include the following:

Alternative 1: No Action Alternative - Promulgate the Interim Final Rule as the final rule

Alternative 2: Preferred Alternative - Interim Final Rule with certain procedural and administrative modifications

Alternative 3: Interim Final Rule with modifications beyond those considered to be procedural or administrative

Alternative 4: “Substantive” rule

Alternative 5: “Discretionary” rule

Alternative 1, the “No Action” Alternative, would propose to promulgate the Interim Final Rule as the final rule.<sup>1</sup> The other four alternatives involve modifications to the Interim Final Rule.

As part of the scoping process, EPA considered ten specific issues along with any other relevant issues raised by the public.<sup>2</sup> The public comments received, or lack of comments, were the basis for identifying any issues which were not considered significant and thus did not require detailed analysis.<sup>3</sup> The issues considered significant and that needed detailed analysis were grouped into three categories,<sup>4</sup> and each of the issues in these categories was developed into a proposed modification within one or more of the Alternatives. These proposed modifications were then analyzed in detail the first time each occurred in an Alternative. In some cases, EPA for reasons of completeness, addresses issues which the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations be consistent with Annex I to the Protocol with respect to nongovernmental activities. Many of the issues for which the U.S. government does not have authority to implement were raised by the public during scoping.

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<sup>1</sup> EPA initially suggested not promulgating a final rule as a No Action Alternative (F.R. 62 No. 90). However, this is not an acceptable alternative because it does not meet the purpose and need to which EPA is responding in proposing the alternatives including the proposed action. EPA is directed by the Act to promulgate such a rule because such regulations are necessary so that the U.S. has the ability to implement its obligations under the Protocol.

<sup>2</sup> The ten issues raised by EPA during scoping were: (1) Time frames for environmental documentation submittal and review; (2) Level of definition of EPA’s review criteria; (3) Appropriate monitoring regime, if any; (4) Options for streamlining documentation requirements; (5) Mitigation: what measures and for which activities; (6) Cumulative impacts; (7) Possible “categorical exclusions;” (8) Public comment on IEEs; (9) Reconsideration of the process for review of environmental documents received from other Parties; and (10) Reevaluation of the paperwork projections in the Interim Final Rule.

<sup>3</sup> Issues were not considered significant if EPA did not receive conflicting, negative, or otherwise substantive comment on them.

<sup>4</sup> These three categories are: issues related to the requirements to be applied to operators and EPA’s role in the EIA process for nongovernmental operators (Category A); issues concerning the scope of the application of the final rule and consideration of other Parties’ requirements (Category B); and process-oriented issues (Category C).



Because this is a regulatory action, the consequences of the selected alternative may entail consequences that are not explicitly environmental in nature but that affect the efficacy, and thus the ultimate environmental impacts, of the rule. Thus, the assessment of the consequences associated with each of the alternatives included assessment of the potential environmental consequences and assessment of other potential consequences.<sup>5</sup> The potential environmental consequences were assessed within the following context:

- The natural and physical environment of Antarctica and its dependent and associated ecosystems;
- The nature of the nongovernmental activities being undertaken by U.S.-based operators in Antarctica, including those of ship-based tour operators;
- The potential for environmental impacts on the Antarctic environment and its dependent and associated ecosystems by the activities undertaken by U.S. nongovernmental operators, primarily ship-based tour operators in the Peninsula area; and
- The domestic statutes and regulations, relative to the Antarctic Treaty System, that already govern the activities of U.S.-based nongovernmental operators in Antarctica.<sup>6</sup>

The alternatives were also assessed regarding other consequences that included the following:

- The ability of the alternative to ensure that the U.S. is able to comply with its obligations under the Protocol;
- Assurance that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;”
- The ability of the alternative to ensure consistency between the governmental<sup>7</sup> and nongovernmental EIA processes; and

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<sup>5</sup> Because the five alternatives are variations of the Interim Final Rule and thus, Alternative 1, the “No Action” alternative, the assessment of the environmental and other consequences for Alternative 1 was based on the assessment of these consequences for the Interim Final Rule with projection of this assessment into the out-years. The assessment of the consequences for the other four alternatives was then based on comparisons with the consequences assessment for Alternative 1.

<sup>6</sup> The United States accomplishes compliance with its obligations under the Antarctic Treaty System through domestic legislation and regulations which govern the actions of persons subject to the jurisdiction of the United States. Pertinent statutes include the: Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*; Antarctic Marine Living Resources Conservation Act (AMLRCA) of 1984, 16 U.S.C.A. §§2431-2444; Antarctic Conservation Act of 1978 (ACA), Public Law 95-541, as amended, 16 U.S.C. §2401 *et seq.*; Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227, that amended the ACA; and the Act to Prevent Pollution from Ships (APPS), Public Law 96-478, 33 U.S.C. §1901 *et seq.*, that implements MARPOL 73/78.

<sup>7</sup> As managed by the National Science Foundation for all U.S. government activities under the U.S. Antarctic Program.

- The burden imposed on the operators.<sup>8</sup>

Alternative 1, the “No Action” Alternative, would propose to promulgate the Interim Final Rule as the final rule without modification except for changing the effective date of the rule and making necessary edits.<sup>9</sup> The environmental consequences, including cumulative impacts, for Alternative 1 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, the impacts of Alternative 1 are unlikely to have ‘significant’ environmental consequences. With regard to other consequences, Alternative 1 ensures that the U.S. is able to comply with its obligations under the Protocol; assures that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;” provides for consistency between the governmental and nongovernmental EIA processes; and does not impose undue burden on the operators.

Alternative 2, EPA’s preferred alternative, would modify the Interim Final Rule to respond to suggestions for certain changes in the EIA process including changes that would ensure consistency between the governmental and nongovernmental EIA processes and that could reduce the time and cost of the EIA process for the nongovernmental operators. Under Alternative 2, the following modifications would be incorporated into the Interim Final Rule:

1. Make necessary technical modifications and edits (see Alternative 1, footnote 9).
2. Add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five austral summer seasons.<sup>10</sup>

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<sup>8</sup> EPA is concerned that the final rule not place undue burden on operators, including small business operators. Should this occur, there is a potential for one or more U.S.-based operators to move their operations to another country, including a country not Party to the Treaty. A move to another country cannot be ruled out given the international nature of the tour industry. Adverse consequences on the Antarctic environment could be created if the final rule has the effect of driving U.S.-based operators to countries not Party to the Protocol. If this were to happen, in most circumstances there would be no obligation on the part of the operator to comply with the planning processes delineated in Article 8 and Annex I of the Protocol leading to decisions about any activities undertaken in the Antarctic Treaty area.

<sup>9</sup> Necessary edits would include: changing the mailing address to be used for submitting EIA documentation, removing the schedule for CEEs for the 1998-1999 season (Section 8.8(b)(1)), and updating the paperwork projections based on the current number of operators (Preamble VII).

<sup>10</sup> Under the multi-year EIA documentation provision, one environmental document could be submitted by one or more operators for proposed expeditions provided that the conditions described in the multi-year document, including the assessment of cumulative impacts, are unchanged. The multi-year provision also would allow operators to update basic information and to provide information on additional activities to supplement the multi-year environmental document without having to revise and re-submit the entire document. The other paperwork reduction provisions now in Section 8.4(d) of the Interim Final Rule would also be part of the final rule under Alternative 2 and could be applied, as appropriate.

3. Add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”<sup>11</sup>

The environmental consequences, including cumulative impacts, for Alternative 2 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, these impacts are unlikely to have a ‘significant’ effect. With regard to other consequences, Alternative 2 ensures that the U.S. is able to comply with its obligations under the Protocol; assures that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;” ensures consistency between the governmental and nongovernmental EIA processes; and does not impose undue burden on the operators.

Alternative 3 describes modifications to the Interim Final Rule beyond those of Alternative 2 that are considered to be procedural or administrative, but does not go as far as Alternatives 4 and 5 in changing the basic approach set out in the Interim Final Rule. These modifications are based on issues raised in the scoping process. Under Alternative 3, the following modifications, which are inconsistent with the provisions of the Protocol and for which there is no legal authority under the Act,<sup>12</sup> would be incorporated into the Interim Final Rule:

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Broaden the definition of operator to include foreign operators “doing business in the United States.” If this is not feasible, then apply the final rule to all U.S. citizens going to Antarctica on nongovernmental expeditions.<sup>13</sup>

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<sup>11</sup> The term “more than a minor or transitory impact” would have the same meaning as “significantly affecting the quality of the human environment,” the same threshold definition applied to EIA of governmental activities in Antarctica thus ensuring regulatory consistency between the governmental and nongovernmental EIA requirements.

<sup>12</sup> Alternative 3 is one of the Alternatives that incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>13</sup> Article 8 requires Parties to ensure that the assessment procedures set out in Annex I are applied to “...tourism and all other ... nongovernmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty ....” Article VII(5) provides that a Party must give notice for “... all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory.” Similarly, the Act explicitly requires environmental impact assessments of nongovernmental activities organized in or proceeding from the U.S. for which the United States is required to give advance notice under Article VII(5) of the Treaty. Thus, for purposes of the Act, the United States

3. Require that EIA documentation demonstrate compliance with other applicable provisions of the Protocol and relevant U.S. statutes.<sup>14</sup>

The environmental consequences, including cumulative impacts, for Alternative 3 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, these impacts are unlikely to have a ‘significant’ effect. With regard to other consequences, Alternative 3 ensures that the U.S. is able to comply with its obligations to require EIA documentation under the Protocol. However, modification 2 is not generally consistent with the Protocol, and modifications 2 and 3 are not required in order for the U.S. to ensure that it is able to comply with its obligations under the Protocol, nor would they be “consistent with Annex I to the Protocol,” as directed by the Act. Modification 3 would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and it would not be consistent with the EIA process or requirements applied to U.S. governmental entities.

Alternative 4 would modify the Interim Final Rule to include substantive requirements in association with the environmental documentation requirements for nongovernmental activities in Antarctica, and to provide for federal direction over the level of environmental document required. Under Alternative 4, the following modifications, which are inconsistent with the provisions of the Protocol and for which there is no legal authority under the Act,<sup>15</sup> would be incorporated into the Interim Final Rule:

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can assert jurisdiction over operators only where the relevant expedition is organized in or proceeding from the United States. It is conceivable that a non-U.S. based operator could conduct such a level of activity within the United States that it could be deemed to be organizing an activity in the United States, and thus the United States would have jurisdiction in such a circumstance. Nevertheless, mere sale of tickets by a foreign operator, for example, would not rise to the level of organizing an expedition in the United States. In these circumstances, EPA believes that a provision amending the definition of “operator” to any foreign operator merely “doing business in the United States” would be too broad and thus inconsistent with the Treaty’s requirement that the expedition be organized in or proceeding from the United States.

<sup>14</sup> Such a provision is not required by Annex I or the Act. Further, certain provisions of the Act are the responsibility of other federal agencies. The environmental documentation provides a useful mechanism to identify whether a proposed activity raises issues under other obligations of the Protocol or domestic law which need further review by the responsible authority. Based on its experience to date, EPA does not believe that a blanket requirement to demonstrate compliance would necessarily reduce environmental impacts. Such a provision would impose obligations and a burden on U.S. nongovernmental operators not required under Annex I or the Act, nor would it be fully consistent with the U.S. governmental EIA requirements regarding U.S. governmental activities in Antarctica.

<sup>15</sup> Alternative 4 is one of the Alternatives that incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Incorporate the two additional modifications proposed in Alternative 3.
3. Add a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation.<sup>16</sup>
4. Add a provision which would allow the federal government to prevent an activity from proceeding if anticipated impacts are determined to be unacceptable. If a substantive provision cannot be included in the final rule, include a provision to require insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause actual environmental harm.<sup>17</sup>
5. Add a provision for public notice and comment on IEEs similar to the process for CEEs.<sup>18</sup>
6. Add a provision to require a CEE when any new landing sites are included, or are proposed as possible landing sites, in the itinerary of expeditions by nongovernmental operators.<sup>19</sup>

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<sup>16</sup> Under the Act, the U.S. government does not have any authority to prevent activities for which proper environmental assessments have been undertaken provided the proposed activities are not otherwise in conflict with U.S. law. Further, Article 3 of the Protocol is implemented through the Annexes to the Protocol and is not capable of direct implementation. Thus, it in and of itself does not impose mandatory requirements. Moreover, Article 8 provides for an EIA process but does not impose substantive requirements. Therefore, the two substantive modifications proposed under Alternative 4 are inconsistent with the Protocol and the Act. Further, because NEPA is the model for governmental EIAs in Antarctica, the proposed substantive elements would result in an inconsistency with the way that EIA provisions are applied to governmental and nongovernmental operators. Also, based on EPA's assessment of the impacts from current and anticipated out-year nongovernmental activities, the proposed substantive modifications would likely not result in substantial environmental benefits.

<sup>17</sup> See footnote 16. Further, an insurance and bonding requirement is not required under Annex I, nor is it consistent with it since Annex I contemplates activities that may have impacts that could be more than minor or transitory (e.g., CEE-level activities); it would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act.

<sup>18</sup> Requiring public notice and comment on IEEs would not necessarily reduce environmental impacts, but would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and would not be consistent with the EIA requirements that apply to U.S. governmental entities.

<sup>19</sup> The conclusion that a CEE should be prepared in every case is not supported since there is not a scientific basis for concluding that any visit to a new site would always have the likelihood of a greater than minor or transitory impact. Such a provision would not necessarily reduce environmental impacts, but would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and would not be consistent with the EIA requirements that apply to U.S. governmental entities.

The environmental consequences, including cumulative impacts, for Alternative 4 are most likely to be no more than minor or transitory. Although substantive provisions could reduce the level of consequences, particularly for CEE-level activities, substantive provisions are not consistent with the Protocol and EPA lacks statutory authority to impose substantive requirements. With regard to other consequences, Alternative 4 ensures that the U.S. is able to comply with its obligations to require EIA documentation under the Protocol. However, certain of the proposed modifications are not required in order for the U.S. to ensure that it is able to comply with its obligations under the Protocol, nor would they be, as directed by the Act, “consistent with Annex I to the Protocol.” Further, certain modifications would not be consistent with the EIA process or requirements that apply to U.S. governmental entities, and several of the proposed modifications would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act.

Alternative 5 would modify the Interim Final Rule by eliminating EPA’s responsibility for making a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I and the provisions of the regulations. Under Alternative 5, the following modifications, which would not adequately ensure that the U.S. is fulfilling its obligations under the Protocol,<sup>20</sup> would be incorporated into the Interim Final Rule:

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Eliminate the provisions in the Interim Final Rule that provide for EPA to make a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations.<sup>21</sup>
3. Eliminate the enforcement provision in the Interim Final Rule.<sup>22</sup>

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<sup>20</sup> Alternative 5 is one of the three Alternatives that incorporate modifications related to issues which EPA included for reasons of completeness. Alternative 5 incorporates modifications under which the U.S. government would not be able to ensure that its obligations under the Protocol would be fulfilled. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>21</sup> Elimination of this responsibility eliminates the U.S. government’s ability to ensure that the United States is able to comply with its obligations under the Protocol.

<sup>22</sup> In keeping with the discretionary nature of Alternative 5, the enforcement provision would be eliminated.

4. Eliminate the preliminary environmental review provision in the Interim Final Rule.<sup>23</sup>
5. Add a provision to provide for an automatic reciprocity when environmental documentation prepared for other Parties is submitted by a U.S.-based operator.<sup>24</sup>
6. Add a provision for “Categorical Exclusions” including a categorical exclusion for Antarctic ship-based tourism conducted according to the “Lindblad Model.”<sup>25</sup>

The environmental consequences, including cumulative impacts, for certain of the modifications under Alternative 5 have the potential to be greater than would otherwise be indicated by the level of EIA documentation prepared by the operator. With regard to other consequences, even though Alternative 5 would provide maximum reduction of burden on the operators, it would not: ensure that the U.S. is able to comply with its obligations under the Protocol; assure that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;” or ensure consistency between the governmental and nongovernmental EIA processes.

EPA’s Preferred Alternative: EPA’s preferred alternative is Alternative 2, the Interim Final Rule with certain procedural and administrative modifications. Selection of Alternative 2 for proposed promulgation would be consistent with and implement the EIA provisions of Article 8 and Annex I to the Protocol. This Alternative would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol.<sup>26</sup> Alternative 2 would reflect a decision to continue with a procedural rule

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<sup>23</sup> Based on past experience, EPA does not believe that eliminating the PERM provision would allow EPA, and thus the U.S. government, to ensure that the assessment procedures set out in Annex I are appropriately applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area.

<sup>24</sup> It is the responsibility of the United States to comply with its obligations under the Protocol. Thus, while this is a “workable” provision, the U.S. government would need to determine whether, in an appropriate case, it should rely on the regulatory procedures of another Party.

<sup>25</sup> The proposal to categorically exclude Antarctic ship-based tourism conducted under a “Lindblad Model” does not fit well with the approach used by the U.S. government for categorical exclusions because it does not identify actions to be excluded in sufficient detail. Further, more needs to be known about potential cumulative impacts of nongovernmental activities undertaken by U.S.-based ship-based tour operators before deciding to exclude some or all of these specific activities. A categorical exclusion provision could, however, be an amendment to the final rule in the future if one or more appropriate categorical exclusions are identified.

<sup>26</sup> Alternative 2 retains the definitions of “operator” and “persons” and the approach in the Interim Final Rule of not applying the requirements of the rule to individual U.S. citizens where the individual is not acting as an operator. Alternative 2 would also carry forth the provision of the Interim Final Rule at Section 8.2(c) that the final rule would “... not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the Conservation of

which does not impose obligations beyond preparation of the EIA documentation and the associated assessment and verification procedures. This Alternative retains EPA's authority with the concurrence of the National Science Foundation to make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. If an operator chooses to mitigate and the mitigation measures are the basis for the level of environmental documentation, EPA assumes the operator will proceed with these mitigation measures. Otherwise, the documentation may not have met the requirements of Article 8 and Annex I and the provisions of the regulations. This Alternative would retain an enforcement provision that it is unlawful for any operator to violate the regulations.

This is the alternative EPA believes would best fulfill its statutory mission and responsibilities giving consideration to:

- The ability to ensure that the U.S. is able to comply with its obligations under the Protocol;
- The need for the regulations to be, as directed by the Act, "consistent with Annex I to the Protocol;"
- The preference to ensure consistency between governmental and nongovernmental EIA processes and regulations;
- The assessment of the environmental and other consequences of the alternatives;
- The current voluntary standards of the U.S.-based Antarctic tour industry; and
- Concern that U.S.-based operators continue to do business as U.S. operators and not move their Antarctic business operations to a non-Party country because of any undue burden imposed by the final rule.

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Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. 1371 *et seq.*"

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## ACRONYMS

|        |  |
|--------|--|
| ACA    | Antarctic Conservation Act of 1978, 16 U.S.C. 2401 <i>et seq.</i>    |
| Act    | Antarctic Science, Tourism, and Conservation Act of 1996             |
| AMLRCA | Antarctic Marine Living Resources Conservation Act                   |
| ANI    | Adventure Network International                                      |
| APA    | Administrative Procedure Act   |
| ASOC   | Antarctic and Southern Ocean Coalition                               |
|        |  |
| C      | centigrade   |
| CCAMLR | Convention for the Conservation of Antarctic Marine Living Resources |
| CEE    | Comprehensive Environmental Evaluation                               |
| CFCs   | chlorofluorocarbons  |
| cm     | centimeters  |
|        |  |
| DAP    | La Linea Aerea de la Patagonia (Chilean regional airline)            |
|        |  |
| EIAs   | Environmental impact assessments                                     |
| EIS    | Environmental impact statement                                       |
| EPA    | Environmental Protection Agency                                      |
|        |  |
| F      | Fahrenheit   |
| fps    | feet per second  |
| ft.    | feet   |
|        |  |
| HALW   | Holland America Line-Westours, Inc.                                  |
|        |  |
| IAATO  | International Association of Antarctica Tour Operators               |
| IEE    | Initial Environmental Evaluation                                     |
| IGY    | International Geophysical Year                                       |
| in.    | inches   |
|        |  |
| km     | kilometers   |
| kph    | kilometers per hour  |
|        |  |
| m      | meters   |
| mi.    | miles  |
| MMPA   | Marine Mammal Protection Act   |
| mph    | miles per hour   |
| m/s    | meters per second  |
| mt.    | metric tons  |
|        |  |
| NEPA   | National Environmental Policy Act                                    |

|                  |   |
|------------------|---|
| NO <sub>x</sub>  | nitrogen oxides   |
| PERM<br>Protocol | Preliminary Environmental Review Memorandum<br>Protocol on Environmental Protection to the Antarctic Treaty of 1959 |
| TAP<br>TAP/ASOC  | The Antarctica Project<br>The Antarctica Project/Antarctic and Southern Ocean Coalition                             |
| U.S.             | United States   |
| USAP             | U.S. Antarctic Program  |
| U.S.S.R.         | Union of Soviet Socialist Republics   |
| UV               | ultraviolet radiation   |
| UVB              | midultraviolet radiation  |
| WMF              | White Mountain Films, LLC   |

## *Chapter 1: Purpose and Needs*

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## **Chapter 1. Purpose and Needs**

### **1.1. The Proposed Action**

The U.S. Environmental Protection Agency (EPA) proposes to promulgate final regulations that provide for assessment of the potential environmental impacts of nongovernmental activities in Antarctica and for coordination of the review of information regarding environmental impact assessments (EIAs) received from other Parties under the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The final rule will be promulgated as required by Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act)<sup>1</sup>, which amends the Antarctic Conservation Act of 1978, 16 U.S.C. 2401 *et seq.*, to provide for U.S. domestic implementation of the Protocol. The purpose of this Environmental Impact Statement (EIS) is to evaluate the environmental impacts of the alternatives for the final rule to be proposed and promulgated by EPA.

The final regulations to be promulgated by EPA do not apply to activities conducted by the U.S. government. The National Science Foundation, in conjunction with their management of the United States' Antarctica Program, is responsible for environmental impact assessment of governmental activities in Antarctica in accordance with regulations at 45 CFR 641.10 through 641.22.

### **1.2. Interim Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica**

The Act provided two years from October 2, 1996, for EPA to promulgate regulations for environmental impact assessment of nongovernmental activities, including tourism, in Antarctica and for coordination of the review of information regarding EIAs received from other Parties under the Protocol. It was expected that the Protocol could enter into force before October 2, 1998, thus, EPA promulgated an Interim Final Rule on April 30, 1997 (40 CFR Part 8), so that the United States

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<sup>1</sup> The [Environmental Protection Agency] shall, within 2 years after October 2, 1996, promulgate regulations to provide for-

(A) the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty; and

(B) coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol. (16 U.S.C. 2403a(c))

(the U.S.) would have the ability to implement its obligations under the Protocol as soon as the Protocol entered into force.<sup>2</sup>

Because of the importance of facilitating the Protocol's prompt entry into force, EPA believed it had good cause under 5 U.S.C. 553(b)(B) to find that implementation of notice and comment procedures for the Interim Final Rule would be contrary to the public interest and unnecessary, and thus the Interim Final Rule, for which EPA prepared an Environmental Assessment (EPA April 3, 1997) and Finding of No Significant Impact (EPA April 9, 1997), was immediately effective upon its publication date (40 CFR Part 8).

Recognizing the importance of full public, including industry, input, EPA stated in the Preamble to the Interim Final Rule that it planned extensive opportunities for public comment in the development of the final regulations. The EPA also stated that an EIS would be prepared which considered the environmental impacts of the proposed final rule and alternatives, and would address the environmental and regulatory issues raised by interested agencies, organizations, groups and individuals.

### **1.3. Public Involvement: Scoping for the EIS and Opportunity for Public Comment on Draft EIS and Proposed Final Rule**

On May 9, 1997, EPA published a Notice of Intent to prepare an EIS for the final rule for environmental impact assessment of nongovernmental activities in Antarctica (F.R. 62, no. 90). In accordance with the National Environmental Policy Act (NEPA), EPA conducted two public scoping meetings. The Notice for the first public scoping meeting for the EIS was published on June 2, 1997 (F.R. 62, no. 105), and the public scoping meeting was held on July 8, 1997, in Arlington, Virginia. The Notice for the second public scoping meeting was published on June 18, 1998 (F.R. 63, no. 117), and the public meeting was held on July 14, 1998, in Washington, DC. Both meetings were held at the time that the Antarctic tour operators were in the Washington, DC, area for their annual meeting with the National Science Foundation. Attendees at these scoping meetings included:

- the Executive Secretary of and legal counsel for the International Association of Antarctica Tour Operators, IAATO, the principle representative of the

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<sup>2</sup> The Protocol was ratified by the U.S. on April 17, 1997, and entered into force on January 14, 1998, following ratification by all necessary Consultative Parties to the Antarctic Treaty.

- tour industry;<sup>3</sup>
- IAATO-member tour operators and other Antarctic tour operators;
- representative of Oceanites, Inc., a nongovernmental research organization;
- the Director of and legal counsel for The Antarctica Project (TAP/ASOC)<sup>4</sup>;
- academics (Antarctic/international law and environmental regulation interests);
- federal agency representatives; and
- the general public.

The July 8, 1997, scoping meeting included an overview and discussion of the Interim Final Rule, and presentation of comments by the public on relevant environmental and regulatory issues which EPA should consider in the Draft EIS. During this meeting, IAATO, individual tour operators, and TAP/ASOC requested that the deadline for the Interim Final Rule be extended to give the operators an opportunity to determine the "workability" of the requirements of the Interim Final Rule and then to comment to EPA. After consultation with other Federal agencies, EPA determined that this request was reasonable and that additional time to develop the final rule would be beneficial. Thus, EPA issued a direct amendment to the Interim Final Rule, effective July 14, 1998, which extends its applicability through the 2000-2001 austral summer (F.R. 63, no. 72).

There were no formal presentations by EPA at the second public scoping meeting on July 14, 1998. Attendees, including IAATO, tour operators, and TAP/ASOC, presented their comments on the process for environmental documentation under the Interim Final Rule for expeditions conducted during the 1997-1998 austral season.

Chapter 4 summarizes the issues offered at the two scoping meetings for consideration in the Draft EIS, and in the letters, written statements and other documents received by EPA. In addition, the EPA will provide opportunity for public comment on the draft EIS in accordance with the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act (40 CFR Parts 1500-1508). The final rule will be proposed and promulgated in accordance with the provisions of the Administrative Procedure Act (5 U.S.C. 553) which also requires notice to the public, description of the substance of the proposed rule, and an opportunity for public comment.

#### **1.4. Rule-Making Process**

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<sup>3</sup> Tour operators are the primary nongovernmental operators subject to the Interim Final Rule.

<sup>4</sup> The Antarctica Project is the northern hemisphere secretariat for the Antarctic and Southern Ocean Coalition (TAP/ASOC) composed of 230 environmental organizations in 50 countries with 26 members in the U.S.

The EPA initiated rule-making in November 1996, with establishment of an inter-agency Workgroup to assist in developing the Interim Final Rule promulgated by EPA April 30, 1997. The regulation development Workgroup includes representatives from various offices in EPA and from other Federal agencies with expertise and interests in Antarctica<sup>5</sup>. The regulatory development process employs the policy, guidance and procedures of the EPA's Regulatory Policy Council.

The process for developing final regulations to be promulgated by EPA is now underway and includes this EIS process for analysis of alternatives for the final rule. As part of the Workgroup's proceedings, a Federal agency scoping meeting was held May 14, 1997; in addition, the National Science Foundation provided written comments. The summary of scoping issues, presented in Chapter 4, also includes the issues raised by the Federal agencies.

The rule-making process will be used by EPA to identify, and resolve, environmental and regulatory issues or concerns on the part of EPA and the Federal agencies, and to fully consider the issues raised during public scoping within the rule-making process.

### **1.5. Other Legal Mandates and Requirements for Rule-Making**

In addition to the Act, a number of other statutes and Executive Orders apply to EPA's rule-making. The Administrative Procedure Act sets out the basic requirements for rule-making which apply to all rules. Other requirements for rule-making procedures flow from other general statutes such as the Paperwork Reduction Act and the Regulatory Flexibility Act. Within the Executive Branch, other requirements are imposed such as Executive Order 12866 which requires the Office of Management and Budget to review proposed and final rules before issuance in most circumstances. Appendix 1 summarizes the other legal mandates and requirements associated with EPA's final rule-making for environmental impact assessment of nongovernmental activities in Antarctica.

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<sup>5</sup> EPA offices represented on Workgroup: Office of Enforcement and Compliance Assurance, including the Offices of Federal Activities (lead for rule-making), Regulatory Enforcement, and Compliance; and the Offices of General Counsel, International Activities, Solid Waste and Emergency Response, Water, and the Quality Staff in the Office of Environmental Information. Federal agencies represented on Workgroup: Department of State, National Science Foundation, Department of Justice, Marine Mammal Commission, Council on Environmental Quality, National Oceanic and Atmospheric Administration including the National Marine Fisheries Service, and the U.S. Coast Guard.

*Chapter 2: Affected Environment — The  
Physical and Biological Environment*

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## Chapter 2. Affected Environment — the Physical and Biological Environment

### 2.1. Introduction

This chapter presents an overview of the physical and biological environment, including the areas where nongovernmental activities occur. For U.S. operators, nongovernmental expeditions are primarily ship-based tours by commercial operators in the Peninsula area. Some U.S. operators also conduct ship-based tours that extend beyond the Peninsula area into the McMurdo Sound area of the Ross Sea, and one U.S.-based private researcher operates in the Peninsula area. Tourism is also the primary nongovernmental activity for non-U.S. operators and generally includes ship-based tours in the Peninsula and Ross Sea areas, adventure tourism to continental areas including Queen Maud Land and the South Pole, and commercial tour overflights of the Peninsula area and of the Ross Sea to the South Pole. Greenpeace International, a non-U.S. headquartered nongovernmental environmental-interest organization, also has ongoing activities in Antarctica. Chapter 3, The Affected Environment — Human Activities in Antarctica, describes the range of historic and present-day human activities in Antarctica including ship-based tourism.

### 2.2. Antarctica — General Overview of Physical Features

Covering almost 10 percent of the land surface of the Earth and surrounded by the Southern Ocean,<sup>1</sup> Antarctica is the fifth largest continent. At 13.9 million square kilometers (5.4 million square miles), it is 1.5 times the size of the continental United States, centered asymmetrically around the geographic South Pole (Figure 2.1). The Antarctic Treaty applies to the area south of 60° south latitude, including all ice shelves, but not affecting rights with regard to the high seas (Figure 2.2).

Antarctica is the coldest, driest, windiest, highest (on average), and most isolated continent on Earth. Distinct climatic and topographic regions exist across the continent with each region unique in its ability to support life forms which are sparse on the continent because of the severe climate (U.S. Antarctic Program External Panel 1997). Changes in the weather can be dramatic: winds can shift from calm to full-gale in a brief period of time; a drop of 36°C (65°F) was once recorded in 12 minutes (External Panel



Figure 2.1.

Source: External Panel 1997

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<sup>1</sup> The term “Southern Ocean” is widely used in Antarctic literature to denote the southern portions of the Pacific, Atlantic, and Indian Oceans.



Figure 2.2. Antarctica

1997). Generally speaking, and from an operations perspective, Antarctica's climate is characterized by a cold, nearly continuously sunlit summer field season (October through February), and a very cold, nearly perpetually dark winter (March through September).<sup>2</sup>

Annual average temperatures vary according to location ranging from 10° to 15°C (50° to 60°F) in the northern regions of the Antarctic Peninsula during the austral summer, to -80° to -90°C (-112° to -130°F) in the interior high altitude regions during the austral winter (National Science Foundation 1992). Winter temperatures in the Peninsula area range from -8° to -20°C (17° to -4°F). The mean annual temperature of the continental interior is -57°C (-70°F). South Pole temperatures range from -32°C (-25°F) in the summer to -59°C (-74°F) in the winter. Russia's Vostok Station recorded -89.2°C (-126.9°F), the lowest temperature ever recorded on Earth. Coastal locations are warmer, and in summer occasionally rise above the freezing point. The monthly mean temperatures at McMurdo Station in the Ross Sea area range from -2°C (27°F) in January to -27°C (-18°F) in August.

Cloud cover is more extensive along the coastal areas than over the interior. Temperature inversions are common in the interior where there is little wind and infrequent cloud cover. Inversions are not as common along the Antarctic Peninsula where winds mix the layers creating an overall warmer air mass. Meteorological observations have been recorded only in recent decades, and only in scattered localities, thus, long-term temperature trends remain uncertain. The longest instrumental temperature records are from the relatively warm Peninsula area, often referred to as the "Banana Belt" of Antarctica (External Panel 1997).

The cold is so intense that most of Antarctica is arid with little or no moisture existing as unfrozen water despite the immense amount of water locked in the ice cap. Annual snowfall in much of the continental interior is less than 5 cm (2 in) making it one of the Earth's driest deserts with an absolute humidity lower than that of the Sahara Desert. The highest snowfalls occur in the coastal areas, including the Peninsula area, where annual precipitation averages over 20 cm (8 in) annually (External Panel 1997).

Katabatic winds<sup>3</sup> sometimes flow down the surface of the continental ice sheet toward the coast commonly reaching speeds of 50 km per hour (kph) (31 mph). In the coastal regions of Terre Adelie, the daily average winds exceed 66 kph (40 mph). Winds on the Adelie Coast in the winter of 1912-1913 averaged 18 meters per second (m/s) (60 fps) 64 percent of the time, and gusts have been recorded at nearly 320 kph (nearly 200 mph) (National Science Foundation 1992).

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<sup>2</sup> The austral seasons are those of the southern hemisphere, opposite those in the northern hemisphere: mid-September to mid-December, spring; mid-December to mid-March, summer; mid-March to mid-June, fall; and mid-June to mid-September, winter.

<sup>3</sup> Katabatic winds are gravity-induced as supercooled, dense air gathers momentum and rushes down unimpeded from the higher reaches of the Polar Plateau to the lower coastal areas.



Figure 2.3 illustrates the general pattern of winds over the Antarctic continent. The Antarctic Trough, a permanent ring of low pressure, results as cold air masses developed over the ice cap interact with the warmer winds moving over the ocean creating massive cyclonic depression systems that spiral toward the continent dissipating their energy as storms over the ocean and along the coastlines. Intense winds generated over the continent produce blizzards, with localized blizzards and dense fog produced as cold continental winds meet the relatively warmer and moist maritime air. Larger storms may move inland onto the Polar Plateau causing blizzards far in the interior before the system finally dissipates. Changes in weather can be dramatic with winds shifting from calm to full-gale in a brief period of time (External Panel 1997). Offshore storms may occur with little warning.

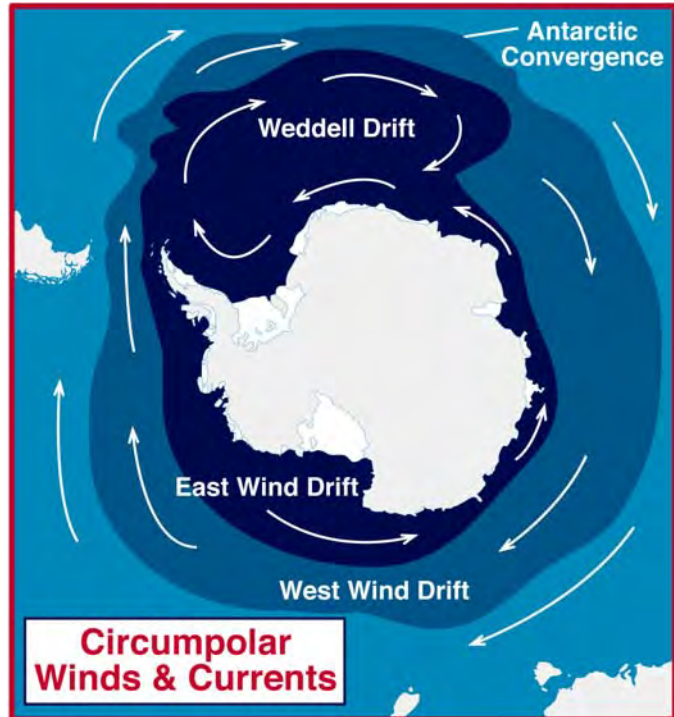


Figure 2.3.

Winds may reach hurricane strength within an hour and persist for several days. The concentration of storm formation and/or intensification at approximately 50° south latitude is associated with some of the most violent seas in the world. The Drake Passage, the ocean passage between the tip of South America and the Antarctic Peninsula, is considered the most hostile in the world and has claimed numerous ships over the centuries (External Panel 1997).

During the winter months, circulating air masses in the upper troposphere and the stratosphere effectively isolate the airmass above Antarctica. The circulation pattern around the South Pole sets up a vortex which deflects poleward-moving air from warmer regions and causes the airmass inside the vortex to cool strengthening the vortex. Ice crystals form in the extremely cold air of the vortex and provide a reaction substrate for the catalytic chemical processes that destroy atmospheric ozone (Salby and Garcia 1990).

Ozone depletion is attributable to pollutants, particularly chlorofluorocarbons (CFCs), related halogen compounds, and nitrogen oxides (NOx) released in populated regions of the Earth and dispersed globally. These chemical components and ice crystals are retained inside the vortex throughout the winter months. When sunlight returns in the spring and summer, stable CFC molecules are converted into highly reactive molecules that catalyze the destruction of ozone (Figure 2.4). Atmospheric ozone selectively absorbs ultraviolet (UV) radiation, and it is the midultraviolet (UVB) radiation, which is extremely injurious to organisms, that increases most significantly when stratospheric ozone is reduced. Research indicates that there is a measurable ozone-induced loss of phytoplankton blooms in the marginal ice zone. As the stratospheric ozone layer thins in the spring, the resulting increase in UVB radiation penetrating the ocean surface may harm phytoplankton

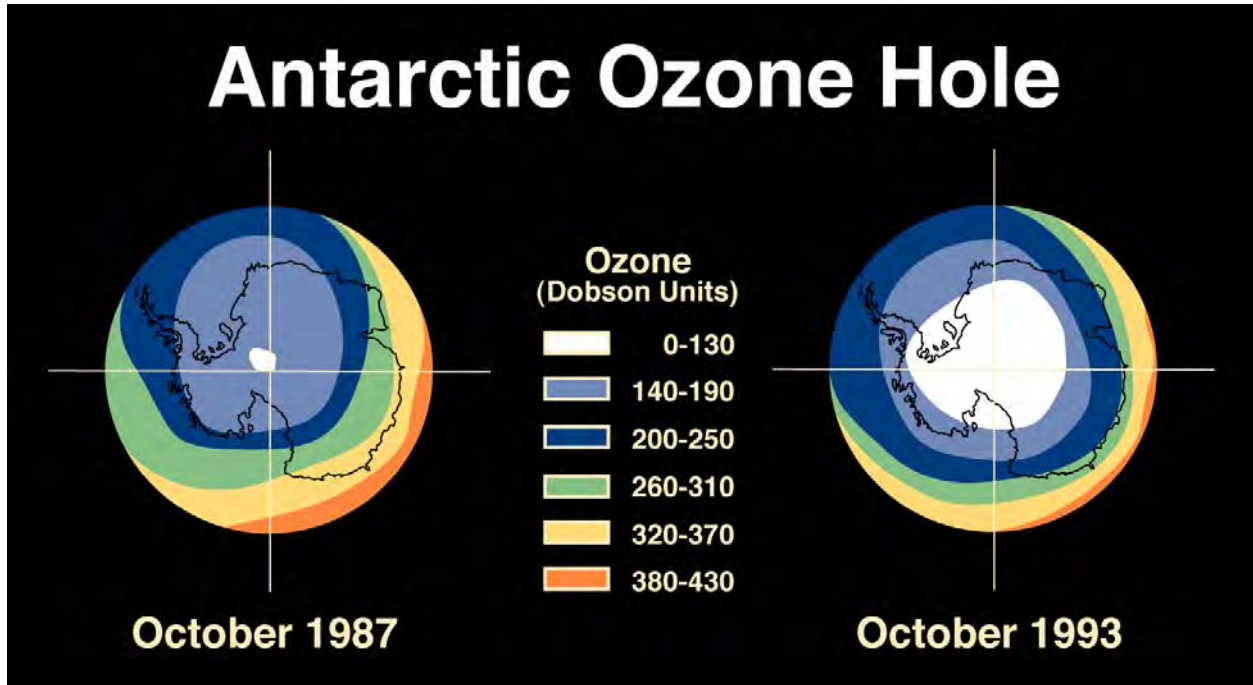


Figure 2.4.

Source: Karentz 1991

communities inhabiting near-surface waters. Because phytoplankton communities are the base of the marine food chain, these disruptions could alter the dynamics of entire Antarctic marine ecosystems (Smith et al 1992; Karentz 1991; and Vernet, Mitchell, and Holm-Hansen 1989).<sup>4</sup>

Antarctica is surrounded by the southern parts of the Pacific, the Atlantic, and the Indian Oceans, waters commonly referred to as the Southern Ocean. At 36 million square kilometers (13.9 million square miles), the Southern Ocean constitutes nearly 10 percent of the Earth’s ocean waters and extends from the Antarctic

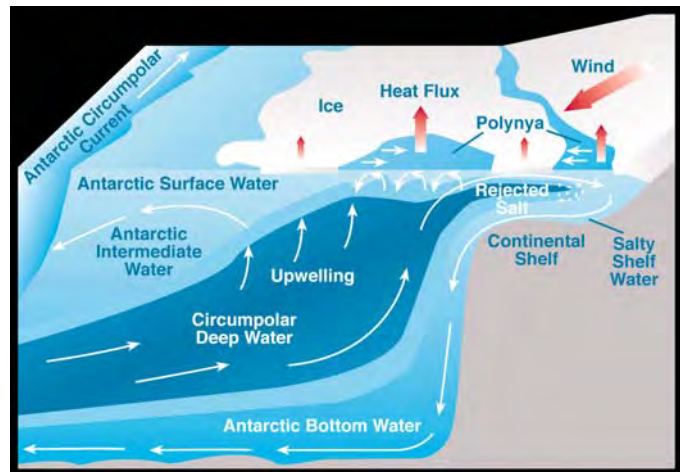


Figure 2.5. Physical characteristics of the Southern Ocean (water layers and currents)

Source: External Panel 1997

<sup>4</sup> The Montreal Protocol on Substances that Deplete the Ozone Layer is the primary international agreement providing for controls on the production and consumption of ozone-depleting substances. As of June 1994, 136 states are Parties to the Protocol, including virtually all major industrialized countries and most developing countries. Recent observations show that tropospheric chlorine levels have been declining, indicating that stratospheric chlorine concentrations should begin decreasing in the near future. Complete recovery of the ozone layer is not expected, however, until the middle of the next century, assuming full compliance with the Montreal Protocol.

continent, including the permanent ice shelves, to the Antarctic Convergence.<sup>5</sup> With temperatures ranging from  $-1.8^{\circ}$  to  $4^{\circ}\text{C}$  ( $28^{\circ}$  to  $39^{\circ}\text{F}$ ) seasonally, the cold waters are part of the global water transport system. The cold surface waters serve as a sink for dissolved gasses, important in the regulation of atmospheric carbon dioxide levels (Jones et al 1990). The circumpolar current, termed the West Wind Drift as depicted in Figure 2.3, transports more water than any of the other ocean current systems (National Science Foundation 1992). Massive upwellings south of the Antarctic Convergence provide the inorganic nutrients that support photosynthesis and phytoplankton growth, the basis of the Antarctic food web (Jones et al 1990 and Quentin and Ross 1991). The physical characteristics of the Southern Ocean are depicted in Figure 2.5.

Antarctica is characterized by the highly variable amount of ice that exists south of the Antarctic Convergence including the Antarctic ice sheet, ice shelves, glaciers, icebergs, and annual sea ice. The ice on the continent is the result of millions of years of snowfall. Ice is highly reflective of sunlight, thus, Antarctic ice is a factor in the regulation of the world's climate by reducing the overall global heat budget (Livermore 1997).

The Antarctic ice sheet, termed the Polar Plateau, currently covers approximately 98% of the continent and contains 90% of the world's ice and nearly 70% of the Earth's fresh water. The

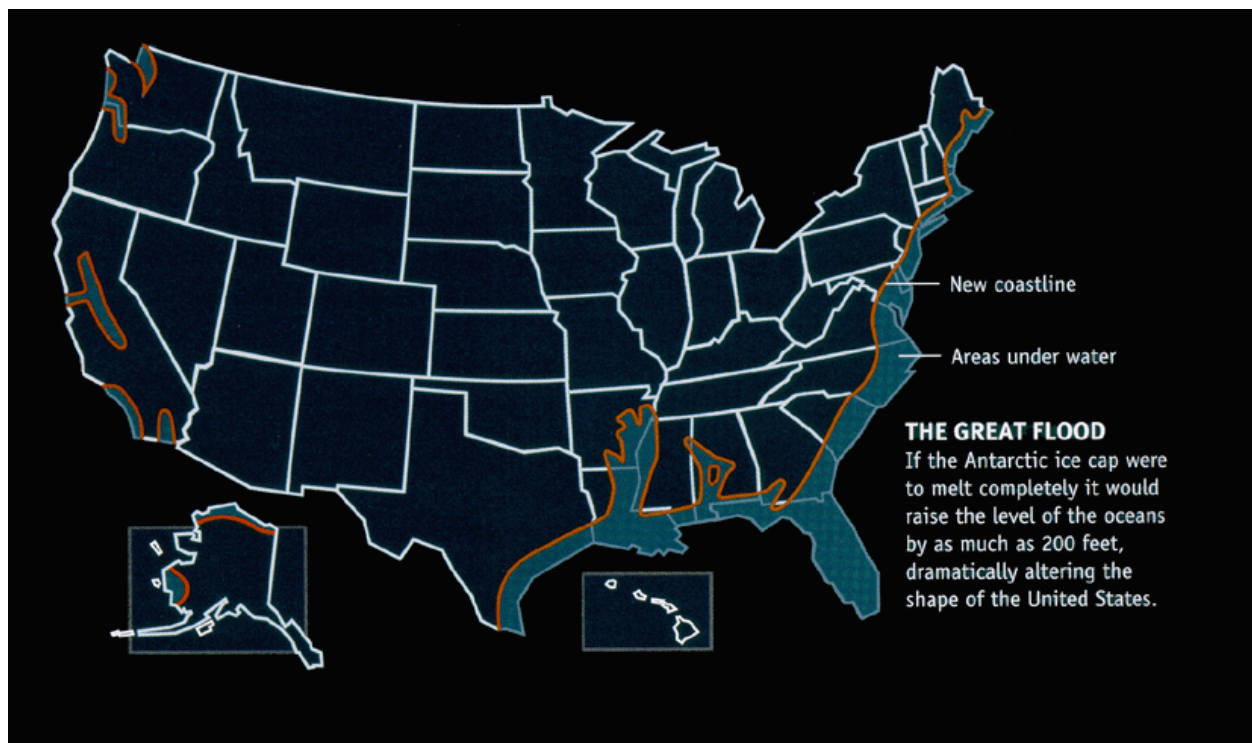


Figure 2.6. Changes in the U.S. coastline should the Antarctic ice cap melt

Source: NSF/OPP (February 1997<sup>®</sup> Popular Science, Infographic<sup>®</sup> 1997 J. Grimwade)

<sup>5</sup> The Antarctic Convergence, generally located between  $47^{\circ}$  and  $63^{\circ}$  south latitude and encircling Antarctica at roughly 1,500 km (932 mi.) off the coast, is the boundary where northward-moving cold Antarctic water meets southward-moving warm subantarctic water from the Atlantic, Pacific, and Indian Oceans.

Polar Plateau is, on average, 2,160 m (7,130 ft.) thick making Antarctica the highest continent (National Science Foundation 1992). The continent itself is depressed more than half-a-mile to near sea level under the tremendous load of the ice sheet, with some regions well below sea level (External Panel 1997). The maximum ice thickness of 4,776 m (3 mi.) occurs in Wilkes Land, about 1,200 km (750 mi.) east-northeast of Russia's Vostok Station in East Antarctica. If the ice sheet melted, global sea level would rise by 60 m (196 ft.) inundating coastal land areas as depicted in Figure 2.6. With ice covering 98% of the continent, Antarctica's ice-free areas (Figure 2.7) are generally near the coast and also include the McMurdo Dry Valleys of southern Victoria Land, the Bungee Oasis in Wilkes Land, isolated spits of land, and nunataks (National Science Foundation 1992).<sup>6</sup>

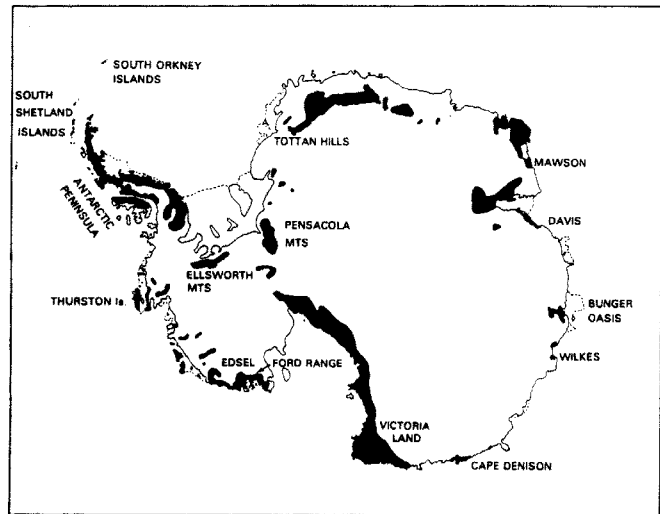


Figure 2.7. Distribution of exposed rock and snow-free ground on the Antarctic continent in Summer

Source: Walton (1984).

Ice shelves occur where large areas of the ice sheet flow (by internal ice deformation and/or by sliding on the rock base) to the coast where these areas of fresh water then float in the ocean. The Ross Ice Shelf and the Ronne/Filchner Ice Shelf are the largest in Antarctica (and the world) with the Ross Ice Shelf covering an area of half a million square kilometers (193,000 square miles), ranging up to about 800 km (497 mi.) across. These, and the other Antarctic ice shelves, typically range in thickness from about 1,000 m (3,280 ft.) at the floating ice/grounded ice boundary to 300 m (984 ft.) near the edge where the ice calves off to form icebergs (Jacka 1999).

Glaciers flow from the continent towards coastal areas where the ice may melt or be incorporated into floating ice shelves or break away to produce icebergs (Crossley 1995 and National Science Foundation 1992). Lambert Glacier, the world's largest glacier, is over 40 km (25 mi.) wide, flowing for 400 km (250 mi.). It is the outlet for about a quarter of the Antarctic ice sheet, flowing into the Amery Ice Shelf. Nearly 90% of the ice flowing across West Antarctica converges into ice streams that are the most dynamic, and perhaps unstable, components of the Antarctic ice sheet (External Panel 1997). About 5,000 to 10,000 major icebergs are calved yearly from Antarctica. Icebergs larger than the state of Connecticut have been observed (External Panel 1997). Icebergs calved from the numerous ice shelves of the Antarctic Peninsula move north and west through the Weddell Sea where they may be so enormous and numerous that it can be difficult to determine where one begins and another ends (Naveen et al 1990).

<sup>6</sup> Nunataks are exposed rock outcrops and include the isolated peaks of the mountains.

The millions of square miles of sea ice in the Southern Ocean around Antarctica increase and decrease on an annual basis as depicted in Figure 2.8. Annually, the extent of sea ice experiences a five-fold increase and decrease with the winter maximum more than doubling the region's area of ice coverage (External Panel 1997). Sea ice up to 3 m (9.8 ft.) thick forms outward from the continent every winter, making a belt 500 to 1,500 km (310 to 932 mi.) wide. The summer sea ice belt is 150 to 800 km (93 to 497 mi.) in most places (National Science Foundation 1992). The minimum areal extent of the sea ice in January is approximately 4 million square kilometers (1.5 million square miles), or 11 percent of the Southern Ocean's surface, and the maximum areal extent

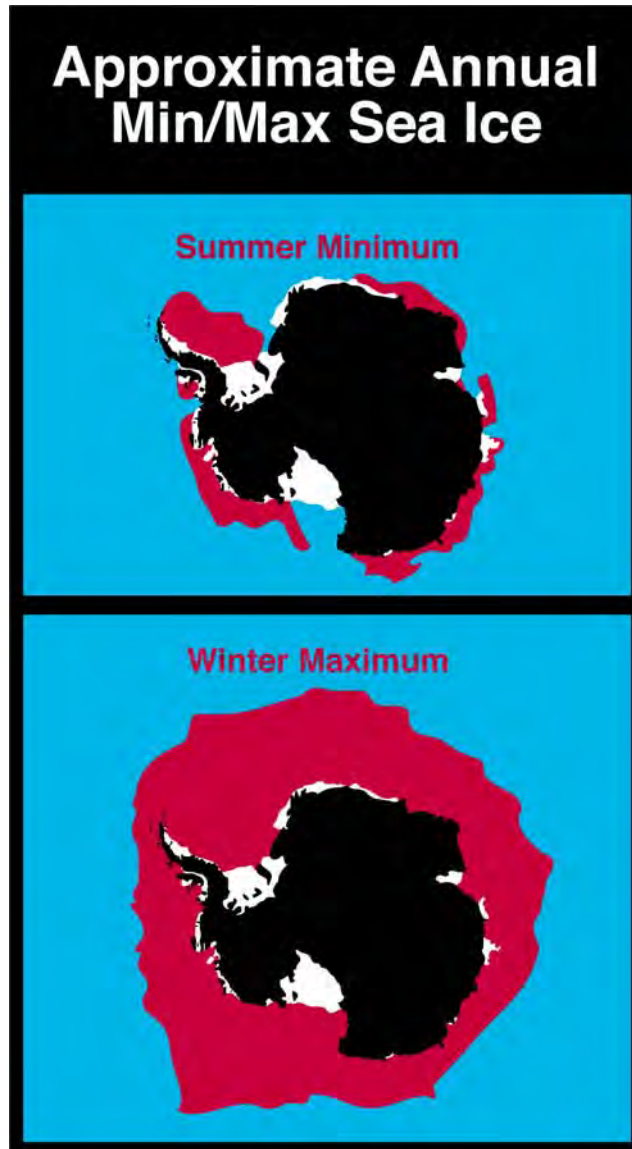


Figure 2.8.

Source: Stammerjohn and Smith 1996 and Foster 1984

in September is about 20 million square kilometers (7.7 million square miles), or 57 percent of the

Southern Ocean's surface (Stammerjohn and Smith 1996).

The temperature gradient associated with the sea ice is one of the strongest on Earth with the seasonal variability in the extent of sea ice serving as an important climate regulator in the Southern Hemisphere (External Panel 1997). The supercooled saline water formed in regions of the Antarctic's continental shelf flows into the global ocean as Antarctic Bottom Water, the coldest and saltiest water mass in the deep ocean, where it becomes a primary driver in global ocean circulation (Figure 2.9) (External Panel 1997).

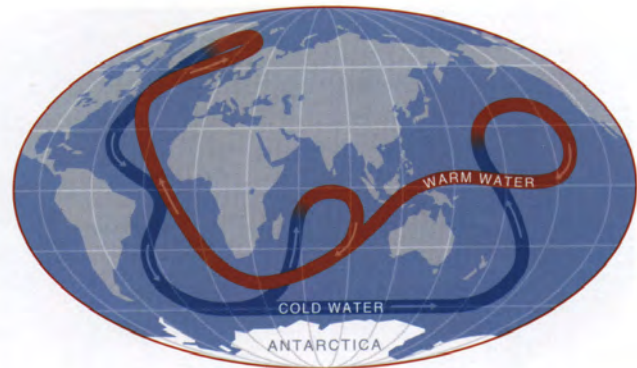


Figure 2.9. Influence of circulating Antarctic bottom water on Global ocean circulation

Source: NSF/OPP (February 1997<sup>®</sup> Popular Science, Infographic<sup>®</sup> 1997 J. Grimwade)

The annual cycle of Antarctic sea-ice growth and recession also affects the total primary biological productivity in the Southern Ocean, and thus the Antarctic food web as depicted in Figure 2.10 (Quetin and Ross 1991 and Smith et al 1992). Sea ice provides habitat (feeding sites, refuge, and breeding areas) for a variety of organisms. Krill, a key component of the Antarctic food web, feed primarily on phytoplankton including the ice algae that frequent the undersides of sea ice during the winter.<sup>7</sup> During the spring and summer, blooms of ice-colonizing phytoplankton and microbial populations may contribute as much as 60 percent of the Southern Ocean's primary productivity (Quetin and Ross 1991; Palmisano and Garrison 1993; and Stammerjohn and Smith 1996).

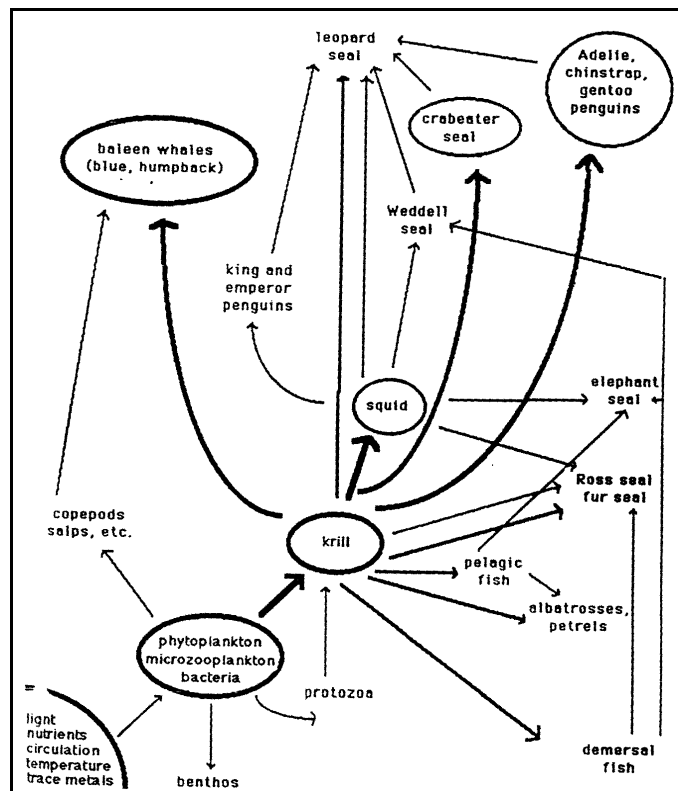


Figure 2.10. Antarctic food chain

Source: Quetin and Ross (1991)

The edge of the ice pack, or marginal ice zone, is the transition area between sea ice and open water and is

<sup>7</sup> Krill, a general term used to describe about 85 species of open-ocean crustaceans known as euphausiids, are herbivorous that feed on phytoplankton, the microscopic suspended plants, of the Southern Ocean; zooplankton, planktonic animals, may also form a part of their diet (Nicol and Clippingdale 1999).

habitat for many species of birds and marine mammals. The marginal ice zone varies from year to year, location to location, and from time to time within a season. The amount of pack ice surface area affects the summer and winter distribution of Antarctic fauna as species rely on pack ice for shelter, breeding habitat, and access for ocean feeding. Several scientific investigations are looking at the effect of physical factors, such as increase in sea ice, on the variability of penguin populations in the Southern Ocean (Fraser et al 1992; Trathan, Croxall, and Murphy 1996; Fraser and Trivelpiece 1996; and Trivelpiece and Fraser 1996).

### **2.3. East and West Antarctica**

Antarctica consists of East and West Antarctica, two distinct geologic provinces bridged by the vast Polar Plateau ice sheet (Figure 2.2). The regional distinctions are based primarily on the geologic origins of the rock that form the two landmasses.

The 3,200 km (2,000 mi.) long Transantarctic Mountains transect the continent separating East and West Antarctica, dividing the ice sheet into two parts. Their average elevation is 2300 m (7,545 ft.), with the highest mountains rising to elevations over 4,270 m (14,000 ft.), about the height of the U.S. Rocky Mountains (External Panel 1997). Other mountain ranges are the Prince Charles Mountains in the Mac. Robertson Land area, and smaller groups near the coasts. Various mountains extend the length of the Antarctic Peninsula. The Ellsworth Mountains in West Antarctica are the tallest, with Vinson Massif at 4,897 m (16,067 ft.) above sea level.

Vulcanism occurs to varying degrees along the Transantarctic Mountains and on some of the islands around Antarctica. Mt. Erebus, bordering McMurdo Sound in the Ross Sea at 77.5° south latitude, is the southernmost of the active Antarctic volcanos (Figure 2.2). The Antarctic Peninsula and the surrounding islands are volcanically active. At least eight of the eleven islands of the subantarctic<sup>8</sup> South Sandwich Islands contain fumaroles. Deception Island (in the South Shetlands directly west of the Peninsula) is extremely active. The British and Chilean research bases on Deception Island were abandoned due to extensive ash damage following eruptions in 1967 and 1969. The sunken caldera of Deception Island where seawater is heated by submarine vents is a favorite tourist landing site that provides an opportunity for tourists to swim in the heated waters.

East Antarctica is about two-thirds of the Antarctic landmass, comprised of land that is mostly above sea level (National Science Foundation 1992). The polar ice cap, East Antarctica's most prominent feature, is, on average, thicker than the ice in West Antarctica. As of winter 1999, there are 20 permanent research bases operated by 12 countries located in East Antarctica (SCAR Bulletin 1999) including the United States' McMurdo Station and New Zealand's Scott Base on Ross Island in the Ross Sea at the edge of the Ross Ice Shelf (Appendix 2). The Ross Sea and McMurdo Station are routinely visited by U.S. ship-based tour expeditions. Tourist activities that are not U.S.-based also occur in East Antarctica; these include: mountain climbing on Vinson Massif

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<sup>8</sup> The rule to be promulgated by EPA will apply to expeditions organized in the U.S. or proceeding to the Antarctic Treaty area from the U.S. The discussions in this EIS will focus on the area south of 60°, however, the subantarctic islands and other such areas are included in this EIS, as appropriate, to provide the broader context for the topics of discussion.

in the Ellsworth Range, the Transantarctic Mountains, and the mountains in the Dronning Maud Land area; private flights to the South Pole; and visits to the Dawson-Lambton Emperor penguin rookery (Adventure Network International 1998). These and other nongovernmental activities are further described in Chapter 3.

Much of the inland environment of East Antarctica is relatively pristine, and as such, provides a baseline for studies including global background levels of airborne contaminants and ancient climatic records through coring in the ice sheet. In addition, the relative abundance of meteorites on the surface of the ice sheet in certain areas lends to the knowledge of meteorites, in general, and to the knowledge of the solar system.

West Antarctica, which includes the Antarctic Peninsula, is about one-third of the Antarctic landmass and is comprised of land that is mostly below sea level (National Science Foundation 1992). Unlike East Antarctica, West Antarctica is composed of crustal blocks which would exist as islands if the polar ice cap were removed. This region is characterized by a varied landscape of undulating ice rises and mountainous nunataks, including Vinson Massif, the continent's highest mountain. Nearly 90% of the ice flowing across West Antarctica converges into ice streams with the Larsen Ice Shelf and the Weddell Sea along the eastern edge of the Antarctic Peninsula.

The Antarctic Peninsula in West Antarctica is the major peninsula of Antarctica and the northern-most extension of the continent. South America is the closest continental land mass at a distance of only about 800 km (500 mi.). By comparison, the distance to the continent from New Zealand is about 2,400 km (1,500 mi.) and from Africa, about 4,000 km (2,500 mi.).

Numerous islands border on the north and west of the Peninsula ranging from the South Orkney Islands at the north to Alexander Island in the south. Ship-based tours cruise the waters around the Peninsula and the area islands with many of the islands serving as onshore visitor sites (Figure 2.11). Few ship-based tour expeditions travel beyond the Peninsula area. However, those traveling from the Peninsula area to the Ross Sea and McMurdo Sound area journey through the Bellingshausen and Amundsen Seas, skirting the coast of West Antarctica (Figure 2.2).<sup>9</sup>

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<sup>9</sup> In 1996-1997, an expedition by Quark Expeditions, Zegrahm Expeditions, and Aurora Expeditions circumnavigated the continent (Quark, Zegrahm, Aurora IEE 1997 and Spletstoeser, Headland, and Todd 1997).



Eleven countries maintain a total of 17 year-round stations in West Antarctica, particularly in the Peninsula area, with additional seasonal research sites located throughout the region (Appendix 2) (SCAR Bulletin 1999). Eight of these 17 stations are located on King George Island (Figure 2.11). The United States’ Palmer Station is located on the southwestern coast of Anvers Island and is routinely visited by U.S. ship-based tour expeditions. The Polish Station, Arctowski, on King George Island, recently opened a “Tourist Information Center” (Antarctic and Southern Coalition 1998).

#### 2.4. General Overview of Antarctic Flora and Fauna

Only two percent of Antarctica is ice-free with virtually all extensive areas of ice free terrain, excluding nunataks, within a 2 km (1.2 mi.) coastal area from the sea (Smith 1993). Soils are generally unconsolidated materials such as talus, moraines, and beach deposits (Smith 1996). However, despite the harsh conditions, bacteria and yeast have been found growing only 290 km (180 mi.) from the South Pole, a lichen was found in a sunny canyon 340 km (210 mi.) from the Pole, and blue-green algae were observed in a frozen pond 360 km (220 mi.) from the Pole (External Panel 1997). The majority of the Antarctic terrestrial biota is confined to the ice free coastal ecosystems but, by comparison to most other coastal regions of the world, the southern polar zone is floristically and faunistically impoverished due to its isolation from the other Southern Hemisphere continents and to the extremely cold summers (Smith 1993).

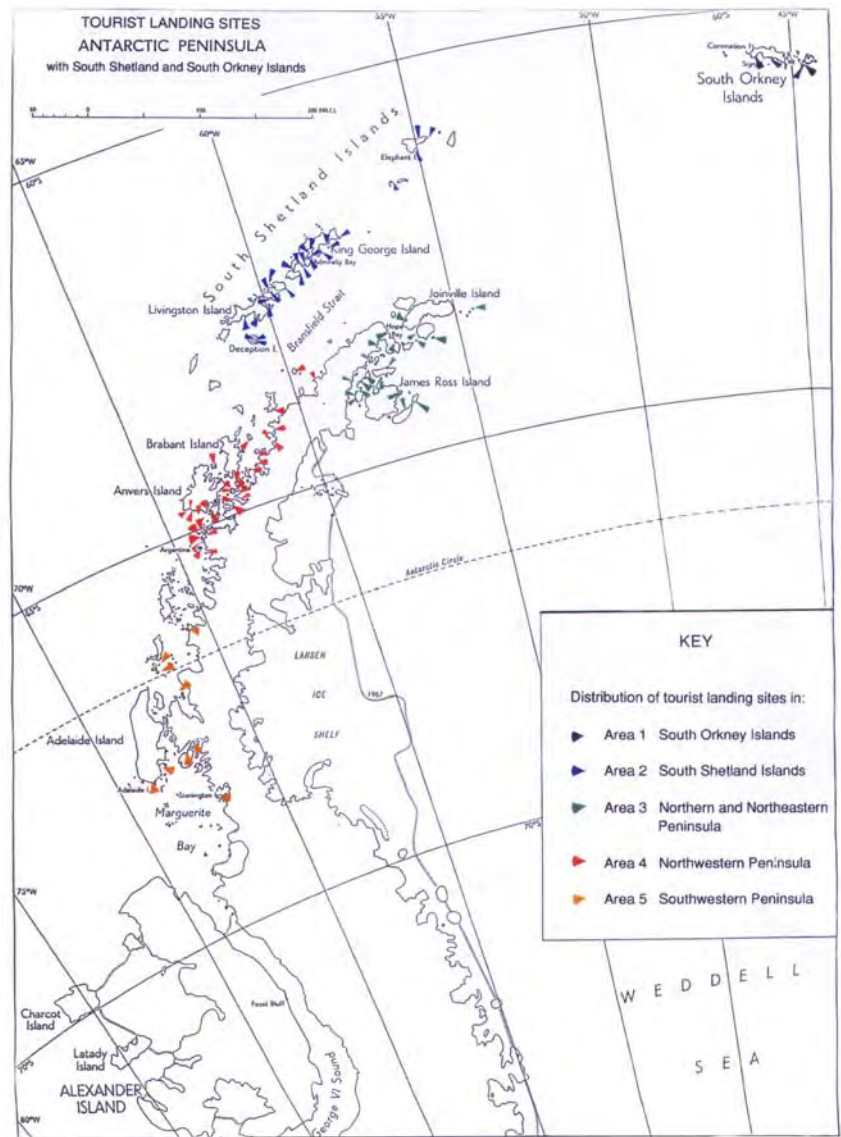


Figure 2.11. Distribution of Antarctic tourist landing sites along the Antarctic Peninsula

Source: Crosbie (unpublished)

Antarctica is divided into two climatically distinct regions (Smith 1993). Maritime Antarctic is the more northerly, milder and wetter semi-desert region which includes the west side of the Antarctic Peninsula and the offshore islands including the South Shetland Islands, South Orkney Islands, and South Sandwich Islands.<sup>10</sup> The maritime Antarctic generally receives more precipitation, which may fall as rain in the summer, and is climatically more favorable for terrestrial plant life and microscopic animals. The Antarctic Peninsula supports the continent's greatest diversity of native flora and fauna. The rest of coastal Antarctica comprises the colder, drier circumpolar coastal continental Antarctic desert region which includes the continental mass and the eastern Antarctic Peninsula (Seppelt and Connell Feb. 8 1999 and Smith 1993). Although the coastal continent is extensive, barely one-third of the coastline has a seaboard, and the other two-thirds is separated from the open sea by ice shelves. Of the coastline with seaboard, less than one-tenth is snow- and ice-free terrain in summer (Smith 1993). Unlike the maritime Antarctic, the greatest expanses of ice-free land occur inland in the cold, barren ablation (or dry) valleys and only relatively small areas of these dry valleys extend to the coast (Smith 1993). Table 2.1 summarizes these two geobotanical regions, zones based on distinctive climatic, oceanic, and biotic characteristics.

| <b>Region</b>         | <b>Province</b>    | <b>Climatic Features</b>   | <b>Biotic Features</b>   | <b>Localities</b>   |
|-----------------------|--------------------|--|--|---|
| Maritime Antarctic    | Northern (55-66°S) | Cold moist maritime climate, mean monthly temperatures exceed 0°C for 3-4 months in the summer, but rarely fall below -10°C in winter; precipitation 35-50 cm per annum with much falling as rain in summer. | Semi-desert dominated by cryptogams but including small closed stands of the only two phanerogams in the Antarctic; locally diverse vegetation near coast; mosses form closed stands in wetter habitats locally accumulating peat, lichens predominate in exposed situations and inland; liverworts frequent. Snow algae and macrofungi frequent in summer. Abundant marine bird and mammal fauna; substantial invertebrate fauna dominated by mites and springtails and including the only higher order insects (Diptera) in the Antarctic. | South Sandwich, South Orkney, South Shetland Islands, west coast of Antarctic Peninsula and offshore islands to about 68°S. |
|                       | Southern (66-70°S) | Cold dry maritime climate, mean monthly temperatures exceed 0°C for 1-2 months in summer but rarely fall below -15°C in winter; precipitation 35 cm or less water equivalent; occasional rain.               | As for northern province but cryptogamic diversity less and closed stands restricted in area; two phanerogams not infrequent to 68°S; liverworts, macrofungi and Diptera rare; no accumulation of peat moss.   | West coast of Antarctic Peninsula and offshore islands from 66-70°S; also northeast coast of Antarctic Peninsula to 63°S.   |
| Continental Antarctic | Coastal            | Cold arid climate, mean monthly temperatures exceed 0°C for 0-1 month in summer; winter means from -5 to -25°C, but some maritime influence  | Semi-desert with moss and alga vegetation present on ahumic soil but restricted in species and extent; lichens numerous and locally form extensive stands; snow algae occasional in some localities.   | Coastal fringe of East Antarctica and West Antarctica south of 70°S and on east coast of Antarctic Peninsula south of       |

<sup>10</sup> The South Sandwich Islands, located northward of the Antarctic Peninsula, are outside the Antarctic Treaty area.

| Region | Province    | Climatic Features  | Biotic Features   | Localities   |
|--------|-------------|--|---|--|
|        |             | narrowing temperature range; precipitation above 10-15 cm water equivalent. Rain very rare.  | Invertebrates locally abundant and diverse. Seabird colonies frequent and large; marine mammals abundant (mainly offshore).   | 63°S; includes ablation areas (dry valleys and oases).   |
|        | Slope       | Cold and more continental climate, all mean monthly temperatures below -5°C, low winter temperatures; precipitation about 10 cm water equivalent; no rain. | Desert with mainly open very discontinuous lichen vegetation; occasional moss patches near rare snow and Antarctic petrel colonies and other favorable oases. Some mites, springtails, and other invertebrates. | Mountain and glacier zone inland from coast encircling the central ice plateau; includes isolated nunataks in plateau. |
|        | Ice Plateau | Extreme continental conditions, all mean monthly temperatures below -15°C, falling well below -30°C in winter; slight precipitation.                       | No life besides occasional microorganisms and stray birds.  | Interior of the continent, generally above 2,000 m altitude.   |

Source: Smith 1984

### 2.4.1. Antarctic Flora

Antarctica's flora is dominated by lichens (about 200 species) and mosses (about 100 species) of various forms, and, in suitable habitats, by species of foliose algae and cyanobacteria (blue-green algae) (Smith 1993). In addition, there are about 20 species of liverworts, 15 species of macro-fungi, and 2 angiosperms or flowering plants (Smith 1993).<sup>11 12</sup> Lichens and bryophytes<sup>13</sup> dominate the macro-flora, with lichens growing in most areas of Antarctica capable of supporting plant life. By mass, algae are the most abundant plants in Antarctica and can be found growing on open ground and ice, and in fresh water ponds (Llano 1965). Terrestrial algae are found growing in snow banks or in the soil itself, and soil algae (along with bacteria and cyanobacteria) are ecologically important as they help bind the soil together with their byproducts (mucilage and slime) (Seppelt and Connell Feb. 3 1999). The National Science Foundation has designated native Antarctic flora and fauna in order to include them in a regulatory framework to conserve and protect them as part of the Antarctic Treaty System (45 CFR 670).<sup>14</sup> Native plants are designated as all

<sup>11</sup> The National Science Foundation has designated native plants as all plants whose normal range is limited to, or includes, Antarctica, including: Bryophytes, Freshwater algae, Fungi, Lichens, Marine algae, and Vascular plants. (45 CFR 670)

<sup>12</sup> The native flowering plants include a grass (Antarctic hair grass, *Deschampsia antarctica*) and an herb (Antarctic pearlwort, *Colobanthus quitensis*).

<sup>13</sup> Mosses and liverworts, with mosses being the dominant bryophyte (Smith 1996).

<sup>14</sup> In 1964, the Antarctic Treaty Parties adopted the Agreed Measures for the Conservation of Antarctic Fauna and Flora, and in 1991, the Treaty Parties adopted the Protocol on Environmental Protection to the Antarctic Treaty with five annexes which codify and strengthen previously adopted environmental provisions. Annex II to the Protocol provides for measures to conserve Antarctic plants and animals and for a permit system for various activities in Antarctica and designation of certain Antarctic mammals and geographic areas as requiring special attention. These measures are implemented in the United States through the Antarctic Conservation Act of 1978 (16

plants whose normal range is limited to, or includes Antarctica. These include: bryophytes, freshwater algae, fungi, lichens, marine algae, and vascular plants (45 CFR 670). None of these plants are designated as Specially Protected Species.

Antarctic plant communities are often small stands, commonly less than 25 square meters (270 square feet). Many plant species are sensitive to minor nutrient changes (especially nitrogen and calcium), moisture, texture and stability of the substratum, micro topography, exposure to wind and protection by winter snow cover (Smith 1993). The two angiosperms, the macro-fungi and the liverworts are restricted to the maritime Antarctic.<sup>15</sup> Growing conditions tend to be relatively constant throughout the coastal snow-free zone, consequently, maritime plant communities often occur well inland, and “montane” communities extend to sea level (Smith 1993). Lichens growing under favorable maritime Antarctic conditions may reach growth rates of 1 cm (.4 in.) or more per 100 years, while in the harsher coastal continental Antarctic, growth may be as little as 1 cm per 1,000 years for *Buellia frigida* in the Dry Valleys region (Seppelt and Connell Feb. 3 1999).

Figure 2.12 illustrates the distribution of the principal dry ecosystems across a typical coastal area of the Antarctic. The absence of the zoned lichen communities on sea cliffs in the continental regions is the major difference between the maritime and continental regions. In continental locations, the extent of vegetation, in general, is usually more fragmentary due either to the lack of snow-free ground or to the severity of the environment (Smith 1993).

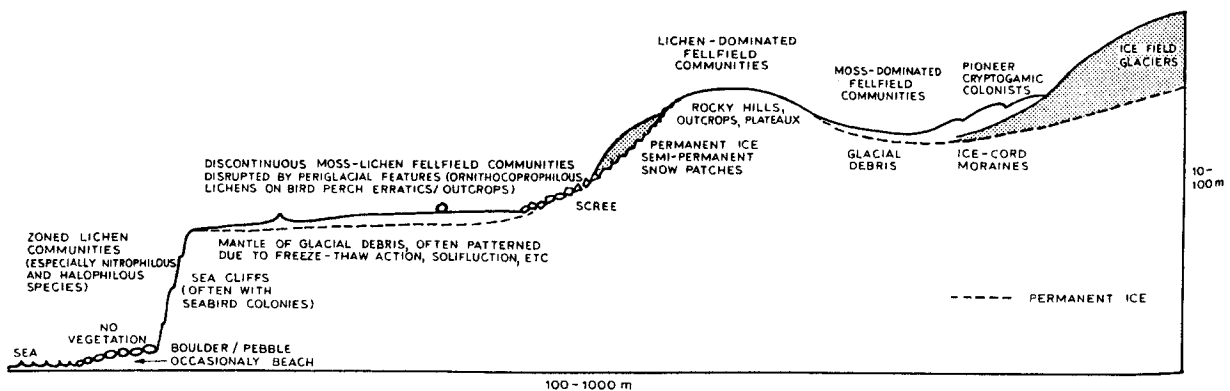


Figure 2.12. Typical coastal area of the Antarctic

Source: Smith 1993

U.S.C. 2401 *et seq.*). In accordance with 45 CFR 670, the National Science Foundation has designated native mammals, birds and plants, and requires permits authorizing the taking or harmful interference with mammals, birds, or plants.

<sup>15</sup> The liverwort, *Cephaloziella exiflora*, is known from four continental localities (Smith 1993).

There are several localized habitats with unique flora, and to a lesser extent, invertebrate fauna, most located in the northern maritime Antarctic (Smith 1993). The calcareous soils and rocks of Signy Island are dominated by short cushion mosses and fruticose lichens. The fine, porous, base-rich black ash soils on several of the South Sandwich and South Shetland Islands and Bouvetoya are sparsely vegetated. However, zoned moss and liverwort communities are located around fumaroles in the South Sandwich Islands, and heterogeneous communities occur on heated ground on Deception Island and Bouvetoya. In wetter areas colonized by mosses and occasional lichens and flowering plants, areas of *Deschampsia antarctica*, covering several hundred square meters, occur in sheltered moist sites. In some dry coastal areas, a unique community of micro-algae and cyanobacteria exists on raw soil beneath translucent boulders (Smith 1993). In the continental Antarctic, the volcanic soils of Ross Island are extremely dry, unstable because of wind action, and barren except along temporary melt stream channels or around or down-wind from penguin rookeries. In these areas, stands of barely 1 square meter (10 square feet) are comprised of scattered moss cushions with associated micro-algae and cyanobacteria, and lichen crusts (Smith 1993). Mt. Melbourne, an inactive volcano in the Ross Sea area, supports the only known Antarctic occurrence of the moss *Campylopus pyriformis* (Seppelt and Connell Feb. 8 1999).

The prominent marine flora in the Southern Ocean are the phytoplankton which form the basis of the marine food chain. As the primary producers, phytoplankton convert light energy from the sun into chemical energy which is made available to zooplankton and, indirectly, higher order predators in the food web process. Phytoplankton contribute 30-40% of the biomass of the Antarctic ecosystem, and up to 60% during spring and summer blooms (Seppelt and Connell Feb 3 1999; Quetin and Ross 1991; Palmisano and Garrison 1993; and Stammerjohn and Smith 1996). The majority of Southern Ocean phytoplankton species are diatoms (18.5%) and Prymnesiophytes spp. (80.4%). The distribution of phytoplankton is patchy throughout the Southern Ocean. Blooms occur in the spring, fall, and several times throughout the summer as sunlight duration and intensity increase and affect other physical and chemical characteristics of the ocean (Bidigare et al 1996).

#### **2.4.2. Antarctic Fauna**

Certain mammals and birds have been designated as native to Antarctica (45 CFR 670). Designated birds include penguins and flying birds, and the mammal designations include pinnipeds, large cetaceans (whales), and small cetaceans (dolphins and porpoises). Two seal species have been designated as Specially Protected Species (45 CFR 670). Whaling is regulated under the International Convention for the Regulation of Whaling through the International Whaling Commission. Commercial fisheries in the waters of the Antarctic Treaty area are addressed under the Convention for the Conservation of Antarctic Marine Living Resources under the Antarctic Treaty System<sup>16</sup> which is discussed further in Chapter 5. No fish have been designated as Specially Protected Species.

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<sup>16</sup> The Antarctic Treaty was signed in Washington, D.C. on December 1, 1959. The Convention for the Conservation of Antarctic Marine Living Resources was concluded in 1980.

About 270 demersal and pelagic fish species have been recorded from the Southern Ocean which account for only 1.5% of the world's approximately 20,000 fish species. With the Scotia Ridge as the only shallow water 'bridge' to the continental shelf of South America, the Antarctic Convergence has had a marked effect on the evolution and composition of the shallow-water and pelagic fish. Deep-sea fish are not confined by this barrier. As a result, about 25% or less of the deep-sea species are endemic to the Southern Ocean, while there are fewer pelagic species than deep-sea species and more than 85% of the coastal species do not occur elsewhere (Kock 1992).

Pelagic fish,<sup>17</sup> including opahs, porbeagle, trumpet fish, and southern blue tuna, are occasional or even permanent invaders of the peripheral parts of the Southern Ocean. There are no true families that are confined more or less to the surface waters of the Southern Ocean during their life cycle. Pelagic fish also consists of early life stages of a large number of notothenioids and of juveniles and adults of the families Nototheniidae, Bathydraconidae and Channichthyidae. The most numerous of the mesopelagic fauna are the lanternfishes. Mesopelagic fauna overlap with bathypelagic fauna making separation between the two faunas somewhat artificial (Kock 1992).

Bottom, or demersal, fish make up almost 75% of the species so far recorded. These are divided into two groups: the deep sea species inhabiting the continental slope and deep sea basins and trenches, and the coastal species living on the continental slope. This distribution pattern becomes blurred because of the submergence of the shelf regions and the presence of inner-shelf depressions, especially in East Antarctica. Apart from the few representatives of the truly coastal fish families,<sup>18</sup> the deep sea species seem to be widespread with 57 species of families known to be common in other parts of the world ocean (Kock 1992).

The single endemic suborder, the Notothenioidei, dominate the coastal fish of the Southern Ocean in terms of species and biomass. This group includes more than 66% of the species and accounts for more than 95% of the individuals in most areas of the Southern Ocean. Comprised of a variety of ecomorphological types, they have adapted to nearly all habitats from shallow tidal pools to the continental slope down to more than 2,000 m (6,561 ft.). All other coastal fish families are not specifically Antarctic and are much less in terms of numbers of species and individuals (Kock 1992).

The abundance of life in the Southern Ocean derives from an abundance of phytoplankton and zooplankton, the flora and fauna base of the food chain (Figure 2.10). Southern Ocean marine invertebrates are the main trophic link between the region's primary producers and apex predators (Ross, Quetin, and Lascara 1996). The most prominent and important of the marine invertebrates is the shrimp-like crustacean, the Antarctic krill (*Euphausia superba*). Estimated at 5 billion tons, krill comprise from 75 to 90 percent of the marine invertebrate biomass in the Peninsula area ( Ross, Quetin, and Lascara 1996 and Schnack-Schiel and Mujica 1994). Several species of copepods and

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<sup>17</sup> Antarctic pelagic fishes are descendants of several faunal groups of different origins: bathypelagic species, mesopelagic species and species originating from coastal fish families that have secondarily adapted to temporary or permanent life in midwater (Kock 1992).

<sup>18</sup> Artedidraconidae, Bathydraconidae, Channichthyidae and Nototheniidae species.

salps may make up as much as 24 percent of the zooplankton biomass in this area (Ross, Quetin, and Lascara 1996). Salps are ecologically important as phytoplankton predators<sup>19</sup> and in the rapid transport of carbon from the sea surface to the deep sea (Chiba, Hosie, and Belbin 1999). *Salpa thompsoni* and *Ihlea racovitzai* are common in Antarctic waters with the former abundant in ice-free areas and the latter distributed exclusively in high-latitude ice edge areas. It may be that in a year when Antarctic krill are less abundant, *S. thompsoni* is abundant, and vice versa, possibly attributable to yearly variations in the extent of the sea ice; salps are dominant in years of poor ice extent while krill are dominant in other years (Chiba, Hosie, and Belbin 1999).

The prominent benthic invertebrates include crustaceans, mollusks, polychaetes, porifera, bryozoa, and echinoderms (Clarke 1996). The marine benthic diversity in the Southern Ocean as compared to the estimated number of such species world-wide is illustrated in Table 2.2. The abundant and varied bottom life in coastal areas includes starfish, urchins and shellfish.

| <b>Taxon</b>  | <b>Estimated Number of Southern Ocean Species</b> | <b>Estimated Number of World Species</b> |
|---------------|---|--|
| Porifera      | >300  | 6,000                                    |
| Cnidaria      | 101   | ?  |
| Brachiopoda   | 16  | 335                                      |
| Bryozoa       | >350  | 5,000                                    |
| Priapulida    | 3   | 9  |
| Mollusca      | ~870  | 130,000                                  |
| Sipunculida   | ~15   | 320                                      |
| Polychaeta    | 562   | 12,000                                   |
| Pycnogonida   | >150  | 1,000                                    |
| Crustacea     | 970   | 29,820                                   |
| Echinodermata | 346   | 6,700                                    |
| Tunicata      | 130   | 3,000                                    |

Source: Clarke 1996

In Antarctica, animal life on land is found in coastal areas. In contrast, sea life abounds with animals including seals, penguins and flying birds that come ashore only to breed. With the exception of a couple of shore and wading birds and the terrestrial invertebrates, animals are entirely dependent on the sea (Beltramino 1993).

Native terrestrial invertebrates are limited to arthropods including insects (2 species) and mites (150 species). Springtails, midges and mites generally live along the coast among plant

<sup>19</sup> With high filtration rates, a salp swarm can harvest a large portion of the phytoplankton of an area, sometimes to the exclusion of other herbivores such as zooplankton.

colonies. A mite, the southernmost known animal, has been found 500 km (310 mi.) from the South Pole (External Panel 1997). There are no terrestrial invertebrates designated as native to Antarctica, nor are there any designated as Specially Protected Species (45 CFR 670).

Mammals designated as native to Antarctica include seals, whales, dolphins and porpoises and are listed in Table 2.3. In the waters of the Antarctic Treaty area, these mammals are addressed under the Convention for the Conservation of Antarctic Marine Living Resources under the Antarctic Treaty System<sup>20</sup> (Chapter 5).

| <b>Table 2.3. Native Mammals of Antarctica</b>   |                                    |
|--|------------------------------------|
| <b>Pinnipeds:</b>                                |                                    |
| Crabeater seal                                   | <i>Lobodon carcinophagus</i>       |
| Southern elephant seal                           | <i>Mirounga leonina</i>            |
| Southern fur seals                               | <i>Arctocephalus, spp.</i>         |
| Leopard seal                                     | <i>Hydrurga leptonyx</i>           |
| Ross seal  | <i>Ommatophoca rossii</i>          |
| Weddell seal                                     | <i>Leptonychotes weddelli</i>      |
| <b>Large Cetaceans (Whales):</b>                 |                                    |
| Blue whale                                       | <i>Balaenoptera musculus</i>       |
| Pygmy blue whale                                 | <i>B. musculus brevicauda</i>      |
| Fin whale  | <i>Balaenoptera physalus</i>       |
| Humpback whale                                   | <i>Megaptera novaeangliae</i>      |
| Minke whale                                      | <i>Balaenoptera acutrostrata</i>   |
| Sei whale  | <i>Balaenoptera borealis</i>       |
| Southern right whale                             | <i>Balaena glacialis australis</i> |
| Sperm whale                                      | <i>Physeter macrocephalus</i>      |
| <b>Small Cetaceans (Dolphins and porpoises):</b> |                                    |
| Arnoux's beaked whale                            | <i>Berardius arnuxii</i>           |
| Commerson's dolphin                              | <i>Cephalorhynchus commersonii</i> |
| Dusky dolphin                                    | <i>Lagenorhynchus obscurus</i>     |
| Hourglass dolphin                                | <i>Lagenorhynchus cruciger</i>     |
| Killer whale                                     | <i>Orcinus orca</i>                |
| Long-finned pilot whale                          | <i>Globicephala melaena</i>        |

<sup>20</sup> The Antarctic Treaty was signed in Washington, D.C. on December 1, 1959. The Convention for the Conservation of Antarctic Marine Living Resources was concluded in 1980. Whaling is regulated under the International Convention for the Regulation of Whaling through the International Whaling Commission.



| Table 2.3. Native Mammals of Antarctica |                              |
|---|------------------------------|
| Southern right whale dolphin            | <i>Lissodelphis peronii</i>  |
| Southern bottlenose whale               | <i>Hyperoodon planifrons</i> |
| Spectacled porpoise                     | <i>Phocoena dioptrica</i>    |

Source: 45 CFR 670

The six species of seals represent nearly half of the 19 known genera of the world's pinniped types (Laws 1984). The Southern Ocean is estimated to contain 50 percent of the world's seal population and 80 percent of the world's seal biomass, with the crabeater estimated to account for 56 percent of the world's pinniped stock and, because of its size, nearly 79 percent of the world's total pinniped biomass (Laws 1984). Two seal species, the Kerguelen fur seal (*Arctocephalus tropicales gazella*) and the Ross seal (*Ommatophoca rossii*), are designated as Specially Protected Species (45 CFR 670). The estimated abundance and status of the Antarctic seal populations are summarized in Table 2.4.

| Table 2.4. Abundance Estimates for Antarctic Seal Populations |                       |                         |
|---|-----------------------|-------------------------|
| Species   | Population Since 1982 | Status                  |
| Crabeater   | 15,000,000-30,000,000 | Increasing              |
| Southern elephant   | 750,000               | Stable, some decreasing |
| Antarctic fur   | 1,500,000             | Increasing              |
| Leopard   | 220,000-440,000       | Increasing              |
| Ross  | 220,000               | Not Known               |
| Weddell   | 800,000               | Stable, some decreasing |
| Total   | 18,490,000-33,710,000 |                         |

Source: Laws 1984 and Boyd and Roberts 1993

Climate, breeding substrate (ice floes or land), and food availability influence the distribution of Antarctic seals (Costa and Crocker 1996 and Croxall 1992). Ice breeders include the crabeater, leopard, Weddell and Ross seals. Land breeders include the Antarctic fur and the Southern elephant seals, both with breeding habitat in the Peninsula area. Figure 2.13 shows the timing of breeding activities for the Antarctic fur, Southern elephant and Weddell seals; the timing of tourism in the Peninsula area is also depicted. Seals in the Peninsula area at the eleven sites with 10,000 or more visitors during the 8-year period 1989-1997 include: crabeater, Southern Elephant, Antarctic Fur, and Weddell seals on land; and leopard seals in the ocean (Naveen 1997).

Eight species of large cetaceans (whales) and 9 species of small cetaceans (dolphins and porpoises) have been documented within the Southern Ocean and are designated as native mammals; none is designated as Specially Protected Species (45 CFR 670 and Brown and Lockyer 1984). Traveling alone or in small pods, none of the cetaceans documented within the Southern Ocean is exclusive to the Antarctic region, and their populations are widely distributed throughout the Southern Ocean.

Birds designated as native to Antarctica are listed in Table 2.5; none is designated as Specially Protected Species (45 CFR 670).<sup>21</sup>

| <b>Table 2.5. Designated Native Birds of Antarctica Under 45 CFR Part 670</b> |                                 |
|---|---------------------------------|
| <b>Non-flying Birds</b>   |                                 |
| <i>Penguin:</i>   |                                 |
| Adelie  | <i>Pygoscelis adeliae</i>       |
| Chinstrap   | <i>Pygoscelis antarctica</i>    |
| Emperor   | <i>Aptenodytes forsteri</i>     |
| Gentoo  | <i>Pygoscelis papua</i>         |
| King  | <i>Aptenodytes patagonicus</i>  |
| Macaroni  | <i>Eudyptes chrysolophus</i>    |
| Rockhopper  | <i>Eudyptes crestatus</i>       |
| <b>Flying Birds</b>   |                                 |
| <i>Albatross:</i>   |                                 |
| Black-browed  | <i>Diomedea melanophris</i>     |
| Gray-headed   | <i>Diomedea chrysostoma</i>     |
| Light-mantled sooty   | <i>Phoebastria palpebrata</i>   |
| Wandering   | <i>Diomedea exulans</i>         |
| <i>Fulmar:</i>  |                                 |
| Northern Giant  | <i>Macronectes halli</i>        |
| Southern  | <i>Fulmarus glacialoides</i>    |
| Southern Giant  | <i>Macronectes giganteus</i>    |
| <i>Gull:</i>  |                                 |
| Southern Black-backed   | <i>Larus dominicanus</i>        |
| <i>Jaeger:</i>  |                                 |
| Parasitic   | <i>Stercorarius parasiticus</i> |
| Pomarine  | <i>Stercorarius pomarius</i>    |
| <i>Petrel:</i>  |                                 |
| Antarctic   | <i>Thalassoica antarctica</i>   |
| Black-bellied Storm   | <i>Fregatta tropica</i>         |

<sup>21</sup> In order to preserve and protect the native mammals, birds, plants, and invertebrates of Antarctica and the ecosystems upon which they depend and to implement the Antarctic Conservation Act of 1978, as amended by the Act, the National Science Foundation has listed “designated native birds;” these regulations also designate specially protected species of native mammals, birds and plants (45 CFR 670).

Chapter 2. Affected Environment — the Physical and Biological Environment

| <b>Table 2.5. Designated Native Birds of Antarctica Under 45 CFR Part 670</b> |                                   |
|---|-----------------------------------|
| Blue  | <i>Halobaena caerulea</i>         |
| Gray  | <i>Procellaria cinerea</i>        |
| Great-winged  | <i>Pterodroma macroptera</i>      |
| Kerguelen   | <i>Pterodroma brevirostris</i>    |
| Kerguelen   | <i>Pterodroma macroptera</i>      |
| Mottled   | <i>Pterodroma inexpectata</i>     |
| Snow  | <i>Pagodroma nivea</i>            |
| Soft-plumed   | <i>Pterodroma mollis</i>          |
| South-Georgia Diving  | <i>Pelecanoides georgicus</i>     |
| White-bellied Storm   | <i>Fregetta grallaria</i>         |
| White-chinned   | <i>Procellaria aequinoctialis</i> |
| White-headed  | <i>Pterodroma lessonia</i>        |
| Wilson's Storm  | <i>Oceanites oceanicus</i>        |
| <b>Pigeon:</b>  |                                   |
| Cape  | <i>Daption capense</i>            |
| <b>Pintail:</b>   |                                   |
| South American Yellow-billed  | <i>Anas georgica spinicauda</i>   |
| <b>Prion:</b>   |                                   |
| Antarctic   | <i>Pachyptila desolata</i>        |
| Narrow-billed   | <i>Pachyptila belcheri</i>        |
| <b>Shag:</b>  |                                   |
| Blue-eyed   | <i>Phalacrocorax atriceps</i>     |
| <b>Shearwater:</b>  |                                   |
| Sooty   | <i>Puffinus griseus</i>           |
| <b>Sheathbill:</b>  |                                   |
| American  | <i>Chionis alba</i>               |
| <b>Skua:</b>  |                                   |
| Brown   | <i>Catharacta lonnbergi</i>       |
| South Polar   | <i>Catharacta maccormicki</i>     |
| <b>Swallow:</b>   |                                   |
| Barn  | <i>Hirundo rustica</i>            |
| <b>Tern:</b>  |                                   |
| Antarctic   | <i>Sterna vittata</i>             |
| Arctic  | <i>Sterna paradisaea</i>          |

Source: 45 CFR 670

The population of birds in the Antarctic is estimated to be 350 million, of which about half are penguins. The total weight of birds is estimated in excess of 400,000 tons, greater than the combined weight of Antarctic seals and whales (External Panel 1997).

Antarctic penguins have evolved in relative isolation adapting to their environment in the absence of land-based predators. All Antarctic penguins are exceptional thermoregulators and are able to maintain constant body temperature even under the widely variable environmental conditions of Antarctica. Several species withstand prolonged periods of fasting on land during incubation and molting during which they deplete their metabolic reserves (Williams 1995).

Penguins are restricted to habitat areas with the characteristics necessary for their reproductive activities; however, these factors vary among species. Habitat requirements include adequate food and nesting resources. All penguins eat krill, and different species use the land or the ice for breeding habitat thus minimizing niche overlap and maximizing available habitat. Some species congregate in large groups to breed, while others breed in relative isolation (Williams 1995). Reproductive success is further maximized by timing of breeding activities to coincide with the few months of summer's relatively milder conditions. The exception to this is the Emperor penguin which breeds on the fast ice along the continent during the winter.

Three species of brush-tailed penguins (*Pygoscelis*), the Adelie, chinstrap and gentoo, commonly nest in the Peninsula area and on the surrounding islands (Woehler 1993). A small colony of macaroni penguins (*Eudyptes*) is regularly encountered at Hannah Point on the South Shetland Islands west of the Antarctic Peninsula (Naveen 1997); however, most macaronis live and breed north of 60° south latitude outside the Antarctic Treaty area. Closely related, all three brush-tailed penguins are medium-sized and feed primarily on krill. Adelies nest farther south than any other living bird including the Antarctic petrel and the Emperor penguin (Croxall 1985). The

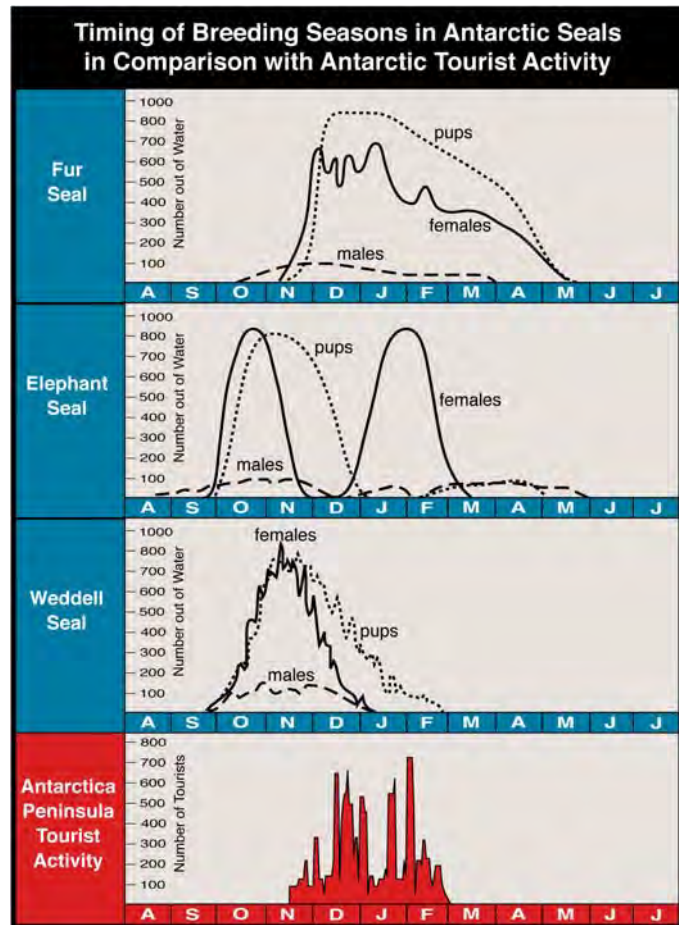


Figure 2.13.

Source: Croxall 1984, IAATO IEE 1998, and Orient Lines IEE 1998

Peninsula represents the northernmost extension of its normal breeding habitat, while a rookery at Cape Royds on Ross Island near the Ross Ice Shelf is nearly 1,500 km (932 mi.) south of the Antarctic Circle. The larger gentoos range around the peripheries of Antarctica mostly on islands near the Antarctic Convergence extending only to the northern tip of the Peninsula. The Peninsula is the primary habitat only for the smaller chinstrap penguins. Table 2.6 lists the estimated abundance and status of the three common Peninsula area penguin species. Figure 2.14 shows the timing of penguin breeding activities; the timing of tourism in the Peninsula area is also depicted.

| Species   | Population Size (breeding adults) | Status (3)        |
|-----------|-----------------------------------|-------------------|
| Adelie    | 5,220,000 (2)                     | Stable/increasing |
| Chinstrap | 14,980,400 (3)                    | Stable/increasing |
| Gentoo    | 628,000 (4)                       | Stable/increasing |

- (1) Estimates include both Antarctic and sub-Antarctic areas.
- (2) Croxall 1985
- (3) Woehler 1993
- (4) Williams 1995

Four of the seven native penguin species were found nesting in the Peninsula area at one or more of the eleven sites with 10,000 or more visitors during the 8-year period 1989-1997. Those typically breeding at these eleven locations include: gentoo (6 sites), chinstrap (4 sites), and Adelie (3 sites). Macaroni penguins typically breed further north, but also breed at one of these eleven sites (Naveen 1997 and Naveen et al 2000).

The movements of the flying seabirds are highly dependent on the availability and distribution of food, as well as physical factors such as temperature, ice cover, and climate (Knox 1994). The winter distribution of Antarctic seabirds is less well known than their

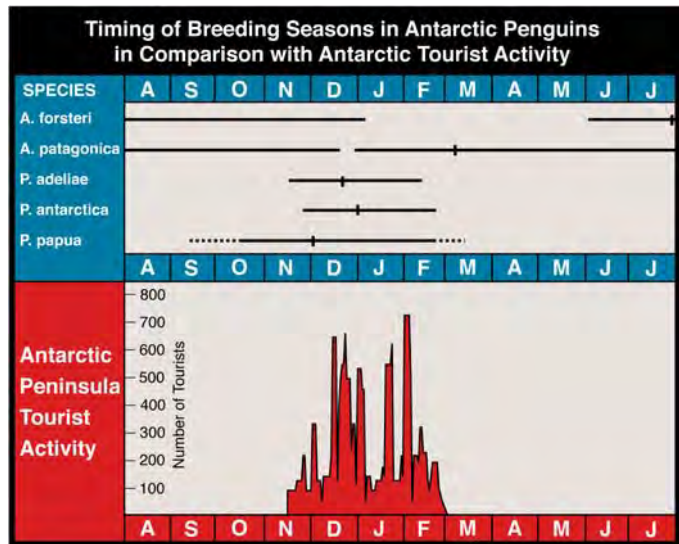


Figure 2.14.

Source: Croxall 1984, IAATO IEE 1998, and Orient Lines IEE 1998

summer distribution. Each winter, all flying seabird species, except the Antarctic tern and Antarctic petrel, migrate to more northern latitudes.

Most of the flying seabirds are pelagic foragers, avoiding land except to breed. Skuas, gulls, petrels and sheathbills are also scavengers opportunistically feeding on penguin, seal, whale and seabird carrion (Croxall 1984). The most prevalent predators are the skuas while petrels are the leading scavenger (Naveen, Monteath, and DeRoy 1990).

The breeding biology of flying seabirds is similar to that of Antarctic penguins with the reproductive season corresponding to the summer. Figure 2.15 shows the timing of flying seabird breeding activities; the timing of tourism in the Peninsula area is also depicted. Several of the flying seabird species use previous nesting sites returning to rebuild these rather than creating new sites (Knox 1994). Several of the smaller bodied species burrow in the ground, building nests between rocks, in soft mud, or in other areas difficult to access. Breeding colonies are scattered, and annual migrations carry most flying bird species far away from the continent during winter months (Knox 1994).

Ten flying seabirds were found nesting in the Peninsula area at ten of the eleven sites with 10,000 or more visitors during the 8-year period 1989-1997. These include six of the flying birds designated as native to Antarctica as shown in Table 2.7.

A recent report on the census of penguins, blue-eyed shag and southern giant petrel populations in the Peninsula area indicates that breeding chronologies vary from site to site, north to south through the area. The peaks in egg-laying and chick creching are not the same throughout the Peninsula area, and there may be seasonal variations in breeding chronologies expected at each particular site (Naveen et al 2000 and Naveen 2001).

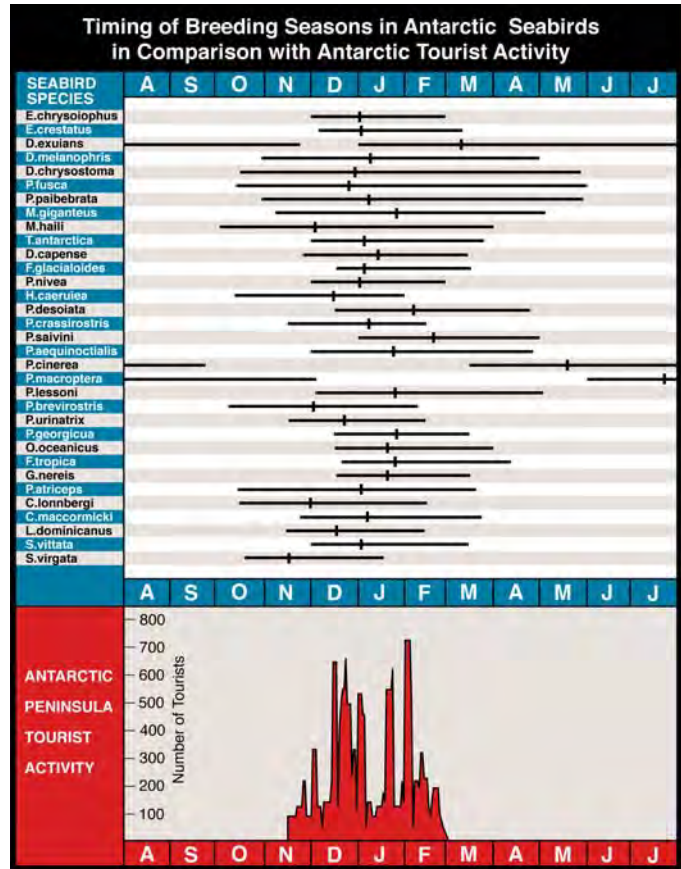


Figure 2.15.

Adapted from: Croxall (1984), IAATO IEE 1998, and Orient Lines IEE 1998

| Table 2.7. Flying Seabirds Nesting at Peninsula Area Sites with 10,000 or More Visitors, 1989-1997. |                         |
|---|-------------------------|
| Species   | Designated Native Birds |
| Gulls:  |                         |
| Kelp  | No                      |
| Petrel:   |                         |
| Snow  | Yes                     |
| Southern Giant  | No                      |
| Pintado   | No                      |
| Wilson's Storm  | Yes                     |
| Shag:   |                         |
| Blue-eyed   | Yes                     |
| Sheathbill:   |                         |
| Snowy   | No                      |
| Skua:   |                         |
| Brown   | Yes                     |
| South Polar   | Yes                     |
| Tern:   |                         |
| Antarctic   | Yes                     |

Source: Naveen 1997 and 45 CFR 670

## 2.5. Antarctic Areas Visited by Tourists

Because of its proximity to South America, the relatively moderate summer climate, the area's physical features, and the richness of the fauna and flora, nearly all U.S. nongovernmental expeditions<sup>22</sup> occur in the Antarctic Peninsula area.<sup>23</sup> Appendix 3 lists the 143 sites visited in the Peninsula area from 1989 through 1997, as reported by the tour operators to the Antarctic Treaty Consultative Meeting and the National Science Foundation, and as summarized by Naveen (1997).

<sup>22</sup> For purposes of this EIS, the definition of *expedition* for U.S.-based operators is taken from 40 CFR Part 8.3 and means any activity undertaken by one or more nongovernmental persons organized within or proceeding from the United States to or within the Antarctic Treaty area for which advance notification is required under Paragraph 5 of Article VII of the Treaty.

<sup>23</sup> There is at least one U.S. ship-based tour operator with expeditions to the Ross Sea area. As discussed in Chapter 3, the relative numbers of landings and visitors in the Ross Sea area are fewer than those in the Peninsula area.

Appendix 3 includes the site location, region<sup>24</sup>, and for the 8-year period 1989-1997, the number of landings and the total passengers for each site (Naveen 1997).

Eleven of the 143 sites were visited by over 10,000 passengers during the period from 1989-1997, with an 8-year total of 195,096 visitors and 2,193 landings for these eleven sites. The annual average number of landings and visitors at these eleven sites ranged from 18 landings with 1,578 passengers per year in the vicinity of Poland's Arctowski Station on King George Island, to 37 landings with 3,069 passengers per year at Whalers Bay, Deception Island. Tourism in the Peninsula area is discussed further in Chapter 3.

Naveen's description of the physical characteristics of the eleven most visited sites is presented in Appendix 4. These site descriptions include listing of any stations, historical artifacts, and Specially Protected Areas.<sup>25</sup> Appendix 5 identifies the Specially Protected Areas and historic monuments.

Within the Peninsula area, the South Shetland Islands and the NW Peninsula area are the most heavily visited by ship-based tours. Of the eleven sites with 10,000 or more visitors for the 8-year period 1989 through 1997, nine of these sites are in the South Shetland Islands and NW Peninsula area, and of the 31 sites with 1,000 to 9,999 visitors during this same 8-year period, 21 of these were in the South Shetland Islands and NW Peninsula area. These figures comprise 74% of the landings and 74% the passenger visits of the total landings and passenger visits to sites in the Peninsula area for this 8-year period.

For the eleven sites with 10,000 or more visitors, Table 2.8 lists those sites where science stations, Sites of Special Scientific Interest and historic monuments are located.

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<sup>24</sup> The Antarctic Site Inventory, compiled by Oceanites, Inc., divides the Peninsula area into five regions: (1) South Orkney Islands including Laurie, Coronation and Signy Islands, and Elephant Island including nearby islands; (2) Northeast Antarctic Peninsula from Cape Dubouzet (63°16'S 64°00'W) to James Ross Island; (3) South Shetland Islands including Deception, Low and Smith Islands; (4) Northwest Antarctic Peninsula from Cape Dubouzet (63°16'S 64°00'W) to the north end of the Lemaire Channel; and (5) Southwest Antarctic Peninsula from the north end of the Lemaire Channel to the northern part of Marguerite Bay (68°18'S 67°11'W).

<sup>25</sup> When Annex V of the Protocol enters into force, Specially Protected Areas, Sites of Special Scientific Interest, and some historic sites will be combined into a single category of protected area, Antarctic Specially Protected Areas (ASPAs). An additional category, Antarctic Specially Managed Areas (ASMAs), will also be created for areas where activities pose risks of mutual interference or cumulative environmental impacts and sites of recognized historic value that do not require strictly controlled access. Entry into an ASPA will require a permit, while entry into ASMAs will not.

In 1998, legislation implementing the Environmental Protocol combined areas previously designated as Specially Protected Areas and Sites of Special Scientific Interest into a single category of Antarctic Specially Protected Areas (ASPAs). These are defined as an area designated by the Antarctic Treaty Parties to protect outstanding environmental, scientific, historic, aesthetic, or wilderness values or to protect ongoing or planned scientific research (45 CFR 670).



| Rank | Site                                  | Country/ Station                  | Historic Monuments | SSSIs     |
|------|---------------------------------------|-----------------------------------|--------------------|-----------|
| 1    | Whalers Bay, Deception Island         |                                   | HSM 31, 58         | SSSI 21-E |
| 2    | Half Moon Island                      | Argentina/ Camara Station         |                    |           |
| 3    | Port Lockroy, Wiencke Island          |                                   | HSM 61             |           |
| 5    | Pendulum Cove, Deception Island       | Chile-closed                      |                    | SSSI 21-D |
| 7    | Petermann Island                      | Argentina-closed                  | HSM 27             |           |
| 8    | Almirante Brown St., Paradise Bay     | Argentina/ Almirante Brown-closed |                    |           |
| 9    | Waterboat Point, Paradise Bay         | Chile/ Gonzales Videla            | HSM 30, 56         |           |
| 10   | Paulet Island                         |                                   | HSM 41             |           |
| 11   | Arctowski Station, King George Island | Poland/ Arctowski Station         | HSM 51             | SSSI 8    |

Source: Naveen 1997

Ship-based tour expeditions to McMurdo Sound in the Ross Sea area provide an opportunity to visit science stations and historic huts. There are fewer large animals in this area due to the lower temperatures, limited coastline and the influence of nutrient-poor waters flowing from beneath the Ross Ice Shelf. Helicopter excursions to the Dry Valleys are also included in the itinerary of U.S. ship-based tour operators operating aboard the *Kapitan Khlebnikov* (Quark, Zegrahm, Aurora IEE 1997, Quark, Zegrahm, Aurora IEE 1998, Quark, Zegrahm, Aurora IEE 1999, and Quark IEE 2000).

The Dry Valleys are a unique feature of East Antarctica covering an area of 15,400 square kilometers (5,946 square miles) on the edge of the Ross Ice Shelf at McMurdo Sound (Figure 2.16). The region includes about 3,800 square kilometers (1,467 square miles) of bare ground kept ice-free by winds that blow away the snow and keep precipitation out of the Valleys. The average annual temperature is  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ), and the average precipitation, which occurs as snow, is less than 10 cm (3.9 in.) of water equivalent per year. Glacial melt forms a single 29 km (18 mi) long river for one or two months each year. The Dry Valleys include three parallel valleys: Victoria, Wright, and Taylor. Several large lakes have formed within these Valleys along with a number of ponds. The lakes and ponds, formed by groundwater seepage and glacial melt, vary in temperature and salt content. Although their surfaces remain frozen, one lake was measured as  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ) at its bottom, and one pond, far saltier than the Great Salt Lake, does not freeze all winter even at temperatures of  $-50^{\circ}\text{C}$  ( $-58^{\circ}\text{F}$ ) (Parfit 1998). Life forms include microscopic communities of algae, fungi and bacteria living within the minute gaps in the rocks,<sup>26</sup> and algae at the bottom of the lakes.

<sup>26</sup> The cryptoendolithic environment of certain granular rocks, an atypical habitat only recently discovered, provides habitat for bacteria, fungi, algae and lichens in the Dry Valleys. Widely fluctuating temperatures and moisture derived from melting snow penetrates slightly porous rock where a typically zoned community of cyanobacteria (lower layer), green algae (middle layer) and fungal hyphae (upper layer) exists under the surface of

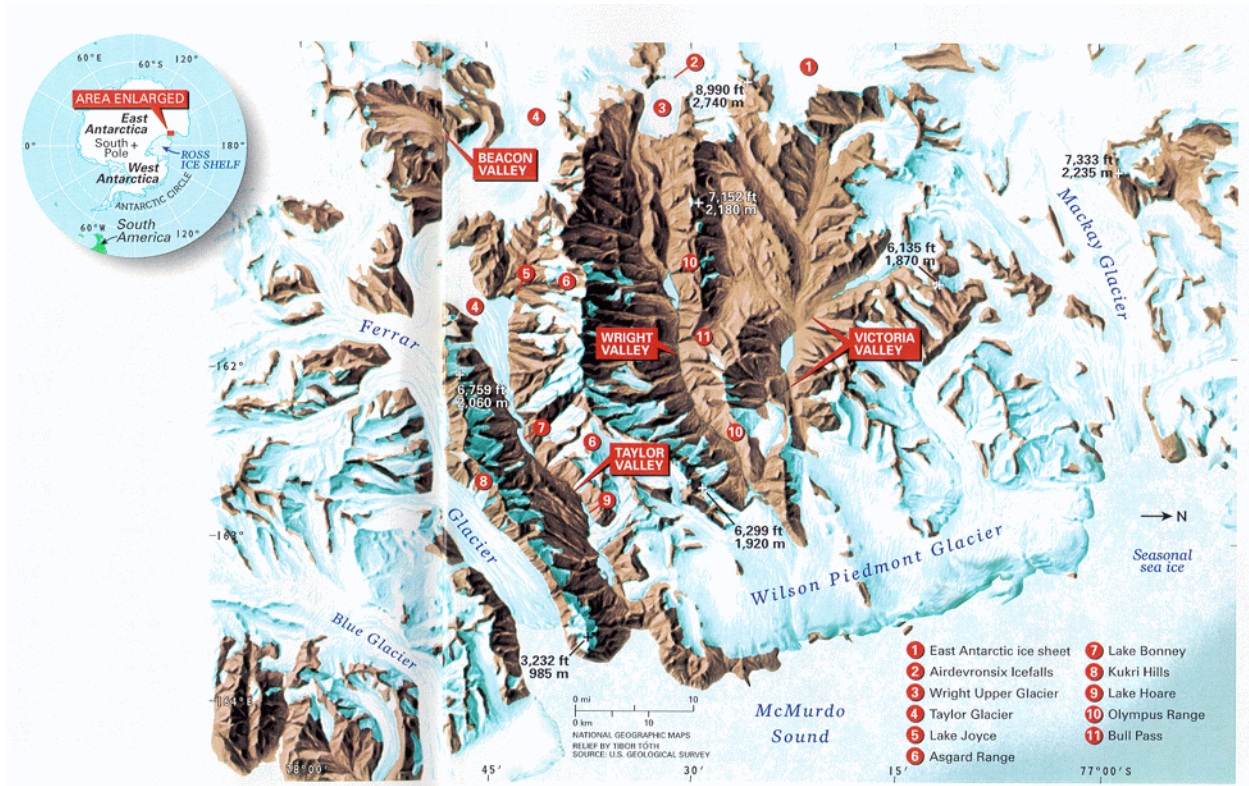


Figure 2.16. Antarctica's Dry Valleys

Source: Parfit (National Geographic, No. 4, Oct. 1998)

## 2.6. Summary of the Physical and Biological Environment

Antarctica is the coldest, driest, windiest, highest, and most isolated continent on Earth, unique in its physical and biological characteristics. Millions of square miles of sea ice surround Antarctica, with an annual five-fold increase and decrease. With the overwhelming presence of ice on land, vegetation is modest and not significantly visible in the landscape, restricted to the ice-free regions in the coastal areas, on islands, and among the isolated inland peaks. Sea life abounds with animals including seals, penguins and flying birds that come ashore only to breed, with most animals entirely dependent on the sea. The Antarctic Peninsula, the northern-most extension of the continent, and the surrounding islands support the continent's greatest diversity of native flora and fauna.

translucent (generally quartz) coarse-grained rock. These lichens are often the only form of macroscopic vegetation present and are revealed only when the rock surface exfoliates (Smith 1993).

*Chapter 3: Affected Environment —  
Human Activities in Antarctica*

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## **Chapter 3. Affected Environment — Human Activities in Antarctica**

### **3.1. Introduction**

Climate limits the presence and activities of humans in Antarctica. The persistence of cold even during the summer season, limited precipitation with desert-like conditions over much of the continent, frequent overcast skies, severe winds, and the succession of storms mainly in summer over the ocean and coastal areas combine to curtail human activities (Beltramino 1993).

Visibility over the continent can be very good due to low humidity and the pureness of the air, but can be reduced to zero by blowing snow or blizzards. In coastal areas, blizzards occur, fog curtails activities, and whiteouts<sup>1</sup> pose a serious risk for the movement of persons, terrestrial vehicles and aircraft as orientation in any direction becomes nearly impossible. The ice cover and its surface relief can impose difficulties for surface transportation and occasionally for air transport, with conditions aggravated by snowdrifts and possibly poor or no visibility. Other risks faced by humans include: frostbite, snowblindness, lethargy and death due to hypothermia, injury or death due to a fall into a crevasse, and drowning from breaking through sea-ice (Beltramino 1993).

The ice at sea presents risks to navigation. Accessibility to Antarctica by sea and anchorage on the coast are made difficult by the varying conditions of the sea ice and the rocky coastline. Better access can be found at islands west and north of the Peninsula, the western side of the Peninsula, and Victoria Land on the Ross Sea, but even at these locations good anchorage sites are uncommon (Beltramino 1993).

Antarctica is the only continent that has never had a native human population and the continent's extreme conditions hamper the activities of people there. Everything required for the maintenance of life and for carrying out activities must come from outside Antarctica. As in other parts of the world, human activities in Antarctica are conditioned by natural setting and history (Beltramino 1993). Chapter 2 describes the natural setting, and this Chapter provides an overview of past and present human activity in Antarctica.

EPA's Final Rule will apply only to nongovernmental activities of U.S.-based operators organized in or proceeding from the U.S. to Antarctica for which advance notification must be given pursuant to Article VII (5) of the Antarctic Treaty.<sup>2</sup> However, the information in this Chapter

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<sup>1</sup> Whiteout conditions occur when land and sky blend as a homogeneous white color, as snow blows over the snow-covered land surface and into the atmosphere with no visible dark objects or shadows to distinguish land from sky.

<sup>2</sup> The Final Rule will be issued pursuant to the Antarctic Science, Tourism, and Conservation Act of 1996 and will implement the requirements of Article 8 and Annex I to the Protocol on Environmental Protection to the Antarctic Treaty of 1959.

includes an overview of historical and current governmental and nongovernmental activities, including those of both U.S.- and foreign-based operators, in order to fully delineate the realm of human activities in Antarctica, information that is relevant to the cumulative impacts of humans in Antarctica. The Chapter first presents a brief overview of historical activities, including exploration and sealing, whaling and fishing, and how these early activities led to controls that now govern them. Next is a brief summary of the establishment of national programs in Antarctica, including the United States Antarctic Program and a summary of its current operations. The Chapter then provides an overview of nongovernmental activities in Antarctica with the focus on ship-based tourism by U.S. operators.

### **3.2. Historical Exploration, Sealing, Whaling and Fishing**

Antarctica was the last continent to be discovered, and most of what is known about Antarctica was discovered in the twentieth century (External Panel 1997).

#### **3.2.1. Early Explorations and Sealing, Whaling and Fishing**

Following Sir Francis Drake's discovery of the Drake Passage in 1578, the subantarctic islands were discovered over the next 150 years. Edmond Halley crossed the Antarctic Convergence in 1700, and Captain James Cook became the first to cross the Antarctic Circle in 1773.

Captain Cook's ship logs noted large numbers of seals and whales in the high southern latitudes, and as this word spread, seal hunting began in the Falkland Islands. British sealers came in 1778, and American sealers in 1792 (External Panel 1997). With huge profits to be made, subantarctic seals were decimated. Sealers pushed farther south in search of new sealing grounds. Exploration continued into the 1800s including discovery of the South Shetland Islands, the Antarctic Peninsula and the Weddell Sea. Sealing increased with these discoveries. Millions of seal skins were taken, with as many as three million skins taken from the Juan Fernandez Islands alone. By the mid-1800s, fur seals and then elephant seals were reduced almost to extinction, at which point the sealers largely abandoned this activity (External Panel 1997). No seal hunting has taken place in the Antarctic since 1964, and the populations of fur and elephant seals have significantly increased. In 1972, Antarctic Treaty<sup>3</sup> nations concluded an agreement to prohibit the taking of fur, elephant and Ross seals, and to limit the annual catch of various other species; this agreement, the Convention for the Conservation of Antarctic Seals, entered into force in 1977 (External Panel 1997 and Marine Mammal Commission, *1998 Annual Report*).

Whalers also came south to hunt southern right whales whose fat, along with that of elephant seals, was rendered into oil. Petroleum oil began to compete with whale and seal oil in the 1850s,

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<sup>3</sup> The Antarctic Treaty was concluded in 1959 and entered into force in 1961. The Antarctic Treaty and the related measures and independent agreements adopted by the Treaty Parties are known collectively as the Antarctic Treaty System, summarized in Chapter 5 and Appendix 26.

but the need for baleen continued to drive the whaling industry. A whaling factory was operated at Deception Island from 1912-13 to 1915-16 and from 1920-21 to 1930-31 during the summer seasons (Beltramino 1993). In 1931, 40,199 whales were caught in the Antarctic, while 1,124 were caught in the rest of the world (External Panel 1997).

Alarmed by the rapidly diminishing stock of whales, the British government established the Discovery Committee in 1923. The Committee's work ultimately led to whale conservation recommendations. In 1931, 26 countries agreed to a regulatory convention which entered into force in 1936, and in 1937, nine countries agreed to minimum size restrictions of whales to be taken. Nonetheless, during the 1937-38 season, over 46,000 whales were killed. Worldwide whale hunting reached its peak in 1964-65, when 64,680 whales were killed, almost half in Antarctica (Tatoh 1984).

In 1994, the International Whaling Commission declared Antarctic waters a whale sanctuary in which no commercial whaling is allowed (External Panel 1997). Since 1988, Japan has issued permits for research whaling including one for the catch of up to 440 minke whales in the Southern Ocean (Marine Mammal Commission, *1998 Annual Report*).<sup>4 5</sup>

The Antarctic fishery is a small fraction of the world's total catch of about 80 million tons, and is regulated by the 1982 Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). The Soviet Union had begun commercial fishing in Antarctica in 1967, and by 1971, its Southern Ocean catch was an estimated 300,000 tons. Modest annual increases continued through 1990-91 when the Soviet long-distance fleet was discontinued. Two U.S.-based firms briefly engaged in crabbing in recent years, but both companies ceased these operations (External Panel 1997).<sup>6</sup>

In 1995-96, ten nations, led by Japan, Poland and Ukraine, landed 115,188 metric tons (mt.) of which 91 percent was krill (104,821 mt.) and the rest finfish (10,367 mt.) (External Panel 1997). During the 1997-1998 season, 80,802 mt. of krill were reported caught, down slightly from the 1996-1997 fishing season; the total reported catch of finfish of 11,419 mt., up slightly from the reported catch in 1996-1997 (Marine Mammal Commission, *1998 Annual Report*). During the 1998-1999

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<sup>4</sup> The International Convention for the Regulation of Whaling allows member nations to issue permits to its citizens to kill whales for scientific research purposes, provided that research plans are submitted to the IWC's Scientific Committee for review and comment before the permits are issued. The IWC adopted a resolution that, amongst other things, expressed concern that whale meat resulting from Japan's research program was being sold in commercial markets despite the moratorium on commercial whaling (Marine Mammal Commission, *1998 Annual Report*).

<sup>5</sup> During the 1999-2000 austral season, Japanese whalers took 439 Minke whales under permit issued by the Japanese Minister of Agriculture, Forest and Fisheries, fifty more than taken during the 1998-1999 season (ANAN-19/08, Apr. 12, 2000).

<sup>6</sup> The first experimental crab fishery was in the 1991-92 season and no crab fishing has been done since 1996 (Hofman 1999).

season, vessels from 15 CCAMLR member countries, including the U.S., participated in CCAMLR-managed fisheries. The principal species harvested were krill, Patagonian toothfish (*Dissostichus eleginoides*), Antarctic toothfish (*D. mawsoni*), and mackerel icefish (*Champsocephalus gunnari*). During 1998-1999, vessels from Argentina, Japan, Poland, the Republic of Korea, and the Ukraine caught a reported 103,318 mt. of krill. These countries anticipate a similar krill catch in 1999-2000. The total reported catch of finfish during 1998-1999 was 18,006 mt., 17,435 mt. of which was Patagonian or Antarctic toothfish, which is marketed in the U.S. as Chilean sea bass (Marine Mammal Commission, 1999 Annual Report).

The apparently continuing high level of illegal, unreported, and unregulated fishing of Patagonian toothfish in the Treaty area is of great concern to the Treaty Parties. The unreported catch of toothfish was estimated to be more than 22,000 mt. during 1997-1998 (Marine Mammal Commission, 1998 Annual Report), and during 1998-1999, the toothfish catch was estimated to be several times more than the 17,000 mt. legally caught by CCAMLR-managed fisheries (Marine Mammal Commission, 1999 Annual Report).<sup>7</sup> Also, several species of seabirds and other non-target species are caught and killed incidental to commercial fisheries, and many are also caught and killed in lost and discarded fishing gear, or die from eating plastics and other non-digestible items discarded at sea. For the 1997-1998 and the 1998-1999 reporting periods, there were reductions during both seasons in the observed seabird mortality in the regulated fisheries (Marine Mammal Commission, 1998 Annual Report).

### 3.2.2. Early Scientific Explorations

Sealing continued to be the driving force for exploration throughout the 1800s. James Weddell, an explorer, naturalist and geographer as well as a sealer, was the first to note that management of the South Shetland Island fur seal population could provide a sustainable annual harvest of about 100,000 skins and that over-harvest destroyed the breeding population. George Powell, a sealer and amateur naturalist, joined with Nathaniel Palmer in search of new sealing grounds. Discovering the South Orkney Islands, but no seals, Powell made an exploratory landing and took readings and samples. Palmer's final voyage included the first scientist to visit Antarctica, Dr. James Eights, who discovered pycnogonids (or sea spiders) (Hedgpeth 1960) and collected the first fossils. As sealing continued, new islands were discovered and thousands of miles of new coastline were charted.

A Norwegian whaling expedition in 1893-94 discovered lichens on the rocks at Possession Island, the first time vegetation had been seen in the Antarctic. The biological and geological specimens collected during this expedition served as the impetus for the scientific explorations of the 1900s.

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<sup>7</sup> None of the identified toothfish poaching vessels or owners/operators are from the United States (ISOFISH 2000).

In 1895, participants in the Sixth International Geographical Congress called for further exploration of the Antarctic region. Scientific expeditions were undertaken by Australia, Belgium, Britain, France, Germany, Japan, Norway, Scotland and Sweden. Exploration of the continent continued in the early 1900s, including the continental interior and the Dry Valleys, and the first expedition to the South Pole. By the late 1920s, aerial reconnaissance and photography accompanied ground-based biology, geology, meteorology, and atmospheric studies.

Following World War II, government activities in Antarctica increased as technology developed during the war was applied to scientific exploration. This upsurge in research activity culminated in the cooperative scientific program in Antarctica undertaken as part of the International Geophysical Year (IGY) in 1957-58, with much of the field work performed in Antarctica.<sup>8</sup> The IGY marked a turning point in the history of Antarctica. Initiated as a scientific exercise, IGY was organized at a nongovernmental level, but with support of the respective governments (Beltramino 1993). Twelve countries with scientific research and other interests in Antarctica established some 60 research stations as part of the IGY program. The countries included: Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the United Kingdom, the United States, and the U.S.S.R. The participants devised informal arrangements for cooperation that formed the basis for a more formal agreement. This resulted in the conclusion of the Antarctic Treaty, signed by these same twelve countries in 1959 (U.S. Dept. of State 1999).

### **3.3 National Programs in Antarctica**

As of the winter 1999, eighteen nations operated 44 research stations in Antarctica (SCAR Bulletin 1999)<sup>9</sup>. Activities range from summer-only seaborne expeditions focused on specific scientific questions to year-round operations with multiple research disciplines relevant to the Antarctic. Many of these nations operate additional stations and camps for field work feasible only during the summer (External Panel 1997). Most stations are on the coast. Only two year-round stations operate in the interior on the Polar Plateau: the United States operates the Amundsen-Scott South Pole Station, and Russia operates the Vostok Station. Appendix 2 lists the eighteen nations with stations and the areas where their stations are located; Table 3.1 summarizes this information (SCAR Bulletin 1999).<sup>10</sup>

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<sup>8</sup> The IGY (July 1, 1957 to December 31, 1958), was a cooperative endeavor by scientists throughout the world to improve understanding of the Earth and its environment.

<sup>9</sup> Seven of these 44 stations are north of 60°S.

<sup>10</sup> During the intensive 18-month International Geophysical Year (1957-1958), 12 nations operated about 60 year-round stations in Antarctica (External Panel 1997).



| Nation         | No. of Stations | West Antarctica: |                 | East Antarctica |
|----------------|-----------------|------------------|-----------------|-----------------|
|                |                 | Peninsula Area   | King George Is. |                 |
| Argentina      | 6               | 4                | 1               | 1               |
| Australia      | 3               |                  |                 | 3               |
| Brazil         | 1               |                  | 1               |                 |
| Chile          | 4               | 2                | 2               |                 |
| China          | 2               |                  | 1               | 1               |
| France         | 1               |                  |                 | 1               |
| Germany        | 1               |                  |                 | 1               |
| India          | 1               |                  |                 | 1               |
| Japan          | 1               |                  |                 | 1               |
| Korea          | 1               |                  | 1               |                 |
| New Zealand    | 1               |                  |                 | 1               |
| Poland         | 1               |                  | 1               |                 |
| Russia         | 6               |                  | 1               | 5               |
| South Africa   | 1               |                  |                 | 1               |
| Ukraine        | 1               | 1                |                 |                 |
| United Kingdom | 2               | 1                |                 | 1               |
| United States  | 3               | 1                |                 | 2               |
| Uruguay        | 1               | 1                |                 |                 |
| <b>TOTALS</b>  | <b>37</b>       | <b>10</b>        | <b>8</b>        | <b>19</b>       |

Source: SCAR Bulletin 1999

The year-round stations serve as research and data collection centers and also as support depots for the temporary research activities including summer camps, traverses, and airborne data collection. Most stations receive personnel and supplies by ship. Only five of the year-round stations can sometimes land wheeled airplanes.<sup>11</sup>

The research stations, and associated ship-supported research in the Southern Ocean, accommodate citizens from approximately 30 nations who are in Antarctica to perform or support

<sup>11</sup> The five stations that can land wheeled airplanes are: Marambio (Argentina), Frei (Chile), Rothera (U.K.), McMurdo (U.S.) and Mirnyy (Russia) (External Panel 1997).

government-sponsored research activities.<sup>12</sup> During the summer, the total number of scientists and support personnel peaks at about 4,000, and drops during the winter months to about 1,000. Of this population, approximately 1,600 (summer) and 200 (winter) are associated with the U.S. Antarctic Program (Table 3.2).

| <b>Program</b>         | <b>Summer (Population/%)</b> | <b>Winter (Population/%)</b> |
|------------------------|------------------------------|------------------------------|
| U.S. Antarctic Program | 1,600/40%                    | 200/20%                      |
| Other Nations          | 2,400/60%                    | 800/80%                      |

Source: External Panel 1997

### **3.4. U.S. Antarctic Program and Policy for Antarctica**

#### **3.4.1. U.S. Antarctic Program**

The U.S. Antarctic Program (USAP), managed by the National Science Foundation, annually deploys scientists and support personnel to Antarctica and the Southern Ocean to support basic research in many disciplines, including: aeronomy and astrophysics, atmospheric chemistry, biology, earth sciences, ocean and climate systems, glaciology, environmental science, and certain types of applied research and technology development. The National Science Foundation provides direct field support for research projects and manages the major facilities that provide logistic and operational infrastructure support, including research vessels and the McMurdo, Amundsen-Scott and Palmer Research Stations. Appendix 6 provides a summary description of the features of these three stations (External Panel 1997). Visits to research stations are popular with tourists to Antarctica, and are scheduled through the National Science Foundation.

The scientific research of other federal agencies is also coordinated by the National Science Foundation. Appendix 6 lists these agencies and the types of research they conduct.

In addition to the permanent stations, approximately 30 field camps are established each austral summer under the USAP to support specific projects. Appendix 6 summarizes these facilities which include: summer research camps, huts, and temporary tent shelters. These facilities are established to meet the requirements of the scientists and their associated activities, including possible emergencies associated with their activities. The National Science Foundation does not allow any tourist visits to be scheduled at these facilities.

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<sup>12</sup> Antarctica has never had an indigenous human population, nor does the Antarctic Treaty recognize any type of Antarctic citizenship.

Ships and aircraft are integral components of the USAP. Appendix 6 lists the types of vessels and aircraft and summarizes their function. As with the stations and field camps, these support vessels and aircraft are intended to support the scientific activities of the USAP. The National Science Foundation does not schedule tourist visits aboard these vessels or aircraft.

### **3.4.2. U.S. Antarctic Policy**

The USAP is the cornerstone of the United States' interests, policy, and presence in Antarctica. The U.S. Antarctic policy is based on the following four fundamental objectives (External Panel 1997):

- Protecting the relatively unspoiled environment of Antarctica and its associated ecosystems;
- Preserving and pursuing unique opportunities for scientific research to understand Antarctica and global physical and environmental systems;
- Maintaining Antarctica as an area of international cooperation reserved exclusively for peaceful purposes; and
- Assuring the conservation and sustainable management of the living resources in the oceans surrounding Antarctica.

In 1958, the U.S. invited the 11 other Antarctic IGY nations to help draft an Antarctic Treaty based on the proposition that Antarctica be open to all nations to conduct scientific and other peaceful activities. The Antarctic Treaty, concluded by these twelve countries in 1959, entered into force in 1961 and is the keystone of U.S. Antarctic policy.

### **3.5 Nongovernmental Activities in Antarctica**

Historically, as summarized in Section 3.2, nongovernmental activities in Antarctica involved exploration and sealing, whaling and fishing. However, tourism is now the primary nongovernmental activity.<sup>13</sup> As of the 1999-2000 austral season, nine U.S.-based tour operators seasonally offer ship-based tours to Antarctica, eight of which are members of the International Association of Antarctica

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<sup>13</sup> Tourists are visitors who are not affiliated in an official capacity with an established national Antarctic program. They include both fare-paying passengers, whose numbers are usually reported reliably by tour operators, and private expedition members and adventurers aboard sea and airborne vessels, whose numbers are more difficult to determine (Enzenbacher 1992).

Tour Operators (IAATO).<sup>14</sup> In addition, one U.S.-based foundation conducts ongoing research in the Peninsula area, assessing and monitoring the biological and physical features at a number of sites from season to season. For the 1999-2000 season, there were two additional U.S.-based nongovernmental expeditions: a cruise line tour company included sailing into Antarctic waters in its world voyage itinerary, and a filming company conducted a one-time documentary filming expedition.

There are also tour operators in other countries, most of which are ship-based operators and many of which are members of IAATO. There is one land-based operator, and overflights are offered by operators in two countries. Other nongovernmental expeditions have included activities such as those of Greenpeace International.

An overview of Antarctic tourism and of IAATO is provided in the next two sections. This is followed by a description of the ship-based expeditions of the U.S.-based tour operators, the land-based adventure tour operations, the nongovernmental research expeditions of U.S.-based Oceanites, Inc., and examples of other nongovernmental expeditions. Since tourism is the primary nongovernmental activity in Antarctica, particularly in the Peninsula area, the Chapter then continues with a discussion of tourist numbers, landing sites and activities with a focus on the Peninsula area, and concludes with a summary of tourism trends and out-year projections. Although EPA's Final Rule will apply only to nongovernmental activities of U.S.-based operators,<sup>15</sup> activities of foreign-based operators are included in this Chapter in order to provide a complete picture of the current realm of nongovernmental activities in Antarctica.

### 3.6. Overview of Antarctic Tourism

Tourism in the Antarctic region dates back to 1891, when the first tourists were passengers on resupply ships to the subantarctic islands (Codling 1995). Traders, whaling vessels, and mail delivery ships in the Antarctic region often carried paying passengers. World War I interrupted Antarctic exploration and the associated tourism (Codling 1995), but in the 1920s, mail, passenger and cargo service between the Falkland Islands and the whaling camps on the Antarctic islands resumed using ships designed to carry tourists (Griffiths 1994 and Griffiths 1980). These trips continued into 1971 when the last of these ships was withdrawn from service (Headland 1994). In 1940, Ernest Walker, in an attempt to defray the expenses of landing an expedition on the continent, proposed to use the *Windward* to make tourist cruises to the Antarctic after deploying his expedition (Headland 1994 and Griffiths 1980). However, World War II diverted logistical support from

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<sup>14</sup> U.S.-based IAATO-member Expeditions, Inc., did not operate in Antarctica during the 1999-2000 season as planned; U.S.-based Cheesemans' Ecology Safaris joined IAATO after the start of the 1999-2000 season (Landau Jun. 3, 2000 and Biggs Jun. 16, 2000).

<sup>15</sup> EPA's final rule will apply to U.S.-based nongovernmental operators for which advance notification must be given pursuant to Article VII (5) of the Antarctic Treaty.

Antarctica, and no further plans for Antarctic tourism emerged until the mid-1950s (Headland 1994 and Codling 1995). There is no record of the number of travelers to visit Antarctica in this fashion (Codling 1995).

The first Antarctic tour expedition after World War II was also the first tourist flight over Antarctic territory. On December 22, 1956, a Chilean Douglas DC-6B, carrying 66 passengers, flew from Chacabuco over the South Shetland Islands and Trinity Peninsula (Headland 1994). In 1957, a Pan American Airways Stratocruiser flew from Christchurch, New Zealand, to McMurdo Sound, and was the first commercial flight to land on the continent (Headland 1994). Ten years later, a tourist flight organized by the Admiral Richard Evelyn Byrd Polar Center of Boston flew over the South Pole as part of an around-the-world tourist flight.

Modern ship-borne tourism began in 1958 when an Argentinian vessel carried approximately 200 tourists to Antarctica on two separate voyages in January and February to the South Shetland Islands and the west coast of the Antarctic Peninsula. During this same period, Lars-Eric Lindblad of New York took 58 U.S. tourists from Ushuaia, Argentina, to the South Shetland Islands and Hope Bay (Headland 1994). Table 3.3 provides a brief chronology of tourism in Antarctica.

| Year     |   |
|----------|---|
| 1920s-71 | Trips of opportunity aboard mail, passenger and cargo ships between the Falkland Islands and whaling camps on the Antarctic islands |
| 1956     |   |
| 1957     | First commercial flight to Antarctica as Pan American Airways transports tourists from Christchurch to McMurdo Sound                |
| 1958     |   |
| 1966     | Annual tourist voyages begin; Lars-Eric Lindblad initiates small vessel, educational tourism in Peninsula area                      |
| 1968     |   |
| 1971     | National expeditions begin carriage of tourists   |
| 1971-72  |   |
| 1977     | Continental overflights made from Australia and New Zealand   |
| 1979     |   |
| 1982     | Tourists flown from Punta Arenas to King George Island  |
| 1983-93  |   |
| 1985     | Vinson Massif scaled by Canadian climbers   |
| 1986     |   |
| 1987-88  | Patriot Hills land based recreation established by Adventure Network International  |

| Table 3.3. Brief Chronology of Antarctic Tourism |  |
|--|--|
| Year   | Event  |
| 1988   | First tourists visit the South Pole by means of land-based flight operations                                     |
| 1990   | First tourists visit the Emperor Penguin colony at Dawson-Lambton Glacier  |
| 1991   | First use of a helicopter by a cruise ship (Frontier Spirit) to take visitors ashore in Antarctica's Dry Valleys |
| 1991   | Formation of International Association of Antarctica Tour Operators  |
| 1991-92  | First Russian tourist ship with ice-hardened hull enters Antarctic tourism market                                |
| 1992-93  | First Russian ice breaker enters Antarctic tourism market  |
| 1993-94  | First tourist cruise into the Weddell Sea  |
| 1993-94  | Blue ice runways used for tourist landings   |
| 1994-95  | Qantas re-establishes tourist overflights of Antarctica  |
| 1996-97  | Russian ice breaker, <i>Kapitan Khlebnikov</i> , makes first circumnavigation of Antarctica                      |
| 1997   | Skydiving expedition at South Pole results in death of three of the six divers                                   |

Sources: Enzenbacher 1993, Headland 1989, Headland 1994, NY Times 1997, Washington Post 1997, Quark, Zegraphm, Aurora IEE 1997, and Landau 2001.

In 1968, Lindblad Travel, in association with Holm Shipping Company, extended Antarctic tourism for the first time into the Ross Sea. The Ross Sea voyage was the first tourist cruise to cross the Antarctic Circle and also the first to visit the historic huts of Carsten Borchgrevink, Robert Scott, and Ernest Shackleton (Headland 1994).

In 1970, Lindblad commissioned the *Lindblad Explorer*,<sup>16</sup> a ship specifically designed for Antarctica, and began tourist voyages to the subantarctic islands, the South Shetland Islands, and the Peninsula area. This region was chosen primarily because of its proximity to the South American ports, its milder summer climate relative to other areas of the Antarctic continent, the diversity of wildlife, the area's relative freedom from pack ice, and its concentration of research stations (Enzenbacher 1993).

Lindblad initiated the philosophy of tourism with an educational emphasis; excursions are led by qualified naturalists and historians aboard small vessels transporting few tourists, with small numbers of persons going ashore at one time (Stonehouse 1995).<sup>17</sup>

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<sup>16</sup> The *Lindblad Explorer* is still in use today as the *Explorer*.

<sup>17</sup> The Lars-Eric Lindblad "model" of ship-based tourism has been replicated by all IAATO tour operators and by Orient Lines (see Sections 3.8 and 3.9) (Underwood July 14, 1998).

In the 1970s, Chilean and Argentine naval ships ferrying passengers and supplies to research bases on the South Shetland Islands and the Antarctic Peninsula also began to carry tourists. In addition to carrying passengers from the South American mainland, both countries used airstrips on Seymour Island and King George Island. Tourists were flown over the Drake Passage to ships already in Antarctica (Headland 1994).

In 1982, an international conference was held on King George Island at Chile’s Presidente Eduardo Frei Station, with accommodations built at the station complex to house the visiting delegates. During the 1983-84 austral summer, Chile rented out these accommodations on a space available basis (Enzenbacher 1993). Carrying an average 40 tourists, C-130 aircraft continued to deliver guests to the newly-named Estrella Polar Hotel (Enzenbacher 1993 and Headland 1994). However, in 1992-93, Chile declined to carry passengers on official flights, thus temporarily ending tourist stays at the research station (Headland 1994). Since then, the Chilean regional airline, La Linea Aerea de la Patagonia (DAP), has offered a limited number of available seats to tourists to travel to Presidente Eduardo Frei Station (ANAN-17/03 Mar. 15, 2000).<sup>18</sup>

Private yachts also travel to Antarctica and since the 1980s there has been an increase in the number of these expeditions. In the past, their activities rarely were recorded as these vessels are not generally used for research or exploration (Headland 1989). The National Science Foundation identified nine yachts, as listed in Table 3.4, that have visited Palmer Station between 1989 and 1997. Of these, two were U.S.-flagged. Several yachts, some with small helicopters onboard, now charter to small groups of tourists and recently, an occasional yacht has wintered over in Antarctica (Headland 1989; ANAN-10/06 Dec. 8, 1999; and ANAN-11/13 Dec. 22, 1999).

| <b>Vessel Name</b>     | <b>Flag</b>    | <b>Year</b> |
|------------------------|----------------|-------------|
| <i>Amria</i>           | French         | 1989        |
| <i>Antarctica</i>      | French         | 1992        |
| <i>S/V Beagle Star</i> | United Kingdom |             |
| <i>Betelgeuse</i>      | United States  | 1992        |
| <i>C-Lise II</i>       | United States  | 1997?       |
| <i>VS/V Chrysadale</i> | French         |             |

<sup>18</sup> DAP has operated flights for several years from Punta Arenas, Chile, to King George Island to transport national program personnel and limited cargo. Over the years, DAP, in conjunction with affiliates, has offered available seats to tourists. Passengers may fly round-trip, stay overnight at the Presidente Frei complex, or opt for extended excursions via yacht or ski-equipped aircraft from Frei to other parts of the Peninsula area. An estimated 150 passengers have visited Antarctica via this process over the past 10 years (ANAN-17/03 Mar. 15, 2000).

| Table 3.4. Yacht Visits to Palmer Station |                |            |
|---|----------------|------------|
| Vessel Name                               | Flag           | Year       |
| <i>Cloud Nine</i>                         |                | 1992       |
| <i>Croix Saint-Paul II</i>                | French         | 1992, 1997 |
| <i>S/Y Curlew</i>                         | United Kingdom | 1992       |

Source: NSF (October 6, 1997, Revised: June 30, 1998)

The International Association of Antarctica Tour Operators (IAATO) now communicates regularly with yacht operators and other interested parties regarding Antarctic yacht activity. Several yacht captains and owners recently began participating in IAATO's annual meetings and the owner/operator of the *S/Y Pelagic* is an IAATO member (IAATO XXIII ATCM 1999). IAATO includes a report on commercial yacht activities in its annual report to the Antarctic Treaty Consultative Meeting. During the 1995-1996 season, 17 yachts made 22 expeditions to Antarctica carrying 150 people including 123 paying passengers (IAATO 1997). For the 1998-1999 season, a total of 90 passengers traveled to Antarctica aboard 11 commercial yachts (IAATO XXIII ATCM 1999).<sup>19</sup> For the 1999-2000 season, a total of 221 passengers traveled to Antarctica aboard 11 commercial yachts.<sup>20</sup> Regular commercial yachts with fare paying passengers include: the *Pelagic* (IAATO Member, Pelagic Expeditions), *Golden Fleece* (IAATO Member, Golden Fleece Expeditions), *Damien II* (Sally and Jerome Poncet), *Croix St. Paul II* (Alex Foucard), *Iron Bark*, *Oosterschelde*, *Express Crusader*, *Arka*, *The Dove*, *Shantooti*, *Alterman*, *Sarah W. Vorwerk*, *Philos*, *Meander*, *Savannah*, *Tooluka*, and yachts organized through Croisieres Australes of France (*Baltazar*, *Kotick I*) (IAATO SATCM/IP 33 2000). None of these yachts are owned or operated by U.S.-based operators.

In 1977, Qantas Airlines, based in Australia, and Air New Zealand, based in New Zealand, began offering charter flights with a total of five flights over different regions of the Antarctic continent. The number of flights increased to 16 in the 1977-78 season. These tourist flights ended, however, when an Air New Zealand DC-10 crashed into Mt. Erebus on November 28, 1979, killing all 257 passengers and crew. Only three tourist flights occurred in the years immediately following the crash (Headland 1994). Qantas Airways Ltd., in conjunction with Croydon Travel Centre (Australia), recommenced this service in 1994 (ANAN-16/05 Mar. 1, 2000).

<sup>19</sup> IAATO's 1998-1999 season report for yachts, which may be incomplete, was based on reports directly to IAATO, yachts reported at Arthur Harbor by the National Science Foundation, and information gathered by Argentina's Tourism Board (Terra del Fuego, Ushuaia) (IAATO XXIII ATCM 1999).

<sup>20</sup> IAATO's 1999-2000 season report for yachts, which may be incomplete, was based on reports directly to IAATO, yachts reported at Arthur Harbor by the National Science Foundation, and information gathered by Argentina's Tourism Board (Terra del Fuego, Ushuaia) (IAATO SATCM/IP 33 2000).



In December 1986, Giles Kershaw, flying an Antarctic Airways<sup>21</sup> DHC-6 Twin Otter, demonstrated that wheeled aircraft could be landed on blue ice runways in Antarctica.<sup>22</sup> The next year, 12 flights were made by DC-4 aircraft between Punta Arenas, Chile, and a snow camp at Patriot Hills, Antarctica. From Patriot Hills, six flights were made using ski-equipped Twin Otters. Aircraft at the Patriot Hills camp carried mountain climbers, skiers and hikers to Vinson Massif; provided logistical and emergency support to transcontinental expeditions; and, for the first time, carried tourists to the South Pole (ANI 1998 and Headland 1994). Most of the short inland flights occurred during the November to March summer season.

Currently, commercial tour overflights of Antarctica are offered by companies in Australia and Chile. Croydon Travel Centre of Australia uses Boeing 747-438 aircraft from Qantas Airways Ltd. The 12-hour flight originates in Melbourne and includes several orbits over scenic areas of the continent at a minimum altitude of 10,000 feet. In 1994-95, Croydon conducted six charter flights; in 1995-96, nine flights were conducted that carried a total of 2,958 passengers along with a total of 202 air and cabin crew; and in 1999-2000 there were nine flights that carried about 3,400 passengers (Australia XX ATCM/INF Apr. 1996 and IAATO SATCM/IP 33 2000). Antarctic flight seeing excursions of the Peninsula area are commercially available through Destination Management, which operates out of Santiago, Chile (HALW IEE 1999). Avant, which operates out of Punta Arenas, Chile, operates overflights of the Peninsula area between November and March with a Boeing 737 aircraft. Flights carry 40-60 passengers and staff including an Antarctic lecturer (IAATO SATCM/IP 33 2000). The Chilean regional airline, DAP, offers a limited number of available seats on flights from Punta Arenas, Chile, to the Presidente Eduardo Frei Station complex on King George Island (Swithinbank 2000). Commercial aircraft operated by Adventure Network International fly tourists in and out of its Patriot Hills base camp as part of its continental expeditions operations (see Section 3.10).

### **3.7. International Association of Antarctica Tour Operators and an Overview of Ship-Based Tourism by IAATO Members**

More than 98 percent of the tourists coming to Antarctica are ship-borne. The International Association of Antarctica Tour Operators (IAATO) was founded in 1991 “...to advocate, promote and practice safe and environmentally responsible private-sector travel to the Antarctic” (IAATO

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<sup>21</sup> Antarctic Airways is affiliated with Adventure Network International (ANI). ANI’s operations are discussed in Section 3.10.

<sup>22</sup> Blue ice is a term used to distinguish areas of net ablation (evaporation) throughout the polar ice sheet. Blue ice areas remain free of snow and are recognized as potential landing sites for wheeled aircraft. McMurdo Station’s Pegasus Runway and ANI’s Patriot Hills runway are on blue ice areas.

Bylaws 2001). Founded by seven operators,<sup>23</sup> in 2000, IAATO identified 29 member companies based in 10 countries.<sup>24</sup> Of these, 14 are Full Members, 5 are Provisional (New) Members, and 10 are Associate Members.<sup>25</sup> Of the 19 Full and Provisional Members (e.g., for-profit companies that organize and/or operate travel programs to the Antarctic), 8 are U.S.-based companies and represent 42% of the Full/Provisional membership.<sup>26</sup> The remaining 11 companies, representing 58% of the Full/Provisional membership, are based in Australia (3 companies), Canada (1), Germany (2), The Netherlands (1), New Zealand (1), and the United Kingdom/Falkland Islands (2/1); two of these 11 are yacht operators (U.K./Falkland Islands). All of the 19 Full/Provisional members are exclusively ship-based operators and all except Marine Expeditions, with its operations in Canada,<sup>27</sup> operate from countries that are Parties to the Protocol on Environmental Protection to the Antarctic Treaty. Appendix 7 lists the objectives of IAATO, the membership criteria, the Bylaws, and membership as of May 2001.

According to IAATO, small ships provide an ideal platform for viewing and experiencing the Antarctic environment in comfort, with the tour vessel serving as a floating hotel (IAATO IEE 1997).<sup>28</sup> The near shore waters are generally deep, allowing for daily sightings of whales, seals, and penguins. IAATO members maintain a self-imposed limitation of less than 400 passengers per trip.<sup>29</sup>

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<sup>23</sup> IAATO was founded by: Adventure Network International (Canada, now United Kingdom), Mountain Travel•Sobek (U.S.), Paquet/Ocean Cruise Lines (U.S.), Salen Lindblad Cruising (U.S.), Society Expeditions (U.S.), Travel Dynamics (U.S.) and Zegrahm Expeditions (U.S.) (IAATO Bylaws 2001).

<sup>24</sup> IAATO Membership Directory 1999-2000 (Landau Jun. 3, 2000).

<sup>25</sup> U.S.-based Expeditions, Inc., became a Provisional (New) Member in 1999, but moved to the Associate Member category when the company did not operate in Antarctica during the 1999-2000 season as planned; U.S.-based Cheesemans' Ecology Safaris became a Provisional member in 2000 and IAATO included the company in the U.S.-based IAATO-member Initial Environmental Evaluation for expeditions for the 2000-2001 season (Landau Jun. 3 2000; Biggs Jun. 16, 2000; and IAATO IEE 2000).

<sup>26</sup> Should Expeditions, Inc., return to Provisional membership status, then the 9 U.S.-based companies would represent 47% of the 19 Full/Provisional members.

<sup>27</sup> Marine Expeditions filed for bankruptcy in 2001; its future status as an Antarctic tour operator is unknown.

<sup>28</sup> Small is a relative term in that these tour vessels are larger than yachts but carry no more than 400 passengers with no more than 100 passengers going ashore at any one time. See: Bylaws of the International Association of Antarctica Tour Operators, Appendix 7.

<sup>29</sup> The 400-passenger limit was determined, in part, by the fact that the seven founding members of IAATO included Paquet/Ocean Cruise Lines which operated the 400-passenger *Ocean Princess* at the time. (IAATO XXIII ATCM 1999).

Currently, IAATO-member tour vessel capacities range from 36 to 280 passengers.<sup>30</sup> Cruise ships are equipped with rubber inflatable boats (“Zodiacs”) providing passengers with opportunities to go ashore. Two of the U.S.-operated ships are also equipped with helicopters to find routes through dense sea ice and to scout for whales. Helicopters are also used by one of the U.S. operators for flight-seeing over inland areas, such as the Dry Valleys near McMurdo Station and occasional inland landings.

As described by IAATO, typical ship borne tours range in length from 8 to 21 days. Occasionally there are longer voyages. The circumnavigation cruise by Quark Expeditions, Zegrahm Expeditions, and Aurora Expeditions during the 1996-97 season lasted 66 days; however, this is not typical of ship-based tours in Antarctica (Quark, Zegrahm, Aurora IEE 1997, and Splettstoesser, Headland, and Todd 1997). Of the total voyage time, crossing the Southern Ocean takes approximately two days in each direction if the Antarctic Peninsula is the destination, and approximately five days in each direction if McMurdo Sound is the destination. If the remote coastal area of East Antarctica is the destination, crossing times can take as much as seven days in each direction. Most ships tour the Peninsula area and the associated subantarctic islands. Section 3.13 discusses tourist numbers in the Peninsula and Ross Sea areas.

Once tour ships arrive in Antarctic waters, IAATO-member tour operators will generally make up to three landings per day with as many as 100 tourists and guides going ashore at one time.<sup>31</sup> A typical landing employs several Zodiacs equipped with 25- to 40-horsepower outboard engines. While the ship stands-off, the Zodiacs carry approximately 12 passengers each and proceed to a landing site which is usually no more than a mile from the ship. The topography varies considerably from site to site. While some sites offer protected beach landings, in the Peninsula area most sites are rocky and may require the Zodiacs to get to the shore through a small ocean break zone. As described by IAATO, once on shore, the chief attraction is usually the congregations of Antarctic wildlife, occurring in some places as large monospecific colonies of penguins or as several patches of different types of penguins and nesting seabirds; seals and a range of plant species are also attractions. Some of the landing sites commonly visited by tourists are quite small, while others are expansive and allow for short hikes. For IAATO-member operators, the typical shore visit generally lasts no more than three hours, but is dependent on weather conditions and other considerations such as the availability of wildlife.

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<sup>30</sup> U.S.-based Orient Lines, discussed in Section 3.9.1, also offers annual tours to Antarctica aboard the *Marco Polo*. Although the passenger capacity is 850, the vessel carries about 500 passengers per Antarctic voyage and, similar to IAATO members, lands only 100 passengers at a time. U.S.-based Holland America Line, Westours, Inc., discussed in Section 3.9.2, included cruising through Antarctic waters in its Year 2000 world cruise of the *ms Rotterdam*. This vessel carried 936 passengers and 656 crew, and was one of the largest to visit Antarctica during the 1999-2000 season. The vessel did not anchor and there were no passenger landings during the three days of cruising through Antarctic waters.

<sup>31</sup> The tourist/guide ratio is a self-imposed limitation for IAATO members. See Section 3.8.

In the McMurdo Sound region, the historic huts are the chief attractions for tourists. In particular, Robert Falcon Scott's Discovery and Cape Evans Huts, and Sir Ernest Shackleton's Cape Royds Hut, all on Ross Island, provide well-preserved records of the early days of Antarctic exploration. The Shackleton Hut is in close proximity to an Adelie penguin colony. Nongovernmental visitors to both McMurdo Sound and the Peninsula area sometimes tour U.S. government research stations, provided that advanced notice is given and permission is received from the National Science Foundation.

The Protocol on Environmental Protection to the Antarctic Treaty, signed by the United States in 1991, provides standards for all visitors to Antarctica. Early guidelines for visitors and tour operators developed by IAATO reflected many of the elements of the Protocol. IAATO includes adherence to the Antarctic Conservation Act and the obligations of "*Guidance for Visitors to the Antarctic*" and "*Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic*," as adopted by the Antarctic Treaty Consultative Meeting as Recommendation XVIII-1, in its Bylaws as a requirement for membership (IAATO Bylaws 2001).<sup>32</sup> These documents are included in Appendix 8.

### **3.8. Ship-Based Tourism by U.S.-Based IAATO Member Operators**

In accordance with 40 CFR Part 8, "Environmental Impact Assessment of Nongovernmental Activities in Antarctica,"<sup>33</sup> IAATO submitted Initial Environmental Evaluations to the Environmental Protection Agency for ship-based tourism in the Peninsula area on behalf of its U.S.-based IAATO member operators for the expeditions undertaken during the 1997-98, 1998-99, 1999-2000, and 2000-2001 seasons (IAATO IEE 1997, IAATO IEE 1998, IAATO IEE 1999, and IAATO IEE 2000)<sup>34</sup>. For all four seasons, the conclusion of the U.S.-based operators in these documents was that the continuation of Peninsula area cruises under the described process will have no more than a minor or transitory impact on the Antarctic environment.<sup>35</sup> For all four seasons, the Environmental

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<sup>32</sup> Recommendation XVIII-1 was adopted at the Eighteenth Antarctic Consultative Meeting in Kyoto, Japan, April 11-24, 1994.

<sup>33</sup> Environmental impact assessment documentation, which may include an Initial Environmental Evaluation, is required by Annex I of the Protocol on Environmental Protection, and by 40 CFR Part 8, "Environmental Impact Assessment of Nongovernmental Activities in Antarctica." The Protocol, including Annex I, entered into force on January 14, 1998, following ratification by the Treaty Parties; 40 CFR Part 8 became effective April 30, 1997.

<sup>34</sup> EPA's rule at 40 CFR Part 8, Article 2 of Annex I to the Protocol requires that unless it has been determined that an activity will have less than a minor or transitory impact, or unless a Comprehensive Environmental Evaluation is being prepared in accordance with article 3 of Annex I, an Initial Environmental Evaluation must be prepared. (40 CFR § 8.7)

<sup>35</sup> The 1997-98 IEEs were submitted by IAATO on behalf of: Abercrombie & Kent/Explorer Shipping, Mountain Travel•Sobek, Quark Expeditions, Society Expeditions, and Zegrahm Expeditions. The 1998-99 IEEs

Protection Agency, in consultation with other interested federal agencies, concluded that these Initial Environmental Evaluations for the U.S.-based IAATO-member operators met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Oct. 20, 1997; Dickerson Sep. 24, 1998; Dickerson Sep. 30, 1999; and Montgomery Oct. 18, 2000).

These Initial Environmental Evaluations (IEEs) describe ship-based tourism as conducted by the U.S.-based IAATO members.<sup>36</sup> Although submitted on behalf of U.S.-based member operators, these documents describe ship-based tourism as conducted by all IAATO members (e.g., U.S. and foreign-based) (Biggs Jul. 19 2000). In these IEEs, the U.S.-based IAATO member operators maintain that shipboard tourism provides a means, within the provisions of the Antarctic Treaty and the Protocol, to meet the tourism demand without the need for permanent infrastructure and with limited residence time. The tour vessel functions as a floating hotel. IAATO member tours are based on the Lindblad philosophy of small-scale tourism with an educational emphasis during which these "...[s]hip-based expeditions provide an opportunity for visitors to experience a wide range of areas of interest, including wildlife sites, historic sites, active research stations, and sites of exceptional wilderness and aesthetic value (IAATO IEE 1997)."<sup>37 38</sup>

The IEEs provide information on the general operations and practices of the U.S.-based IAATO-member operators for expeditions in the Peninsula area. In general, IAATO-member vessels carry from 50 to 300 persons, including officers, crew, staff and passengers. The average passenger load for IAATO-member vessels ranges from 25 to 150, with the estimated average passenger load for the U.S.-based operators being 25 to 120. The expeditions of the U.S.-based IAATO member

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were submitted by IAATO on behalf of these five operators, Clipper Cruise Line, and Lindblad Special Expeditions. The 1999-2000 IEEs were submitted by IAATO on behalf of these seven operators and Expeditions, Inc. The 2000-2001 IEEs were submitted by IAATO on behalf of these seven operators and Cheesmans' Ecology Safaris and Victor Emanuel Nature Tours; Society Expeditions did not, however, operate in Antarctica during the 2000-2001 season.

<sup>36</sup> In accordance with 40 CFR 8.4(d), the document "Initial Environmental Evaluation, Ship Based Tourism by Five U.S. Organizers, Antarctic Peninsula, South Shetland Islands and South Orkney Islands, November 1997-March 1998," prepared by IAATO, October 15, 1997, on behalf of its U.S.-based member organizers was incorporated into the Initial Environmental Evaluations submitted for the U.S.-based organizers for the 1998-99, 1999-2000, and 2000-2001 seasons. The 1997 document was prepared for IAATO's U.S.-based and Australian-based members and describes Antarctic tourism as practiced under IAATO's Bylaws which apply to all IAATO members and includes measures to mitigate environmental impacts.

<sup>37</sup> As previously noted, small is a relative term in that these tour vessels are larger than yachts but carry no more than 400 passengers with no more than 100 passengers going ashore at any one time. See: IAATO Bylaws, Appendix 7.

<sup>38</sup> As previously noted, the Lars-Eric Lindblad "model" of ship-based tourism has been replicated by all IAATO tour operators and by Orient Lines (see Sections 3.8 and 3.9) (Underwood Jul. 14, 1998).

operators proceed according to standard operating procedures for voyage activities and landings published in the *Expedition Leader's Notebooks*, which include guidelines for operation of Zodiacs around wildlife, emergency contingency plans and reporting procedures. In accordance with IAATO Bylaws and standards, U.S.-based IAATO member operators limit the maximum number of passengers ashore at any one time to 100, and maintain a minimum 1:20 ratio of staff to passengers. Site visits for passengers may last about three hours (IAATO Bylaws 2001, IAATO IEE 1997, and IAATO IEE 1999).

Each season, U.S.-based IAATO member operators propose routes and itineraries which are submitted to the Department of State as part of the operator's notice of intent to travel. However, as discussed in the IEEs for the U.S.-based IAATO member operators, the actual routes and sites visited may vary in response to local weather conditions, presence or absence of animal populations of interest, and environmental and safety considerations. Before any landing, the expedition leader and captain consult various maps and review reference information on the site to verify there are no protected areas in the vicinity of the proposed landing site. Final decisions regarding the itinerary, including any decisions not to land, are made in the field by the expedition leader and captain. As a matter of policy and practice, expedition leaders coordinate tour schedules so that no two ships are in the same place at the same time; expedition operators receive approval from the National Science Foundation for visits to U.S. research stations (IAATO IEE 1997).<sup>39</sup>

For U.S.-based IAATO members, IAATO membership also places requirements on crew experience and on education of both staff and passengers. IAATO requires that its members hire staff with a minimum of 75% previous Antarctic experience overall. In addition, all crew are given specific, formal information on the obligations of the Antarctic Treaty System including a copy of Recommendation XVIII-1, *Guidance for Antarctic Visitors* (IAATO IEE 1997).<sup>40</sup>

Education is an ongoing process for passengers of U.S.-based IAATO member tours. Pre-departure materials for passengers include information on safety and conservation, an Antarctica Primer, and a copy of Recommendation XVIII-1. Passengers also receive a copy of the National Science Foundation pamphlet, *Conservation of Antarctic Seabirds*.<sup>41</sup> On board, there are regular briefings for passengers. For cruises with U.S. citizens, the video, *Behold Antarctica*, produced by

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<sup>39</sup> IAATO members meet annually during which time station visits are scheduled with the National Science Foundation and any new, pertinent information is provided to the operators. Such information may include new or modified national regulatory requirements and identification of any new Antarctic Specially Protected Areas or Antarctic Specially Managed Areas.

<sup>40</sup> The written version of *Guidance for Antarctic Visitors* has been translated into English, Russian, German, Spanish, French, Chinese, Japanese and Italian. Briefings are held in Russian and German whenever possible (Landau 2001).

<sup>41</sup> This pamphlet informs the reader about the Antarctic Conservation Act by describing Antarctica's birds and their habitat, and by providing conservation tips and other related information.

the National Science Foundation, is shown to highlight U.S. obligations under the Antarctic Conservation Act. All passengers again receive a copy of Recommendation XVIII-1. An initial briefing on Antarctic conservation and etiquette ashore is held before the first landing and features an IAATO-produced slide presentation reinforcing Recommendation XVIII-1. Education continues throughout the cruise with lecture programs, which emphasize sound environmental practices around wildlife in the Antarctic, and documentary videos. Each U.S.-based IAATO member's vessel carries a small polar library, including documents on the Antarctic Treaty System (IAATO IEE 1997).

For U.S.-based IAATO member operators cruising in the Peninsula area, site selection is a flexible, opportunistic process by which expedition leaders select and manage activities at landing sites. Appendix 9 summarizes the elements in this process. Opportunistic landings and excursions in the Peninsula area take place at sites on the Peninsula mainland and on offshore islands and include areas of scenic and wilderness interest, scientific stations, historic sites and areas where a specific physical activity is possible. Landing activities are generally limited to supervised walks for observing wildlife and nature (IAATO IEE 1997).

Before passengers are allowed to disembark, the expedition leader and any official observers make a reconnaissance of the landing site to evaluate safety and environmental conditions. Boot washing stations are standard on all U.S.-based IAATO member tour vessels to prevent introduction of alien species, and passengers and staff clean their boots before and after each landing (IAATO IEE 1997).

U.S.-based IAATO member operators do not allow passengers onshore to engage in any activities that may adversely affect wildlife or the environment. To ensure that the likelihood of any impacts on flora, fauna and geological features are no more than minor or transitory, the operators ensure that onshore passenger activities are conducted in accordance with Recommendation XVIII-1, other relevant laws and regulations,<sup>42</sup> and IAATO standards (IAATO Bylaws 2001). The number of visitors and time ashore are managed by U.S.-based IAATO member operators in consideration of safety, weather, environment, schedules and the nature of the group (IAATO IEE 1997).

For U.S.-based IAATO member operators, a typical landing for 90 passengers includes four Zodiacs, each carrying 12 passengers ashore. Zodiac cruises around ice floes, along coastal cliffs, or to other areas of interest are often offered in conjunction with landings, particularly where sites offer limited visitor space or during critical periods of the breeding cycle for the area's fauna. The minimum staff/passenger ratio ashore is 1:20,<sup>43</sup> and passengers remain within sight of the staff with

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<sup>42</sup> See the discussion in Section 5.4 of systems governing human activities in Antarctica including nongovernmental activities.

<sup>43</sup> The IAATO Bylaws provide that members agree to not have more than 100 passengers ashore at any one site at the same time. IAATO members also agree to maintain a minimum 1:20 ratio of staff to passengers; some operators often increase the staff to passenger ratio (Landau 2001).

most staff remaining ashore for the full duration of the landing. The visit lasts about three hours; during this time passengers may observe and photograph wildlife and the landscape.<sup>44</sup> Passengers are not allowed to enter any man-made structures unless specifically invited to do so by an authorized person. Depending on the site, staff may conduct supervised walks or be positioned at key areas to provide information and point out sensitive features to avoid. For U.S.-based IAATO member operators, passengers are advised of their obligations under the Antarctic Treaty and the legal implications; the most likely sanction for flagrant disregard of the rules by a passenger would be the immediate removal from the site and prohibition, by the ship's captain, of further landings by that passenger (IAATO IEE 1997).

For U.S.-based IAATO member operators, conditions which may lead to a decision not to land include: presence of another vessel; a science program in progress; passenger safety being compromised; poor local weather conditions; limited or no landing area to accommodate the planned number of people going ashore while maintaining a safe distance from animals; an inexperienced or difficult group of passengers; unavoidable abundant plant life close to or at the proposed landing site; significant likelihood of disturbing birds nesting close to the landing site; or the presence of abundant seals, especially fur seals (IAATO IEE 1997).

Quark Expeditions is the only U.S.-based IAATO member operator that currently offers flight seeing as part of its two cruises with the vessel, the *Kapitan Khlebnikov* (Quark IEE 2000). The helicopters are used to provide passengers with aerial views of the ship navigating in the ice, for landings otherwise inaccessible by Zodiac, and for flight seeing excursions including the Dry Valleys area. Appendix 10 summarizes Quark's use of the helicopters.

In accordance with 40 CFR Part 8, "Environmental Impact Assessment of Nongovernmental Activities in Antarctica (40 CFR Part 8)," Quark Expeditions submitted Initial Environmental Evaluations to the Environmental Protection Agency for the expeditions aboard the *Kapitan Khlebnikov*, including the helicopter operations, undertaken during the 1997-98, 1998-99, 1999-2000, and 2000-2001 seasons (Quark, Zengrahm, Aurora IEE 1997, Quark, Zengrahm, Aurora IEE 1998, Quark, Zengrahm, Aurora IEE 1999, and Quark IEE 2000). For all four seasons, the operators concluded that the continuation of these expeditions under the described process will have no more than a minor or transitory impact on the Antarctic environment. For all four seasons, the Environmental Protection Agency, in consultation with other interested federal agencies, concluded that the operators' Initial Environmental Evaluations met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Nov. 17, 1997; Dickerson Oct. 28, 1998; Dickerson Sep. 30, 1999; and Montgomery Oct. 18, 2000).

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<sup>44</sup> Some sites are highly visited for reasons in addition to the landscape and wildlife. For example, Port Lockroy has been more frequently visited because of the restored British Antarctic Survey base with a post office, museum and shop. Half Moon Island was frequently visited when tourist research was underway there, and Cuverville Island was visited at the request of researchers conducting human/wildlife studies (Landau 2001).



### 3.9. Ship-Based Tourism by Other U.S.-Based Operators

In addition to the U.S.-based IAATO member operators, two other U.S.-based operators have conducted ship-based tour voyages to Antarctica. Orient Lines, Inc., has offered ship-based tours with passenger landings since 1993-1994, while Holland America Line-Westours, Inc., included cruising through Antarctic waters without any passenger landings in its Year 2000 world cruise.

#### 3.9.1. *m/v Marco Polo* Cruises by Orient Lines, Inc.

Orient Lines, Inc., based in Fort Lauderdale, Florida, has offered cruises in the Peninsula and McMurdo Sound areas since the 1993-94 season. Beginning with the 2000-2001 season, the *Marco Polo* will cruise only in the Peninsula area (Orient Lines IEE 2000). Although not a member of IAATO,<sup>45</sup> Orient Lines observes IAATO's practices as expressed in their Bylaws and other recommendations in its operations (Orient Lines IEE 1998). The size of the *Marco Polo* and the number of passengers carried per expedition distinguishes Orient Lines from IAATO members. Table 3.5 compares the carrying capacity of the *Marco Polo* with the *Hanseatic*, the largest vessel of an IAATO member (Hapag-Lloyd, Germany) and the *Clipper Adventurer*, the largest vessel operated by U.S.-based IAATO members (Clipper Cruise Line and Zegrahm Expeditions).

| Vessel                 | <i>Marco Polo</i> | <i>Hanseatic</i> | <i>Clipper Adventurer</i>                  |
|------------------------|-------------------|------------------|--|
| Operator(s)            | Orient Lines      | Hapag-Lloyd      | Clipper Cruise Line<br>Zegrahm Expeditions |
| IAATO Member(s)        | No                | Yes              | Yes  |
| Passenger Capacity     | 850               | 180              | 120  |
| Estimated Average Load | - 500             | 150              | 110-115                                    |
| <b>Difference:</b>     |                   |                  |  |
| No. of Passengers      |                   | 350              | - 385                                      |
| Percent                |                   | -330%            | -435%                                      |

From: Orient Lines IEE 1998 and IAATO IEE 1999

Orient Lines' operations are similar in most respects to those of IAATO member operators including the U.S.-based IAATO members. The operational elements that are similar are summarized as follows:

<sup>45</sup> Orient Lines had applied for IAATO membership. However, IAATO's Bylaws require that Full, Provisional and Probationary Members agree not to carry more than 400 passengers per trip. The *Marco Polo* has a passenger capacity of 850 and an estimated average passenger load of about 500; thus, Orient Lines is not a member of IAATO (IAATO Bylaws 2001; and Fogelberg, Oct. 4, 1999).

- Proposed routes and itineraries are submitted to the Department of State as part of operator's notice of intent to travel.
- The ship's crew includes at least 75% with previous Antarctic experience, and the crew is advised and briefed on Recommendation XVIII-1, *Guidance for Antarctic Visitors*.<sup>46</sup>
- Standard Operating Procedures are delineated in the Safety Management System of the ship, which also includes helicopter operations.
- The passenger education program includes lectures on and distribution of Recommendation XVIII-1, and lecture programs on and library availability of appropriate laws and regulations. Passenger briefings before landings include safety considerations and how to avoid impacting wildlife and the local environment, identification of any protected areas, and reminder not to enter any man-made structures unless specifically invited to do so by an authorized person.<sup>47</sup>
- Expedition leaders coordinate tour schedules so that no two ships are in the same place at the same time.
- Landing decisions are made aboard ship by the captain and expedition leader and, for the *Marco Polo*, the ship's ice master.
- The maximum number of passengers ashore at any one time is limited to 100 with a minimum 1:15 ratio of staff to passengers maintained.
- Site landings are under the supervision of the Expedition Leader. Passengers are landed via Zodiacs and while onshore remain in sight of staff at all times.<sup>48</sup> Passengers are not allowed to engage in any activities that may adversely affect wildlife or the environment. Passengers are not allowed to enter man-made structures unless specifically invited to do so by the Expedition Leader. Landing activities are generally limited to supervised walks and

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<sup>46</sup> According to the Orient Lines IEE (1998), the majority of the ship's crew are from the Philippines, which is not a Party to the Antarctic Treaty, and has no Antarctic legislation. However, the Master of the ship has shipboard sanctions which may be used to ensure responsible behavior of crew members in Antarctica.

<sup>47</sup> Orient Lines' Initial Environmental Evaluation further specifies that passengers are reminded not to smoke in Zodiacs or onshore, not to take food items onshore, and that there are no toilet facilities available onshore (Orient Lines IEE 1998).

<sup>48</sup> At least seven expedition staff members with previous Antarctic experience are on shore while passengers are landing ensuring a minimum ratio of about 1:15, and the expedition staff is assisted by several members of the ship's cruise staff to ensure protection of wildlife, vegetation, and protected areas, and to ensure safe operations (Orient Lines IEE 1998).

observation and photography of scenery and wildlife. Boot washing is required before and after each landing.

- The sanction for flagrant disregard of the rules by a passenger is immediate removal from site and prohibition of further landings by the ship’s captain by that passenger.
- Advanced approval is obtained from the National Science Foundation for any visits to U.S. research stations with the schedule for these visits coordinated at the annual meeting of tour operators.
- Post-trip report forms are maintained and submitted to the National Science Foundation.

Because of the total number of passengers onboard the *Marco Polo* as compared to an IAATO member operator’s vessel, individual passengers are likely to remain ashore for approximately one hour (actual times may vary from 45 to 90 minutes at a landing site), and the approximate duration of each landing is four to six hours (Orient Lines IEE 1998).

Orient Lines has selected landing sites based on the seven factors listed in Table 3.6. While Orient Lines does not operate by the in-field opportunistic process used by IAATO member operators, the site selection criteria employed by Orient Lines are similar to that of IAATO member operators, namely, that sites are selected on the basis of wildlife and scenic or historic interest, ability to avoid impacts, and weather and safety conditions.

| Table 3.6. Factors Used by Orient Lines to Select Landing Sites |  |
|---|--|
| 1.  | Potential for avoiding impact on wildlife.                         |
| 2.  | Potential for avoiding impact on vegetation.                       |
| 3.  | Potential for avoiding impact on scientific research.              |
| 4.  | Potential for avoiding impact on geological and wilderness values. |
| 5.  | Variety of wildlife to be seen.                                    |
| 6.  | Scenic or historic interest of the site.                           |
| 7.  | Availability of reliable charts of site (good soundings, etc.)     |

From: Orient Lines IEE 1998

The sites selected by Orient Lines for landing in the Peninsula area include: Half Moon Island; Whalers Bay, Deception Island; Waterboat Point, Paradise Harbor (Gon. Videla Station); Port Lockroy, Wiencke Island; and Hovgaard Island in the Lemaire Channel. In the Ross Sea area, the sites visited include: McMurdo Station, Cape Evans, Cape Royds and Cape Bird on Ross Island, and

Terra Nova Bay. The visit to Scott's Hut at Cape Evans, an Antarctic Specially Protected Area,<sup>49</sup> is conducted in accordance with the management plan and guidelines of Antarctica New Zealand under a permit issued to visit the site as specified in the management plan (Orient Lines IEE 1998).<sup>50</sup>

Orient Lines maintains an onboard helicopter that is used only for ice reconnaissance and to find a navigable route in the event pack ice is encountered. The helicopter is not used to offer any flight seeing for passengers. The Standard Operating Procedures for helicopter operations are included in the ship's Safety Management System. During reconnaissance flights, the helicopter crew adheres to the company's policy of never flying from the *Marco Polo* in reduced visibility (such as falling snow) or beyond a distance that can be safely reached from the vessel by either a Zodiac or a lifeboat (Orient Lines IEE 1998).

In accordance with 40 CFR Part 8, "Environmental Impact Assessment of Nongovernmental Activities in Antarctica," (40 CFR Part 8) Orient Lines submitted Initial Environmental Evaluations to the Environmental Protection Agency for the *Marco Polo* expeditions undertaken during the 1997-98, 1998-99, 1999-2000, and 2000-2001 seasons (Orient Lines IEE 1997, Orient Lines IEE 1998, Orient Lines IEE 1999, and Orient Lines IEE 2000). For all four seasons, Orient Lines concluded that the continuation of these expeditions under the described process will have no more than a minor or transitory impact on the Antarctic environment. For all four seasons, the Environmental Protection Agency, in consultation with other interested federal agencies, concluded that Orient Lines' Initial Environmental Evaluation met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Nov. 28, 1997; Dickerson Oct. 22, 1998; Dickerson Sep. 10, 1999; and Montgomery Oct. 3, 2000).

### **3.9.2 *ms Rotterdam* Cruise by Holland America Line - Westours, Inc.**

Holland America Line-Westours, Inc. (HALW), based in Seattle, Washington, included scenic cruising through waters in the Peninsula area of Antarctica in its Year 2000 world cruise (HALW IEE 1999). As a U.S.-based operator, HALW's 1999-2000 operations in Antarctica were distinctly different from those of other U.S.-based ship-based tour operators in that the expedition consisted solely of a voyage transiting Antarctica for a period of approximately 72 hours, during which time passengers could observe the surrounding environment from the vessel. The *ms Rotterdam* did not dock or anchor in Antarctica, there were no passenger landings nor did passengers leave the ship via

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<sup>49</sup> Scott's Hut at Cape Evans is an Antarctic Specially Protected Area designated Specially Protected Area No. 25 (see Appendix 5).

<sup>50</sup> During the 2000-2001 season, the *Marco Polo* will tour only in the Peninsula area and will not travel to the Ross Sea area (Orient Lines IEE 2000).

the ship's tenders while in Antarctica.<sup>51</sup> Further, the ship had no onboard helicopters or other aircraft, nor were there any facilities onboard to refuel aircraft (HALW IEE 1999).

HALW is not a member of IAATO nor would the company be eligible for Full or Provisional Membership because of the number of passengers carried on the cruise (IAATO Bylaws 2001). According to HALW's Initial Environmental Evaluation for the expedition, the *ms Rotterdam* carries approximately 1,000 passengers and a crew of approximately 600.<sup>52</sup> The size of the *Rotterdam* and the number of passengers carried on this expedition distinguishes HALW from Orient Lines and from IAATO members. Table 3.7 compares the *Rotterdam* with the *Marco Polo* (Orient Lines, U.S.), the *Hanseatic*, the largest vessel of an IAATO member (Hapag-Lloyd, Germany), and the *Clipper Adventurer*, the largest vessel operated by U.S.-based IAATO members (Clipper Cruise Line and Zegrahm Expeditions).

| Vessel                 | <i>Rotterdam</i>                    | <i>Marco Polo</i> | <i>Hanseatic</i><br><i>Clipper Adventurer</i>             |
|------------------------|-------------------------------------|-------------------|---|
| Operator(s)            | Holland America Line-Westours, Inc. | Orient Lines      | Hapag-Lloyd<br>Clipper Cruise Line<br>Zegrahm Expeditions |
| IAATO Member(s)        | No                                  | No                | Yes   |
| Passenger Capacity     | 1,000                               | 850               | 120-180   |
| Estimated Average Load | 1,000                               | - 500             | 110-150   |
| <b>Difference:</b>     |                                     |                   |   |
| Estimated Average Load |                                     | 500               | 890-850   |
| Percent                |                                     | 200%              | -900-670%   |

From: HALW IEE 1999; Orient Lines IEE 1998, Fogelberg Oct. 4 1999; and IAATO IEE 1999.

HALW's operations for the voyage through Antarctic waters were similar to those of IAATO member operators, including U.S.-based operators, and Orient Lines as follows:

<sup>51</sup> HALW initially proposed using the ship's tenders on a limited basis to provide passengers with an opportunity to visit areas inaccessible to the *Rotterdam*. As proposed, the tenders would not land or disembark passengers, would not travel more than two nautical miles from the ship, and would operate only during acceptable weather conditions. However, HALW withdrew this proposed activity. (HALW 1999, HALW IEE 1999, and Dickerson Apr. 16, 1999).

<sup>52</sup> During its 1999-2000 world cruise, the *Rotterdam* carried 936 passengers and 656 crew. The passengers included: 811 from the U.S.; 65 from Canada; 20 from The Netherlands; 12 from the U.K.; 9 from Australia; and 1 to 4 from Argentina, Belgium, Colombia, Germany, Israel, New Zealand, Norway, Panama, Portugal, Switzerland (Van Deursen Apr. 19, 2000).

- Proposed routes and itineraries were submitted to the Department of State as part of operator's notice of intent to travel.
- The ship's crew was advised and briefed on Recommendation XVIII-1, *Guidance for Visitors to the Antarctic*, the Protocol on Environmental Protection to the Antarctic Treaty, and IAATO's Bylaws and recommendations.<sup>53</sup>
- Standard Operating Procedures were delineated in the Safety Management System of the ship.
- A special training module which provided officers, crew and passengers with a code of conduct to follow while in Antarctic waters was developed.<sup>54</sup>
- The *Rotterdam* was fitted with communications capabilities to enable coordinated communications with expedition leaders of other ships.
- Post-trip report forms were maintained and submitted to the National Science Foundation.

HALW's Initial Environmental Evaluation indicates that the itinerary for the *Rotterdam*, as listed in Table 3.8, is based on maximizing the scenic cruising experience with consideration of weather and time, and avoidance of any activity within marine protected areas.<sup>55</sup> The total voyage time in the Antarctic Treaty area is estimated to be 72 hours, the shortest time for a Peninsula area cruise relative to other U.S.-based ship-based operators.

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<sup>53</sup> IAATO member operators and Orient Lines maintain staff with a minimum of 75% previous Antarctic experience overall. HALW retained an Ice Pilot and Expedition Leader both with Antarctic experience.

<sup>54</sup> For U.S.-based IAATO members and Orient Lines, the passenger education program includes a lecture program on a code of conduct to follow while in Antarctic waters including Recommendation XVIII-1.

<sup>55</sup> 'Marine protected areas' in this EIS refers to those marine areas within the Antarctic Treaty area that are or may be designated as marine protected areas under the Antarctic Treaty or related agreements. These are not the same as 'marine protected areas' under Executive Order 13158, "Marine Protected Areas," or other international treaties or U.S. domestic legislation. Executive Order 13158 applies to the 'marine environment' which means those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands thereunder, over which the United States exercises jurisdiction consistent with international law.

| <b>Location</b>  | <b>Purpose</b>  |
|--|---|
| Enter Hope Bay at Esperanza Station                        | • Scenic viewing  |
| Bransfield Strait, by Deception Island to Neumayer Channel | • Scenic viewing:<br>Gerlache Strait, Lemaire Channel, Paradise Bay |
| Return through Bransfield Strait past Elephant Island      | • Scenic viewing including Shackleton expedition area               |
|  | • Efficient passage north   |
|  | • Passenger interest in Shackleton expedition                       |

From: HALW IEE 1999

In accordance with 40 CFR Part 8, “Environmental Impact Assessment of Nongovernmental Activities in Antarctica,” (40 CFR Part 8) HALW submitted an Initial Environmental Evaluation to the Environmental Protection Agency for the *Rotterdam* expedition undertaken during the 1999-2000 (HALW IEE 1999). HALW concluded that the proposed expedition under the described process will have no more than a minor or transitory impact on the Antarctic environment. The Environmental Protection Agency, in consultation with other interested federal agencies, concluded that HALW’s Initial Environmental Evaluation met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Apr. 16, 1999).<sup>56</sup>

### **3.10. Land-Based Operations by Adventure Network International (ANI)**

EPA’s Final Rule will apply only to nongovernmental activities of U.S.-based operators organized in or proceeding from the U.S. to Antarctica.<sup>57</sup> Currently, there are no U.S.-based operators with land-based operations in Antarctica.<sup>58</sup> However, the discussion of human activities in Antarctica includes an overview of the foreign-based, land-based operations of Adventure Network International (ANI) in order to fully delineate the realm of human activities in Antarctica, information that is relevant to the cumulative impacts of humans in Antarctica.

ANI is based in Canada with business offices in the United Kingdom; its expeditions are organized from the United Kingdom. ANI is the only land-based operator serving tourists and other nongovernmental expeditions to Antarctica. ANI was created in 1985 as a guided transportation

<sup>56</sup> HALW has also submitted an IEE to EPA for two similar voyages to be made during the 2001-2002 season by the *Ryndam* (HALW IEE 2000 and Montgomery May 23, 2000).

<sup>57</sup> The Final Rule will be issued pursuant to the Antarctic Science, Tourism, and Conservation Act of 1996 and will implement the requirements of Article 8 and Annex I to the Protocol on Environmental Protection to the Antarctic Treaty of 1959.

<sup>58</sup> In 2001, ANI opened a business office in the U.S. The company has not yet submitted advance notification to the Department of State for any planned Antarctic expeditions.

system for climbers wishing to climb Vinson Massif and has supported almost every private expedition into Antarctica since this time. In 1987, the company was the first to land a wheeled aircraft in Antarctica,<sup>59</sup> the first to fly tourists to the South Pole in 1988, and the first to visit the Emperor Penguins at their colony on Dawson-Lambton Glacier (ANI 1998).

ANI uses large aircraft operating out of Punta Arenas, Chile, to carry passengers directly to its Patriot Hills camp at the southern end of the Ellsworth Mountains. Since its beginning in 1985, ANI has carried over 1,000 passengers to Antarctica. The ANI Patriot Hills camp is a six-hour flight from the southern tip of Chile and is accessible only by air and over land. Housing 48 visitors, Patriot Hills is the only private camp operating in Antarctica. The camp has a kitchen, dining and library areas, with insulated tents for guests who use sleeping bags with cots.<sup>60</sup>

As an example of ANI's tourist operations, for the 1998-99 season ANI offered seven programs. These included: mountain climbing on Vinson Massif in the Ellsworth Range, the Transantarctic Mountains, and Dronning Maud Land; an Ellsworth Mountain ski safari through Horseshoe Valley to the Union Glacier and the base of the Ellsworth Mountains; private flights to the South Pole; a photo safari to the Dawson-Lambton Emperor Penguin rookery; and an expedition which included snow-mobiling, hiking, light climbing and flight seeing. All expeditions departed for Patriot Hills from Punta Arenas, Chile, except the Dronning Maud Land mountain climbing expedition which departed from Cape Town, South Africa (ANI 1998).

ANI provides support for various solo and small groups trekking to/from the South Pole or other parts of the continent, including transcontinental treks. ANI has provided support for sky diving expeditions, (Washington Post Feb. 8, 1997; NY Times Dec. 8, 1997) and in 1998, ANI supported the first nongovernmental expedition to collect meteorites (Krajick 1999).

Although not an IAATO member, ANI abides by the IAATO Bylaws.<sup>61</sup> ANI also has an environmental policy and operational guidelines, as listed in Appendix 11, that are observed while providing and supporting aircraft and land-based, private-sector travel to and within Antarctica. Through its environmental policy and guidelines, ANI abides by the relevant provisions of the

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<sup>59</sup> ANI first landed a DC-4 on a blue ice runway at the foot of Patriot Hills, and continued with the first wheeled landing of a DC-6 aircraft on the same runway in 1989, and the first wheeled landing of a civilian Lockheed Hercules in November 1993. The company's Twin Otters have flown more than 3,000 hours, and the ANI-owned Cessna 185 has flown more than 500 hours. By early 1997, the total distance flown over the continent by ANI aircraft exceeded 850,000 miles (ANI 1998).

<sup>60</sup> Weather at Patriot Hills varies with the seasons. Temperatures in mid-October are about -30/C (-22/F) and rise to about -5/C (23/F) in mid-December. Winds blow from the Pole to the coast at about 10-15 knots, with occasional katabatic winds gusting up to 100 knots.

<sup>61</sup> ANI was one of the founding members of IAATO although it currently is not a member. See Appendix 7.



Protocol on Environmental Protection to the Antarctic Treaty and Annexes, and complies with those provisions, including ensuring that all staff and clients are properly briefed on those provisions that might affect them. Following the requirements of the Protocol on Environmental Protection to the Antarctic Treaty, ANI notifies the United Kingdom and follows British requirements for environmental impact assessment documentation and other matters associated with its Antarctic activities (ANI 1998 and ANI IEE 1993).

In addition to its tourist-related activities, in 1991, ANI established Polar Logistics at a base camp in Dronning Maud Land, Antarctica, to provide commercial logistical support to national science programs including cargo movement, search and rescue and medical evacuation from the continent through the availability of a Hercules C-130, the Twin Otter aircraft and skidoos. IAATO-member operators have also made arrangements with ANI for emergency evacuation of sick or injured persons (IAATO IEE 1999). The Hercules aircraft flies from South Africa to the base camp, and the Twin Otter is used to support flights to national research stations in the region and to place small groups of climbers in Fimbulheimen and Sør Rondane (Polar Logistics Brochure and Polar Logistics).

### 3.11. Expeditions by U.S.-Based Research Foundation, Oceanites, Inc.

Oceanites, Inc. is a U.S.-based nonprofit education and scientific foundation located near Washington, D.C. (Naveen 1996 and Oceanites IEE1997). Oceanites has conducted the Antarctic Site Inventory project since 1994 in order to develop baseline information on Peninsula area sites visited by tour ships (Naveen 1996 and Oceanites IEE 1997).<sup>62</sup> The project’s methodology is described in the “*Compendium of Antarctic Peninsula Visitor Sites: A Report to the Governments of the United States and the United Kingdom*” (*Compendium*) and summarized in Table 3.9 (Naveen 1997).

| Table 3.9. Methods Used for the Antarctic Site Inventory |  |
|--|--|
| <b>Research Teams:</b>                                   | 2-3 two-person teams working on different platforms (tour ships)   |
| <b>Vessel Selection:</b>                                 | Tour expeditions that envisage 2-3 landings per day over a 5-7 day itinerary during which project investigators can be ashore 3-5 hours during each landing; investigators may also arrange to be landed at other nearby survey sites which are not the primary focus of that day's tourist landings |

<sup>62</sup> The Antarctic Site Inventory was initiated by Oceanites, Inc., in 1994 as a two-year pilot project and was initially a U.S. government expedition since the project received grant funds from the National Science Foundation. However, since the Apr. 30, 1997 promulgation of 40 CFR Part 8, “Environmental Impact Assessment of Nongovernmental Activities in Antarctica,” Oceanites has not received grant funds from the National Science Foundation or from other U.S. government sources for its expeditions to Antarctica, thus, Oceanites’ expeditions are defined as nongovernmental expeditions [40 CFR 8.3] and are subject to the requirements of 40 CFR Part 8.

| Table 3.9. Methods Used for the Antarctic Site Inventory |   |
|--|---|
| <b>Timing of Visits:</b>                                 | Key times are based on collection of information regarding relevant biological parameters: early November to early December (peak penguin egg laying); and mid-January to mid-February (peak penguin chick-creching, southern fur seals may haul-out, southern elephant seals collect in wallows to molt) |
| <b>Categories of Information Collected at Each Site:</b> | 1. Basic Site Information includes key physical, biological and topographical characteristics of the site   |
|  | 2. Variable Site Information describes weather and other environmental conditions, particular biological parameters relating to penguins and flying birds, and the nature and extent of any observed visitor impacts  |
|  | 3. Maps and photo documentation includes up-to-date maps of each site   |

From: Naveen 1997

During the first three austral field seasons, 1994-1997, Oceanites began characterizing and describing the flora, fauna, and other features of Antarctic Peninsula sites subject to frequent tourist visits, and compiling baseline data and information to be used to detect and assess changes in the flora, fauna, and other features of these Peninsula area sites. During the subsequent four austral seasons, 1997-2001, Oceanites continued to conduct census activities at Peninsula area sites regularly visited by tourists (Oceanites IEE 1997, Oceanites IEE 1998, Oceanites IEE 1999, and Oceanites IEE 2000).

The *Compendium* summarizes the results and findings for the first three seasons of the project, 1994 through 1997 (Naveen 1997). *Visitor Landings in the Antarctic Peninsula, 1989-99*, updates the *Compendium* and examines the 165 landing sites that tour vessels have visited in the Antarctic Peninsula during the 10-year period 1989-99 (Naveen 1999).

In accordance with 40 CFR Part 8, “Environmental Impact Assessment of Nongovernmental Activities in Antarctica,” Oceanites submitted Initial Environmental Evaluations to the Environmental Protection Agency for the Antarctic Site Inventory project for the expeditions undertaken during the 1997-98, 1998-99, 1999-2000, and 2000-2001 seasons (Oceanites IEE 1997, Oceanites IEE 1998, Oceanites IEE 1999, and Oceanites IEE 2000). For all four seasons, Oceanites concluded that the continuation of the Antarctic Site Inventory under the described process, will have no more than a minor or transitory impact on the Antarctic environment. The Environmental Protection Agency, in consultation with other interested federal agencies, concluded that Oceanites’ Initial Environmental Evaluations met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Nov. 5, 1997; Dickerson Oct. 6, 1998; Dickerson Sep. 8, 1999; and Montgomery Oct. 18, 2000).

### 3.12. Examples of Other Nongovernmental Expeditions

#### 3.12.1. Greenpeace International

Greenpeace International, based in The Netherlands, has campaigned to have Antarctica declared a World Park since 1983. As part of its Antarctic Expedition Program, Greenpeace established World Park Base, a small base at Cape Evans on Ross Island. Constructed during the

austral summer of 1986-87, the base was decommissioned in 1991-92.<sup>63</sup> The base was used by Greenpeace to gain first-hand experience in operating a base and to monitor and publicize the activities of other nearby government-operated stations. Since 1990-91, Greenpeace has maintained small, independently mobile ship-based teams to monitor the implementation of the Environmental Protocol and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) (Greenpeace 1991). Greenpeace has continued its focus on whaling and illegal fishing operations in the Southern Ocean into the 1999-2000 season. On its first expedition of this season, Greenpeace pursued a four-vessel whaling fleet operated by a Japanese company in the Indian Ocean region of the Southern Ocean.<sup>64</sup> The second voyage focused on illegal fishing in the same general region, primarily to watch for illegal fishing of Patagonian toothfish (ANAN-11/06 Dec. 22, 1999; ANAN-12/10 Jan. 5, 2000; ANAN-19/08 Apr. 12, 2000; and ANAN-18/07 Mar. 29, 2000).

### 3.12.2. White Mountain Films, LLC

White Mountain Films, LLC, (WMF) is a U.S.-based company that organized a one-time expedition to Antarctica during the 1999-2000 austral season to undertake filming for two projects about Sir Ernest Shackleton and the Imperial Trans-Antarctic Expedition of 1914-16. During this expedition, filming was conducted at sea, on the edges of the ice pack, in the Elephant Island vicinity and on the island itself. The filming activity took place aboard ships, from a helicopter based on one of the ships, small inflatable boats, and on the ice and land. The 33-member film crew included seven field staff and a medic, with about 20 persons as the largest number ashore at any one time.<sup>65</sup> The expedition was in the Antarctic Treaty area for several weeks between November 1999 and February 2000. This was the only expedition undertaken by this U.S.-based company and no further expeditions are planned (WMF IEE 1999).

In accordance with 40 CFR Part 8, “Environmental Impact Assessment of Nongovernmental Activities in Antarctica,” (40 CFR Part 8) WMF submitted an Initial Environmental Evaluation to the Environmental Protection Agency for the filming expedition undertaken during the 1999-2000 season (WMF IEE 1999). WMF concluded that the planned filming expedition would have no more than

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<sup>63</sup> As part of the base removal, Greenpeace conducted a monitoring program to evaluate the effect that World Park Base (77/38'S, 166/24'E) had on the environment since its construction in 1987. The Initial Environmental Evaluation prepared by Greenpeace for removal of the base concluded that the base operations and removal activities had no more than a minor or transitory impact on the Antarctic environment (Greenpeace 1991).

<sup>64</sup> Under a permit issued by the Japanese Minister of Agriculture, Forestry and Fisheries for the 1999-2000 season, the Japanese vessels could catch up to 400 Minke whales with up to 440 taken if necessary for ‘research purposes.’ During the season, 439 Minke whales were taken, 50 more than in 1998-1999 (ANAN-19/08 Apr. 12, 2000).

<sup>65</sup> This number does not include the ships’ crew. The ships include: the *Akademik Shuleykin* chartered from Marine Expeditions, Inc., Canada, which accommodated 29 film crew and support staff; and the *Laurel* chartered from Ultragas Ltda, Chile, which accommodated four film and two helicopter crew.

a minor or transitory impact on the Antarctic environment. The Environmental Protection Agency, in consultation with other interested federal agencies, concluded that WMF's Initial Environmental Evaluation met the requirements of Article 8 and Annex I of the Protocol on Environmental Protection and the provisions of 40 CFR Part 8 (Dickerson Sep. 29, 1999).

### **3.13. Tourist Numbers, Landing Sites and Activities in Antarctica with a Focus on the Peninsula Area**

Tourist information submitted by Antarctic tour operators has been compiled by the National Science Foundation for the 10-year period 1989-1999.<sup>66 67</sup> During this time, the overall number of visitors to all of Antarctica has increased from 2,460 total visitors reported in 1989-1990 to 10,013 total visitors reported in 1998-1999, representing a 407% overall increase in the number of visitors to all of Antarctica. The 1998-1999 season was the first time there were over 10,000 visitors to Antarctica. The total visitors for each year and the percentage change from the previous year are presented in Appendix 12. These totals represent the number of visitors reported by the ship-based tour operators in a particular season, but do not distinguish between visitors onboard ships in the Peninsula and Ross Sea areas (Naveen 1999). The five countries with the largest number of its citizens traveling to Antarctica are: the United States (41.0%), Germany (13.4%), the United Kingdom (7.8%), Australia (7.1%), and Japan (5.6%) (IAATO XXII ATCM/IP 1998 and IAATO ATCM/IP 98 1999).<sup>68</sup>

#### **3.13.1. Land-Based vs. Ship-Based Tourism and Ross Sea vs. Peninsula Area Tourism**

The majority of nongovernmental activities in Antarctica occur as ship-based tourism. Table 3.10 lists the number of land-based expedition participants and the number of ship-based tourists to

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<sup>66</sup> Beginning with the 1989-90 Antarctic tour season, the National Science Foundation has compiled information on Antarctic tourism from reports submitted by Antarctic tour operators. Reports are submitted by U.S.-based and non-U.S.-based tour operators (including IAATO and non-IAATO members), but are not necessarily submitted by yacht operators; see Section 3.6 for information on yachts. Expeditions reported on include those to both the Peninsula and Ross Sea areas.

<sup>67</sup> IAATO has collaborated with the National Science Foundation to ensure that all Antarctic tourist expeditions, not just those of U.S. organizers, are reported and included in the numerical summary reports maintained by the National Science Foundation (IAATO XXIII ATCM 1999).

<sup>68</sup> For the 1994-95, 1995-96, 1996-97 and 1997-98 seasons, the average percent of the totals by nationality are listed in parentheses. During this same period, other nationalities averaged as follows: Switzerland (2.6%), Canada (2.5%), Argentina (2.0%), France (1.4%), Austria and Brazil (1.1%), Others (8.4%) and Unknown (5.8%); % discrepancies due to rounding.

all of Antarctica for the eight-season period, 1992 through 2000.<sup>69</sup> On average, 98.7% of all Antarctic tourists are ship-based while only 1.3% are land-based.

|                       | <b>Land-Based Tourists</b> | <b>Ship-Based Tourists</b> | <b>Total Tourists</b> | <b>%Land-Based Tourists</b> |
|-----------------------|----------------------------|----------------------------|-----------------------|-----------------------------|
| 1992-93               | 127                        | 6,577                      | 6,704                 | 1.9%                        |
| 1993-94               | 59                         | 7,957                      | 8,016                 | 0.7%                        |
| 1994-95               | 120                        | 8,090                      | 8,210                 | 1.5%                        |
| 1995-96               | 155                        | 9,212                      | 9,367                 | 1.7%                        |
| 1996-97               | 91                         | 7,322                      | 7,413                 | 1.2%                        |
| 1997-98               | 171                        | 9,473                      | 9,644                 | 1.8%                        |
| 1998-99               | 79                         | 9,934                      | 10,013                | 0.8%                        |
| 1999-2000 (Estimates) | 200                        | 14,065                     | 14,265                | 1.4%                        |
| Average:              |                            |                            |                       | 1.3%                        |

From: IAATO IEE 2000, IAATO IEE 1999, IAATO IEE 1998, and IAATO IEE 1997

As noted in Section 3.6, the majority of ship-based tourism in Antarctica occurs in the Peninsula area. Beginning with the 1992-93 season, the tour operators began reporting landing information to the National Science Foundation for the Peninsula and Ross Sea areas. From this information, in 1992-93, nearly 89% of the tourist landings were in the Peninsula area, and for the six-year period from 1993-1999, 95-98% of the landings were in the Peninsula area (Naveen 1999). Appendix 13 lists for each year the total number of reported landings, the number of landings in the Peninsula and Ross Sea areas, and the percentage of the total landings that are in the Peninsula area. The figures in Appendix 14 summarize Antarctic tourism during the three austral seasons, 1997-2000,<sup>70</sup> and confirm that, on average, during these three seasons 95% of the expeditions and 96% of the passengers traveled to the Peninsula area while only 5% of the expeditions and 4% of the passengers traveled to the Ross Sea area.

<sup>69</sup> This includes the time period that EPA's Interim Final Rule at 40 CFR Part 8 has been in effect; e.g., the 1997-98, 1998-99 and 1999-2000 austral seasons. The passenger estimates are from IAATO's Preliminary Estimate of Antarctic Tourism submitted with each year's Initial Environmental Evaluation; See: Appendix 14.

<sup>70</sup> This covers the time period that EPA's Interim Final Rule at 40 CFR Part 8 has been in effect for U.S.-based operators; e.g., the 1997-98, 1998-99 and 1999-2000 austral seasons. The passenger estimates are from IAATO's Preliminary Estimates of Antarctic Tourism submitted with each year's Initial Environmental Evaluation.

### 3.13.2 Tourist Numbers, Landing Sites and Activities in the Peninsula Area

Based on information reported by tour operators to the National Science Foundation, Naveen (1999) analyzed the location and frequency of tourists coming ashore by Zodiac annually in the Peninsula area. A total of 165 Peninsula area sites were identified where visitors made Zodiac landings during the 10-year period, 1989-1999.<sup>71</sup> The geographical distribution of visitor landings in the Peninsula area has been relatively consistent throughout the 10-year period, 1989-1999. Most visits occur in the South Shetland Islands (about 43% of all landings) and the northwestern part of the Peninsula (about 36% of all landings). Over the 10-year period, landings on the southwest Peninsula have been about 10% of all landings, and on the northeast Peninsula about 7-8% of all landings. Naveen (1999) also analyzed the annual number of visitors to these landing sites. During each of the seasons within the 10-year period, 1989-1999, the ten sites with the most number of landings consistently accounted for more than 55% of that season's landings and about 51% of that season's visitors. The twenty sites with the most number of landings consistently accounted for more than 75% of that season's landings and about 77% of that season's visitors (Naveen 1999 and Naveen et al 2001).

During this 10-year period, the number of annual Zodiac landings increased from 164 to 858, representing an increase of 523%. For the same 10-year period, the number of annual tour passenger visitors increased from 17,759 to 74,772, representing an increase of 421%. Appendix 15 lists the total number of Peninsula area landings and visitors by season and the percentage change from the preceding season for each.

With regard to landings in the Peninsula area during the 10-year period 1989-1999, even with decreases in three of the seasons, the number of landings per year increased on average by 77 with an average increase of 81 between the years in the first four seasons (1989-1994) and an average increase of 149 between the years in the next five seasons (1994-1999). The greatest increase in number of landings, +216, occurred between the 1993-1994 and 1994-1995 seasons, while the greatest decrease in the number of landings, -61, occurred between the 1996-1997 and 1997-1998 seasons. With regard to the number of visitors to Peninsula area landing sites during this same 10-year period, even with decreases in two of the seasons, the number of visitors at landing sites increased on average by 6,332. Thus, there was an average increase of 8,069 between the years in the first four seasons, and an average increase of 4,934 between the years in the next five seasons. The greatest increase in number of visitors to landing sites, +22,246, occurred between the 1992-1993 and 1993-1994 seasons, while the greatest decrease in the number of visitors to landing sites, -11,039, occurred between the 1991-1992 and 1992-1993 seasons.

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<sup>71</sup> The National Science Foundation compilation lists more than 250 sites in the Antarctic Peninsula, Queen Maud Land, South Georgia and Falklands Islands regions. The Antarctic Treaty area, the area south of 60° south latitude, excludes areas such as South Georgia and the Falkland Islands; thus these sites were not included in Naveen's analysis (Naveen 1999).

Naveen (1999) identified the most heavily visited Peninsula area sites according to the number of annual landings and visitors for the five-year period 1989-94, the next five-year period 1994-99, and for the total 10-year period 1989-99. Table 3.11 lists the 16 sites with 100 or more annual landings for the 10-year period 1989-99, and their relative rank for the first and second five-year periods and the total 10-year period.

| <b>Site</b>                                      | <b>1989-99<br/>LDGS</b> | <b>1989-99<br/>LDGS Rank</b> | <b>1989-94<br/>LDGS Rank</b> | <b>1994-99<br/>LDGS Rank</b> |
|--|-------------------------|------------------------------|------------------------------|------------------------------|
| Whalers Bay, Deception Island                    | 425                     | 1                            | 1                            | 1                            |
| Cuerville Island                                 | 359                     | 2                            | 4                            | 2                            |
| Port Lockroy, Wiencke Island                     | 350                     | 3                            | 5                            | 3                            |
| Pendulum Cove, Deception Island                  | 300                     | 4                            | 3                            | 5                            |
| Hannah Point, Livingston Island                  | 290                     | 5                            | 8                            | 4                            |
| Petermann Island                                 | 278                     | 6                            | 6 Tied                       | 6                            |
| Half Moon Island                                 | 263                     | 7                            | 6 Tied                       | 7                            |
| Almirante Brown Station, Paradise Bay            | 259                     | 8                            | 2                            | 8                            |
| Paulet Island                                    | 196                     | 9                            | 11                           | 10                           |
| Arctowski Station, King George Island            | 166                     | 10                           | 10                           | 13                           |
| Neko Harbor, Andvord Bay                         | 152                     | 11                           | —                            | 9                            |
| Baily Head, Deception Island                     | 149                     | 12                           | 13                           | 12                           |
| Waterboat Point (G.Videla Station), Paradise Bay | 148                     | 13                           | 9                            | 16                           |
| Aitcho Islands                                   | 147                     | 14                           | —                            | 11                           |
| Penguin Island                                   | 118                     | 15                           | 18                           | 14                           |
| Palmer Station, Anvers Island                    | 104                     | 16                           | 12                           | 19 Tied                      |

From: Naveen 1999

For these 16 sites with 100 or more annual landings, Whalers Bay has consistently been the most heavily visited site for both the first and second five-year periods and throughout the 10-year period. Other sites with little or no change in their landings rank are: Petermann Island, Half Moon Island, Arctowski Station on King George Island, and Baily Head including Rancho Point on Deception Island (ranked 6<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> and 12<sup>th</sup>, respectively, for the 10-year period).

An increase in rank of 2 to 4 occurred over the 10-year period for Cuerville Island, Port Lockroy (including Jougla Point) on Wiencke Island, Hannah Point on Livingston Island, and Penguin Island. More notable, two sites, Neko Harbor in Andvord Bay and Aitcho Islands, were not ranked in the top 25 most landed sites for the first five-year period (Naveen 1999). However, the intensity

of landings during the second five-year period raised their landing rank during this period to 9<sup>th</sup> and 11<sup>th</sup>, respectively, and for the 10-year period to 11<sup>th</sup> and 14<sup>th</sup>, respectively.

A decrease in rank of 2 to 3 occurred over the 10-year period for Pendulum Cove on Deception Island and Arctowski Station on King George Island. More notable, three sites, Almirante Brown Station at Paradise Bay, Waterboat Point including G. Videla Station at Paradise Bay, and Palmer Station on Anvers Island, dropped 6 to 7 rankings from the first five-year period to the second five-year period. All three continue to have more than 100 annual landings and for the 10-year period are ranked 8<sup>th</sup>, 13<sup>th</sup> and 16<sup>th</sup>, respectively.

Table 3.12 lists the number of sites with 100 or more annual landings for the first and second five-year periods and the total for the 10-year period, and illustrates how the number of sites with 100 or more annual lands rose during the second five-year period, 1994-99. During the second five-year period, Whalers Bay went from over 100 annual landings to over 300 annual landings so that Whalers Bay had over 400 landings during the 10-year period, 1989-99. Similarly, during the second five-year period, over 200 annual landings occurred at five sites (Cuverville Island, Port Lockroy, Hannah Point, Pendulum Cove, and Petermann Island), so that Cuverville Island, Port Lockroy, and Pendulum Cover each had over 300 landings during the 10-year period. The same increase pattern occurred such that, over the 10-year period, over 200 annual landings occurred at four sites (Hannah Point, Petermann Island, Half Moon Island, and Almirante Brown Station), and over 100 annual landings occurred at eight sites (Paulet Island, Arctowski Station, Neko Harbor, Baily Head, Waterboat Point, Aitcho Islands, Penguin Island, and Palmer Station).

| <b>Number of Sites with:</b>          | <b>1<sup>st</sup> 5-Years<br/>1989-94</b> | <b>2<sup>nd</sup> 5-Years<br/>1994-99</b> | <b>10-Years<br/>1989-99</b> |
|---------------------------------------|---|---|-----------------------------|
| 400 or more landings                  | 0   | 0   | 1                           |
| 300 or more landings                  | 0   | 1   | 3                           |
| 200 or more landings                  | 0   | 5   | 4                           |
| 100 or more landings                  | 2   | 6   | 8                           |
| Total sites with 100 or more landings | 2   | 12  | 16                          |

From: Naveen 1999

In addition to the location and frequency of tourist visitors coming ashore by Zodiac landing during the 1989-99 period, Naveen also analyzed the number of visitors at the 165 Peninsula area sites, including identification of the most heavily visited sites according to the number of annual visitors for the first and second five-year periods and for the total 10-year period, 1989-99. Table 3.13 lists 17 sites with 9,000 or more visitors. These sites include the 16 sites with 100 or more annual landings for the 10-year period 1989-99 with the addition of Esperanza Station at Hope Bay, ranked 19<sup>th</sup> by number of annual landings. Table 3.13 also lists the visitor ranking for these 17 sites for the first and second five-year periods and the total 10-year period.



| <b>Site</b>                                      | <b>1989-99<br/>PAX</b> | <b>1989-99<br/>PAX Rank</b> | <b>1989-94<br/>PAX Rank</b> | <b>1994-99<br/>PAX Rank</b> |
|--|------------------------|-----------------------------|-----------------------------|-----------------------------|
| Whalers Bay, Deception Island                    | 35,325                 | 1                           | 1                           | 1                           |
| Port Lockroy, Wiencke Island                     | 34,189                 | 2                           | 2                           | 2                           |
| Half Moon Island                                 | 28,541                 | 3                           | 5                           | 4                           |
| Cuerverville Island                              | 27,801                 | 4                           | 7                           | 3                           |
| Pendulum Cove, Deception Island                  | 26,030                 | 5                           | 6                           | 6                           |
| Hannah Point, Livingston Island                  | 24,444                 | 6                           | 10                          | 6                           |
| Petermann Island                                 | 24,082                 | 7                           | 8                           | 7                           |
| Almirante Brown Station, Paradise Bay            | 22,381                 | 8                           | 3                           | 9                           |
| Waterboat Point (G.Videla Station), Paradise Bay | 21,735                 | 9                           | 4                           | 10                          |
| Paulet Island                                    | 18,809                 | 10                          | 11                          | 8                           |
| Arctowski Station, King George Island            | 14,750                 | 11                          | 9                           | 14                          |
| Baily Head, Deception Island                     | 12,176                 | 12                          | 14                          | 13                          |
| Aitcho Islands                                   | 11,219                 | 13                          | —                           | 11                          |
| Palmer Station, Anvers Island                    | 10,790                 | 14                          | 12                          | 18                          |
| Hope Bay, Esperanza Station                      | 9,897                  | 15                          | 13                          | 17                          |
| Neko Harbor, Andvord Bay                         | 9,853                  | 16                          | —                           | 12                          |
| Penguin Island                                   | 9,362                  | 17                          | 20                          | 15                          |

From: Naveen 1999

For these 17 sites with 9,000 or more annual visitors, Whalers Bay has consistently been the most heavily visited site with Port Lockroy (including Jougla Point) on Wiencke Island as the second most visited site for both the first and second five-year periods and throughout the 10-year period. Other sites with little or no change in their visiting passenger rank are: Half Moon Island, Pendulum Cove on Deception Island, Petermann Island, and Baily Head including Rancho Point on Deception Island (ranked 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup> and 12<sup>th</sup>, respectively).

An increase in rank of 3 to 5 occurred over the 10-year period for Cuerverville Island, Hannah Point on Livingston Island, Arctowski Station on King George Island, and Penguin Island. More notable, two sites, the Aitcho Islands and Neko Harbor in Andvord Bay, were not ranked in the top 25 most visited sites for the first five-year period (Naveen 1999). However, the intensity of visiting tourists during the second five-year period raised their passenger visitor rank during this period to 11<sup>th</sup> and 12<sup>th</sup>, respectively, and for the 10-year period to 13<sup>th</sup> and 16<sup>th</sup>, respectively.

A notable decrease in rank of 4 to 6 occurred over the 10-year period for five sites from the first five-year period to the second five-year period: Almirante Brown Station at Paradise Bay, Waterboat Point including G. Videla Station at Paradise Bay, Arctowski Station on King George Island, Palmer Station on Anvers Island, and Esperanza Station at Hope Bay. All five continue to have more than 9,000 passengers visiting annually and for the 10-year period are ranked 8<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup>, respectively.

Table 3.14 lists the number of sites with 9,000 or more annual visitors for the first and second five-year periods and the total for the 10-year period, and illustrates how the number of sites with 9,000 or more annual visitors rose during the second five-year period, 1994-99 as follows:

- During the second five-year period, Whalers Bay and Port Lockroy went from over 10,000 annual visitors to over 20,000 annual visitors so that Whalers Bay had over 30,000 visitors during the 10-year period, 1989-99.
- For the seven sites with 20,000 or more total visitors during the 10-year period, Almirante Brown Station and Waterboat Point (with Gonzales Videla Station) remained at about 10,000-11,000 for both the first and second five-year periods; however, the other five sites went from the 6,000-9,000 range up to the 12,000-19,000 visitor range. The seven sites with 20,000 or more visitors for the 10-year period include: Half Moon Island, Cuverville Island, Pendulum Cove, Hannah Point, Petermann Island, Almirante Brown Station, and Waterboat Point.
- The number of sites with 10,000 or more annual visitors doubled from four in the 1989-94 period to eight in the 1994-1999 period. Of these, the five sites with 10,000 or more visitors during the 10-year period include: Paulet Island, Arctowski Station, Baily Head, Aitcho Islands, and Palmer Station. Visitors at these sites rose in range from fewer than 3,000-6,000 visitors up to the 5,000-12,000 visitor range.
- During the first five-year period, only Half Moon Island had over 9,000 visitors. During the second five-year period, Half Moon Island increased to over 18,000 visitors moving it to the 20,000 range for the 10-year period, and two new sites, the Aitcho Islands and Neko Harbor, rose from fewer than 1,000 visitors in the first five-year period to over 9,000 annual visitors in the second five-year period. These two sites, and Hope Bay, totaled 9,000 or more visitors for the 10-year period.

| <b>Number of Sites with:</b> | <b>1st 5-Years 1989-94</b> | <b>2nd 5-Years 1994-99</b> | <b>10-Years 1989-99</b> |
|------------------------------|----------------------------|----------------------------|-------------------------|
| 30,000 or more PAX           | 0                          | 0                          | 2                       |
| 20,000 or more PAX           | 0                          | 2                          | 7                       |
| 10,000 or more PAX           | 4                          | 8                          | 5                       |

| Number of Sites with:              | 1st 5-Years 1989-94 | 2nd 5-Years 1994-99 | 10-Years 1989-99 |
|------------------------------------|---------------------|---------------------|------------------|
| 9,000 or more PAX                  | 1                   | 2                   | 3                |
| Total sites with 9,000 or more PAX | 5                   | 12                  | 17               |

From: Naveen 1999

As seen in Tables 3.11 and 3.13, and summarized in Table 3.15, there were more than 250 landings and more than 20,000 visiting passengers<sup>72</sup> at the top eight ranked sites for the 10-year period, 1989-99. With regard to these sites and this 10-year period, the *Marco Polo*, which carries more than 400 passengers, was the largest tour vessel with passengers going ashore (see Section 3.9.1).<sup>73</sup> Of the Peninsula area sites included in the landing itinerary for the *Marco Polo*, three of these sites are in the top eight ranked sites for both the number of landings and the number of annual visitors (Orient Lines IEE 1998 and Orient Lines IEE 2000).

| Site                                  | On Itinerary of Marco Polo | Rank by LDGS | Rank by PAX |
|---------------------------------------|----------------------------|--------------|-------------|
| Whalers Bay, Deception Island         | (Yes) <sup>74</sup>        | 1/425        | 1/35,325    |
| Cuerville Island                      |                            | 2/359        | 4/27,801    |
| Port Lockroy, Wiencke Island          | Yes                        | 3/350        | 2/34,189    |
| Pendulum Cove, Deception Island       | Yes                        | 4/300        | 5/26,030    |
| Hannah Point, Livingston Island       |                            | 5/290        | 6/24,444    |
| Petermann Island                      |                            | 6/278        | 7/24,082    |
| Half Moon Island                      | Yes                        | 7/263        | 3/28,541    |
| Almirante Brown Station, Paradise Bay |                            | 8/259        | 8/22,381    |

From: Naveen 1999

Naveen's 1999 analysis of the 165 Peninsula area sites shows that during every season Zodiac landings of tourists are made at new sites in the Antarctic Peninsula area with the addition of new sites reaching a peak in the three seasons between 1994 and 1997. Table 3.16 lists, by season, the

<sup>72</sup> Waterboat Point (Gonzales Videla Station), Paradise Bay, was the only other site with more than 20,000 visitors during the 1989-99 10-year period. During this time, this site had 148 landings.

<sup>73</sup> The *Rotterdam*, with 1,000 passengers is larger than the *Marco Polo*. However, the *Rotterdam* expedition consists solely of transiting Antarctic waters without passengers going ashore. By comparison, the largest IAATO-member vessel, the *Hanseatic*, carries 150 passengers with onshore visits.

<sup>74</sup> Whalers Bay was included as a landing site through the 1999-2000 season; beginning in 2000-2001, the *Marco Polo* will land at Pendulum Cove rather than Whalers Bay (Orient Lines IEE 2000).

number of sites where Zodiac landings occurred for the first time and the percentage of all Peninsula area sites with Zodiac landings during that season. For this compilation, the 1989-90 season is considered the “base.” The 35 sites visited in the base season, 1989-90, are listed in Appendix 16 along with the number of landings at each site for the 10-year period 1989-99.

| <b>Season</b> | <b>No. Sites Where Zodiac Landings Occurred for First Time</b> | <b>% of All Peninsula Area Sites With Zodiac Landings that Season</b> |
|---------------|--|---|
| 1989-90       | 35   | 100.0%  |
| 1990-91       | 7  | 21.9%   |
| 1991-92       | 12   | 27.3%   |
| 1992-93       | 14   | 28.0%   |
| 1993-94       | 16   | 25.0%   |
| 1994-95       | 21   | 28.0%   |
| 1995-96       | 19   | 26.8%   |
| 1996-97       | 18   | 22.2%   |
| 1997-98       | 11   | 15.5%   |
| 1998-99       | 12   | 14.1%   |

From: Naveen 1999

Setting aside the 35 Zodiac landings in the 1989-90 “base” year, the number of new landing sites added for the period 1990-94 increases annually with an average for this first four-year period of 12 new sites per year. The average number of new landing sites added per year for the second five-year period, 1994-1999, is 16 sites. However, during this second five-year period, the actual numbers decrease from an all-time high of 21 new sites to the previous four-year period average of 12. Over the total nine-year period (excluding the 1989-1990 base year), there was an increasing trend through the 1994-1995 season then a decreasing trend through 1997-1998; the overall average for the number of new landing sites added for the total nine-year period is 14 sites per year. Not all sites that have had previous landings are visited each year.

During the 10-year period, 1989-99, the geographical distribution of Zodiac landings was relatively consistent. The most landings were in the South Shetland Islands (43%) and the northwest Peninsula area (36%), with less in the southwest Peninsula area (about 10%) and the northeast Peninsula area (about 7-8%) (Naveen et al 2001).

Many Peninsula area sites are visited by Zodiac landings only once a season. On average, for the 10-year period 1989-99, this occurred at about 31% of the visited Peninsula area sites; during the first five-year period, this occurred on average at about 29% of the visited sites, and for the second five-year period, this increased somewhat to about 34% of the visited sites (Naveen 1999).

Zodiac visits in the Peninsula area are attracted to sites with features such as a high to medium fauna and flora diversity and to sites where resident fauna and flora are easily accessed by Zodiac-landed visitors. Further, during the peak of the tourist season, certain sites are likely to have Zodiac landings by more than one tour ship in a single day (Naveen et al 2001).

Tour operators have also reported on activities other than landings in the Antarctic Peninsula area. These are listed in Appendix 17 and include: Zodiac tours without landings (28 locations), helicopter landings (two sites) and helicopter overflights (three sites), snorkeling and scuba activities (seven sites), and ice walking (one site) (Naveen 1999).<sup>75</sup>

### 3.13.3. Summary of the 1999-2000 ‘Millennium’ Season

The 1999-2000 austral season set records for the number of tourists and the number of large tour vessels. In addition to the usual ship-based and land-based expeditions, the season also included some unique, and first-time, activities.

For the 1999-2000 season, Argentina’s Tourism Board of Terra del Fuego anticipated 114 voyages from the Port of Ushuaia by 19 tour vessels with total passenger capacity in excess of 13,700 for departures and 12,500 for arrivals as compared to 93 voyages by 14 tour vessels with a total of 9,139 Antarctic passengers for the 1998-99 season (XXII ATCM IP/116 1998). These figures represent increases of 22% in the number of voyages, 36% in the number of tour vessels, and 37% in the number of passengers, respectively.<sup>76</sup> The ‘millennium factor’ may have contributed to some of this increase.<sup>77</sup>

Three vessels conducted five voyages to the Ross Sea region with a combined passenger capacity of about 770. Due to ice conditions, less than a third of the passengers were estimated to have gone ashore. The ships and operators included: *Kapitan Khlebnikov* (Quark and Zegrahm

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<sup>75</sup> Ship-based tour operators do not normally include camping as part of their expeditions. However, the operator reports for the 10-year period, 1989-1999, include camping activities at seven sites. These may have been included in reports submitted by yacht operators.

<sup>76</sup> Argentina’s Tourism Board of Terra del Fuego (TBTF) estimates that almost 50,000 Antarctic tourists, or 83% of all Antarctic ship-borne tourists, have passed through Ushuaia in the past seven years. TBTF reports the average ship passenger loading on voyages from Ushuaia over the last seven years has been around 82% (78% in 1998-99). IAATO estimates similar loadings for the 1999-2000 season indicating that between 10,200 and 11,300 passengers will pass through Ushuaia in 1999-2000. The ship-load factor would need to fall to about 70% if the 1998-99 numbers are not to be exceeded (ANAN-5/02 Sep. 29, 1999).

<sup>77</sup> Argentina’s Tourism Board of Terra del Fuego in Ushuaia indicated that over 3,000 people, including 2,400 tourists and 700 crew, celebrated the Millennium New Years onboard some 16 tour vessels in the Peninsula Area. In the Ross Sea area, about 100 tourists were onboard a single ship, and an overflight carried 373 passengers and crew. In the interior of the continent, nearly 100 people were engaged in various nongovernmental activities through expeditions organized by ANI or the ‘Millennium Expedition.’ (ANAN-12/01 Jan. 5, 2000)

Expeditions, U.S., two voyages); *Akademic Shokalskiy* (Heritage Expeditions, New Zealand, two voyages); and *Marco Polo* (Orient Lines, U.S., one voyage). The *Marco Polo* included the Ross Sea region as part of a semi-circumnavigation of the continent (Biggs Feb. 2, 2000 and Landau 2001).<sup>78</sup>

The record number of nongovernmental ships, yachts and aircraft supported a wide range of tourist and adventure-related activities including: general sightseeing, shore visits, wildlife watching, running,<sup>79</sup> camping, trekking, climbing, skiing, snowboarding, kayaking,<sup>80</sup> wind surfing, overflights, wintering over,<sup>81</sup> and for the first time, SCUBA diving<sup>82</sup> and an organized reconnaissance of surfing locations.<sup>83</sup> In addition, Oceanites continued with its nongovernmental research in the Peninsula area<sup>84</sup> (Oceanites IEE 1999), and Greenpeace International continued its whaling- and fishing-related (ANAN-19/08 Apr. 12, 2000) activities (ANAN-17/01 Mar. 15, 2000; ANAN-10/05 Dec. 8, 1999; and ANAN-18/04 Mar. 29, 2000).

For the ship-based expeditions, as with previous seasons, an estimated 95% of the 1999-2000 voyages originated from Ushuaia and operated in the Peninsula area with the remainder from New Zealand and Australia to the Ross Sea area. No tourist voyages occurred in the Indian Ocean or East Antarctic sector. Of the 153 ship and yacht voyages in the 1999-2000 season, 148 voyages visited the Peninsula area, four visited the Ross Sea area, and one voyage (on the *Marco Polo*) included both the Peninsula and Ross Sea areas (IAATO SATCM/IP 33 2000). At least 17-18 vessels were

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<sup>78</sup> The *Lyubov Orlova* (Marine Expeditions, Canada) was scheduled for one voyage to the Peninsula and Ross Sea areas, but this voyage was canceled (Landau 2001).

<sup>79</sup> Marine Expeditions, Inc., (Canada) organized the 4<sup>th</sup> Antarctic Marathon and half-Marathon on King George Island; about 100 persons participated (ANAN-18/03 Mar. 29, 2000).

<sup>80</sup> Aurora Expeditions (Australia) offered sea kayaking on two of its Peninsula Area expeditions; only 6-10 of the passengers participated in this activity (ANAN-9/04 Nov. 24, 1999)

<sup>81</sup> McIntyre Marine (Australia) has a small overwintering facility at Commonwealth Bay, George V Land. Two Australians spent the year at the facility. An Australian also wintered on his yacht at Port Lockroy. From: “‘Spirit of Sydney’ to Depart for Commonwealth Bay.” (ANAN-10/06 Dec. 8, 1999 and ANAN-11/13 Dec. 22, 1999).

<sup>82</sup> Aurora Expeditions (Australia) offered SCUBA diving for tourists for the first time during the 1998-1999 season. Twenty-four people participated during an expedition to the Peninsula Area. (ANAN-8/08 Nov. 10, 1999).

<sup>83</sup> Jeremy Poncet (UK/Falkland Islands) organized an expedition aboard the yacht, *Golden Fleece*, for eight surfers affiliated with the U.S.-based Surfer’s Medical Association. The group found good surfing conditions at only two locations in the Peninsula Area, Harmony Point and Low Island (ANAN-21/03 May 10, 2000).

<sup>84</sup> The U.S.-based Oceanites completed its sixth season of the Site Inventory Project (see: Section 3.11) with continued collection of baseline data at tourist landing sites in the Peninsula Area.

scheduled to be in the Peninsula Area for the ‘Millennium’ New Year celebration (ANAN-7/02 Oct. 27, 1999).

Of the 19 Antarctic tour vessels operating out of Ushuaia during 1999-2000, eight carried 100 passengers or less; seven carried between 101-299 passengers; and four large ships carried over 300 passengers, the most ‘large’ vessels to tour Antarctic waters in a single season. The four large ships included: the Canadian-based World Cruise Company’s *Aegean I* and *Ocean Explorer I*; HALW’s *Rotterdam*; and Orient Line’s *Marco Polo*. The first three of these large ships were on world cruises and used Ushuaia as the staging port for the Antarctic leg of their voyages.

The activities of the IAATO-member small vessel operators, including the U.S.-based operators, were typical of those of previous seasons (see Section 3.8). For the large vessels, U.S.-based Orient Lines operated the *Marco Polo* in Antarctic waters as it has for several seasons (see Section 3.9.1). U.S.-based HALW’s operation of the *Rotterdam*, the largest tour vessel to ever traverse Antarctic waters, was unique in that this was the first Antarctic voyage for the vessel, and the activities involved cruising only with no passengers going ashore (see Section 3.9.2). The Canadian-based World Cruise Company’s four expeditions were the first with its two vessels. The expedition activities included a total of four passenger landings of about 1,800 total passengers at two locations in the Peninsula area. In a unique tour operator undertaking in Antarctic waters, the *Ocean Explorer I* met at Deception Island with three vessels of sister company and IAATO-member Marine Expeditions and undertook a passenger transfer of some of the passengers, with the *Ocean Explorer I* returning to Ushuaia and the three smaller vessels continuing with touring in the Peninsula area (ANAN-17/07 Mar. 15, 2000).<sup>85</sup>

The continental expeditions and activities were supported primarily by ANI but also included the activities associated with the one-time Russian-based ‘Millennium Expedition.’ These expeditions resulted in a record number of persons with activities originating at Patriot Hills and with an estimated 80 to 90 tourists and adventurers arriving at the South Geographic Pole, the busiest season of nongovernmental activity ever at the Pole. Activities associated with ANI-sponsored continental expeditions were typical of its operations (see Section 3.10) and included: mountaineering, snowboarding, skiing, wildlife visits including visits to Emperor penguin colonies along the coast of the Weddell Sea, meteorite collecting,<sup>86</sup> various solo and small group traverses to the South Geographic Pole and beyond, and flights to the South Geographic Pole. ‘Millennium Expedition’

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<sup>85</sup> The World Cruise Company contracted with IAATO-member Marine Expeditions and employed the process used by IAATO-member operators during the passenger landings (World Cruise Co. IEE 1999). Both companies have filed for bankruptcy; their future status as Antarctic tour operators is unknown.

<sup>86</sup> ANI organized a meteorite collection project and visit to the South Geographic Pole for the Planetary Studies Foundation, a U.S.-based private, non-profit educational organization established in 1989, whose aim is to involve students in the study of planetary science and astronomy including direct internet access of its field programs. Most of the Foundation’s 200 members are from the U.S. with others from Australia, Canada, France, Germany, New Zealand and the United Kingdom. (ANAN-18/04 Mar. 29, 2000).

activities at Patriot Hills and the South Geographic Pole included: sky diving by 32 persons, ‘snow bug’ vehicle traverse to the South Geographic Pole by 15 persons, and hot air ballooning in two balloons in the vicinity of the Pole (ANAN-9/01 Nov. 24, 1999; ANAN-18/04 Mar. 29, 2000; ANAN-12/02 Jan. 5, 2000; ANAN-12/03 Jan. 5, 2000; and ANAN-17/01 Mar. 15, 2000).<sup>87</sup>

Qantas Airways Ltd. in conjunction with Croydon Travel Centre (Australia), completed its sixth season of continental overflights with nine flights carrying about 3,400 passengers. Since recommencing this service in the 1994-95 season, about 17,000 passengers have now participated in 52 continental overflights (see Section 3.6). The Chilean airline, La Linea Aerea de la Patagonia (DAP), operated from Punta Arenas, Chile, to King George Island primarily transporting national program personnel and limited cargo. As with previous seasons, DAP offered available seats to tourists providing passengers with an opportunity for an overnight stay at the Presidente Eduardo Frei complex or an extended excursion via yacht or ski-equipped aircraft from Frei to other parts of the Peninsula area (see Section 3.6). Avant operated from Punta Arenas, Chile, offering optional Peninsula area overflight excursions to cruise ship passengers and independent travelers calling at Punta Arenas. At least 22 (of 27 originally scheduled) flights took place each carrying 40-60 passengers and staff. Unique to the 1999-2000 season, four private tourists flew from Punta Arenas, Chile, to Presidente Eduardo Frei Station and from there engaged in overflights of various areas in the Peninsula region (ANAN-7/04 Oct. 27, 1999; ANAN-17/03 Mar. 15, 2000; ANAN-16/05 Mar. 1, 2000; ANAN-12/07 Jan. 5, 2000; and IAATO SATCM/IP 33 2000).<sup>88</sup>

### **3.14. Antarctic Tourism Trends and Out-Year Projections**

#### **3.14.1. Antarctic Tourism Trends Including Ship/Land-Based and Peninsula/Ross Sea Area Tourism**

Antarctic tourism, particularly in the Peninsula area, has been increasing over the past 10 years.<sup>89</sup> The information for the 10-year period, 1989-1999, shows the overall number of visitors to all of Antarctica increased by 407% from 2,460 to 10,013. For the Peninsula area, the number of annual tourists increased 421% from 17,759 to 74,772. During this time, Zodiac landings increased

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<sup>87</sup> Although more than 30 persons planned to traverse to the South Geographic Pole on the snow bugs, only 15 completed this part of the expedition. From: <http://www.newzeal.com/theme/antarctic/mil2000.htm>.

<sup>88</sup> To celebrate the millennium, Qantas was given approval by Australian authorities to use a new overflight route designed to provide passengers on the December 31<sup>st</sup> flight with the opportunity to greet the Year 2000 over the International Date Line high above the Ross Ice Shelf (ANAN-7/04 Oct. 27, 1999).

<sup>89</sup> The National Science Foundation has been compiling information on the numbers of tourists and landings, as reported by the tour operators, beginning with the 1989-90 season.



523% from 164 to 858 with landings made at 165 Peninsula area sites.<sup>90</sup> The 1998-1999 season was the first time there were over 10,000 total visitors to Antarctica, and during the 1999-2000 “Millennium Year” season, a record 14,762 ship-based tourists traveled to Antarctica, up nearly 5,000 from the previous season representing nearly a 50% increase over the numbers reported for the 1998-99 season (IAATO IEE 2000 and IAATO SATCM/IP 33 2000).

Information on Antarctic tourism for the three austral seasons, 1997-98 through 1999-2000, is summarized in Appendix 15.<sup>91</sup> During this period, the number of tourists participating in ship-based expeditions averaged nearly 99%, with land-based expeditions averaging just over 1% of the total Antarctic tourists. The Peninsula area received 95% of the ship-based expeditions and 96% of the tourists, while the Ross Sea area averaged 5% of the expeditions and 4% of the tourists.<sup>92 93</sup>

Some of the record number of Antarctic ship-borne tourists during the 1999-2000 season may be attributable to the ‘millennium factor’ and, as IAATO has suggested, some companies were possibly testing the market with this event (Landau Sep. 25, 1999). However, cruise holidays are reported by the World Tourism Organization to be the fastest growing sector of world tourism (World Tourism Org. 1998), and consistent with this, IAATO projects an overall growth of 11% during the five-year period from 2001-02 to 2004-05 (IAATO IEE 1999).<sup>94</sup> IAATO believes that the economic carrying capacity of the Antarctic tourism market is not known and its forecast is a “best estimate of what ... could happen” (Landau Sep. 25, 1999).<sup>95</sup>

IAATO’s most recent five-year forecast for ship-borne Antarctic tourism is summarized in Appendix 18 (IAATO SATCM/IP 32 2000). IAATO projects 16,000 passengers landing by the 2004-05 season. If IAATO’s passenger projections are reasonable and if ‘actual’ tourist numbers are

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<sup>90</sup> On average, 14 new landing sites are visited per year. However, not all sites that have had previous landings are visited each year.

<sup>91</sup> This represents the time since the Environmental Protection Agency’s interim final rule at 40 CFR Part 8, “Environmental Impact Assessment of Nongovernmental Activities in Antarctica,” was promulgated and has been in effect.

<sup>92</sup> The number of tourists visiting the Ross Sea area has been decreasing over the past three seasons from 8% in 1997-98 to 4% for the 1998-99 season and an estimated 3% for the 1999-2000 season.

<sup>93</sup> During the three-year period 1997-2000, yachts have carried about 1% of the total number of tourists and have averaged 14% of the total voyages in the Peninsula area (see Appendix 14).

<sup>94</sup> IAATO’s projected increase follows an anticipated 4% decrease in tourist numbers from the ‘millennium year’ high of 14,762 to a projected 14,175 for the 2001-02 season.

<sup>95</sup> IAATO reported that all ships and trips for the 1999-2000 season were not full even considering the millennium, and that future oil prices could affect a number of ships and trips due to the great distances ships must travel to reposition to Antarctica (Landau Sep. 25, 1999).

85% of the forecast (as calculated in Appendix 18), then the low forecast projection would be 13,600 passengers landing by the 2004-05 season. Likewise, if IAATO's forecasted 14,175 for the 2000-01 season is reasonable and if the rate of passengers landing increases 8 to 9% per year, then the high forecast projection would be 19,650 passengers landing by the 2004-05 season.

### 3.14.2. Ship-Based Tourism

Ship-based tourism is expected to continue to be conducted primarily by IAATO-member operators aboard small vessels.<sup>96</sup> Since its founding in 1991, IAATO has grown from seven members to 19 Full and Provisional members and 10 Associate members based in 10 countries.<sup>97</sup> Of these, eight are U.S.-based operators, including the three new U.S.-based operators added since the 1997-98 season<sup>98 99</sup> (see Section 3.7). The present IAATO membership represents a 414% increase over nearly a 10-year period. The three new U.S.-based operators represent an increase of 38% in the total number of U.S.-based IAATO-member operators and 16% of the Full/Provisional members of IAATO.

During the three-year period 1997-98 through 1999-2000,<sup>100</sup> U.S.-based operators conducted about 42% of the ship-based Peninsula area expeditions and carried about 54% of the tourists; Orient Lines accounts for about 9% of these expeditions with the *Marco Polo* carrying about 63% of the

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<sup>96</sup> During the 1996-1997 season, all 13 tour vessels were operated by IAATO members, and during the 1998-1999 season, IAATO members operated all but one of the vessels. (IAATO 1997 and IAATO XXIII ATCM 1999).

<sup>97</sup> IAATO Membership Directory 1999-2000 (Landau Jun. 3, 2000).

<sup>98</sup> EPA's Interim Final Rule at 40 CFR Part 8 was in effect for the first time for the 1997-98 austral season.

<sup>99</sup> U.S.-based Expeditions, Inc., became a Provisional (New) Member in 1999, but moved to the Associate Member category when the company did not operate in Antarctica during the 1999-2000 season as planned; U.S.-based Cheesemans' Ecology Safaris became a Provisional member in 2000 and IAATO included the company in the U.S.-based IAATO-member Initial Environmental Evaluation for expeditions for the 2000-2001 season (Landau Jun. 3, 2000; Biggs Jun. 16, 2000; and IAATO IEE 2000).

<sup>100</sup> This represents the time since the Environmental Protection Agency's interim final rule at 40 CFR Part 8, "Environmental Impact Assessment of Nongovernmental Activities in Antarctica," was promulgated and has been in effect.

tourists on these expeditions (see Appendix 14).<sup>101</sup> U.S.-based operators are likely to continue to be 40% to 50% of the IAATO membership and to carry 50% or more of the U.S. citizen tourists.

IAATO members, including U.S.-based members, are projected to continue at approximately the same levels as the 2000-01 season for the next five years (IAATO IEE 2000).<sup>102</sup> Thus, any significant increases in the number of voyages and passengers in the out-years would likely be due to one or more new large vessel operators entering the market and/or increases in the number of large vessel (e.g., the *Marco Polo* or a comparable vessel) expeditions by operators already in the Antarctic tour market.<sup>103</sup> However, significant increases could also occur if additional new small vessel operators<sup>104</sup> enter the market and offer multiple annual expeditions, or if current IAATO-member operators increase their annual operations. Although yachts carry only about 1-2% of the total ship-borne passengers,<sup>105</sup> the number of yachts carrying passengers to Antarctica is expected to increase in the out-years, particularly in support of land-based adventure tours in the Peninsula area.<sup>106</sup>

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<sup>101</sup> Clipper Cruise Line and Special Expeditions (as of 2000, renamed Lindblad Expeditions) initiated expeditions during the 1998-99 season. Expeditions, Inc., had planned to initiate expeditions during the 1999-2000 season but did not. Cheesemans' Ecology Safaris did not operate expeditions to Antarctica during 1999-2000 but plans to initiate operations in the 2000-2001 season. All four companies are members of IAATO. The *Rotterdam* (HALW) which sailed through Peninsula area waters during the 1999-2000 season is not included in the figures since the ship cruised only without landing any passengers.

<sup>102</sup> It is likely that U.S.-based small vessel operators will continue to enter the market as IAATO members with expeditions to the Peninsula area. However, this may occur as more IAATO Associate Members move to Provisional and Full Member status. For example, for the 2000-01 season, IAATO identified two new operators. Both were previously Associate Members and had booked tourists on other IAATO-member expeditions and vessels. Both operators plan to continue to charter on other IAATO-member's vessels but they are now Provisional IAATO Members and are the recognized organizers for their expeditions for purposes of EPA's Interim Final Rule at 40 CFR Part 8.

<sup>103</sup> Regarding large cruise vessels, the IAATO Bylaws include a provision that members not carry more than 400 passengers per trip. IAATO is currently considering membership options for large vessel operators that would bind them to the operational provisions of IAATO members (IAATO SATCM/IP 32 2000).

<sup>104</sup> E.g., operators other than those moving from IAATO Associate Member to Provisional/Full Members status.

<sup>105</sup> During the 1999-2000 season, yachts were estimated to carry about 235, or 1.6%, of the total 14,762 ship-borne passengers.(IAATO SATCM/IP 32 2000).

<sup>106</sup> The number of yachts visiting Antarctica has increased steadily since the early 1970s with yachts increasingly taking fare-paying passengers; many commercial yacht operators are not IAATO members. IAATO has made an effort to reach out to yacht owners and operators and to encourage IAATO membership. Two operators are IAATO members and several others are now attending IAATO's annual operators' meeting (United Kingdom ATCM/IP1 1998 and IAATO XXIII ATCM 1999).

Substantial out-year growth in Antarctic tourism could be related to an increase in the number of large vessel expeditions. According to IAATO, large cruise vessels have not regularly visited Antarctica since the 1970s when the *Regina Prima*, *Cabo San Roque* and *Cabo San Vincente* made a number of voyages, each with more than 800 passengers aboard. In 1992-93, the *Sagafford* included a cruise-only visit to the South Shetlands as part of an around the world voyage, and in 1994-95, the *Europa* sailed to Antarctica with 841 passengers (IAATO XXIII ATCM 1999). The 1999-2000 season is the first since these that several large vessels have cruised Antarctic waters. During the 1999-2000 season, the *Marco Polo* (which regularly operates in Antarctica) was joined by the World Cruise Company's *Ocean Explorer I* and *Aegean I* and HALW's *Rotterdam*. The *Marco Polo* conducted four cruises and carried about 500 passengers with 300 crew/staff per voyage. The *Ocean Explorer I* (similar in size to the *Marco Polo*) conducted two cruises and carried an average 425 passengers with 335 crew/staff per voyage, and the *Aegean I* (slightly smaller sized) conducted two cruises and carried an average 225 passengers with 290 crew/staff per voyage.<sup>107</sup> The *Rotterdam* carried a record of nearly 1000 passengers with crew/staff of 600 on its single voyage (Orient Lines IEE 1999; World Cruise Co. IEE 1999; ANAN-11/03 Dec. 22, 1999; IAATO ATCM XXIII 1999; and ANAN-17/07 Mar. 15, 2000).

U.S.-based Orient Lines has operated the *Marco Polo* in both the Peninsula and Ross Sea areas of Antarctica since 1992-93. However, beginning with the 2000-2001 season, Orient Lines has eliminated its semi-circumnavigation cruise from the Peninsula area to the Ross Sea and replaced this with an additional cruise to the Peninsula area for a total of six voyages to the Peninsula area.<sup>108</sup> The planned itineraries will be similar to previous Peninsula area cruises (see Section 3.9.1) (Orient Lines IEE 2000).<sup>109</sup> As a result of this shift, *Marco Polo* passengers will no longer visit and land in the Ross Sea area, but an additional load of about 500 passengers will be landed at certain Peninsula area sites.

U.S.-based HALW does not plan to operate the *Rotterdam* or any of its other cruise vessels in Antarctica during the 2000-2001 season (ANAN-19/02 Apr. 12, 2000). However, during the 2001-2002 season, HALW does plan to include cruising in Antarctic waters as part of the two world cruises of the *Ryndam*. Each cruise would carry up to 1,200 passengers and 560 crew. The plans for the Antarctic legs of these world cruises are the same as those of the *Rotterdam's* 1999-2000

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<sup>107</sup> The *Ocean Explorer I* anticipated carrying about 1,100 passengers on each of its two voyages but carried about 850 total passengers; the *Aegean I* anticipated carrying about 1,000 passengers on each of its two voyages but carried about 450 total passengers.

<sup>108</sup> U.S.-based Quark Expeditions (*Kapitan Khlebnikov*) and New Zealand-based Heritage Expeditions (*Akademik Shokalskiy*) are expected to continue to operate in the Ross Sea area. The German-based operator, Hapag-Lloyd (*Bremen*) has operated in the Ross Sea area during previous seasons and plans to operate in this area again during the 2000-2001 season.

<sup>109</sup> Three of the four planned landing sites remain in the top eight ranked sites for both the number of landings and the number of annual visitors (see Section 3.13.2).

season expedition, a 72-hour cruise in the Peninsula area with no landings (see Section 3.9.2) (HALW IEE 2000).

In future years, the World Cruise Company had planned to conduct one annual tourist expedition to Antarctica with a single 500-passenger vessel. However, the company has entered bankruptcy and its status with regard to future Antarctic expeditions is uncertain. Without this company's operations, the only large vessel operating in the Antarctic Peninsula area during the 2000-2001 season will be the *Marco Polo* (World Cruise Co. IEE 1999; ANAN-23/03 Jun. 7, 2000; and Biggs Jun. 16, 2000).

In the out-years, it is possible that at least one additional U.S.-based large vessel operator could enter the Antarctic tourism market.<sup>110 111</sup>

During the 1999-2000 season, sister Canadian operators World Cruise Company and Marine Expeditions implemented a unique passenger transfer operation. The companies coordinated logistics for 10 voyages involving five vessels and several thousand passengers over a two-week period in order to move tourists to the Peninsula area and subsequently exchange passengers between the large and small vessels while in the Peninsula area (ANAN-17/07 Mar. 15, 2000 and Biggs Jun. 16, 2000). Two elements of this operation bear consideration for out-year tourism projections. First, the new airport at Ushuaia can now handle the number of larger aircraft and flights that makes it possible to bring the numbers of passengers into Ushuaia that are needed to economically fill several large tour vessels. Further, a passenger transfer operation in the Peninsula area, such as the one by World Cruise Company and Marine Expeditions, provides the opportunity to transport larger numbers of passengers across the Drake Passage to several smaller vessels already in the area. This represents savings in terms of both fuel costs<sup>112</sup> and time<sup>113</sup> and thus provides opportunity for a larger number of passengers to economically tour the various Peninsula area landing sites.<sup>114</sup>

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<sup>110</sup> U.S.-based Crystal Cruises has discussed with EPA its plan to include cruising in Antarctic waters as part of its 2001-02 world cruise. As tentatively planned, this large-vessel expedition would be similar to HALW's and would include cruising only without passenger landings.

<sup>111</sup> Norwegian Cruise Lines, the parent of Orient Lines which operates the *Marco Polo*, is the subject of a take-over bid by the U.S.-based Carnival Cruise Lines, the world's largest cruise ship owner. The large world-wide Swiss travel group, Kuoni Travel Holding Limited of Zurich, has purchased the parent company of the U.S.-based Clipper Cruise Line (ANAN-14/06 Feb. 2, 2000).

<sup>112</sup> IAATO reported that future oil prices could effect a number of ships and trips due to the great distances ships must travel to reposition to Antarctica (Landau Sep. 25, 1999).

<sup>113</sup> E.g., the number of days required for the smaller vessels to round-trip the Drake Passage.

<sup>114</sup> This process may also provide some degree of comfort for the passengers since crossing the Drake Passage in a larger vessel could allow for a smoother voyage.

Although no U.S.-based operators have indicated plans to participate in similar operations, it is conceivable that such operations could be economically viable to U.S. operators in the future.

With regard to small vessel operators, the U.S.-based IAATO Provisional member, Expeditions, Inc., had intended to operate tours in the Peninsula area during the 1999-2000 season but did not.<sup>115</sup> It is likely that Expeditions, Inc., will operate Peninsula area tours as an IAATO Provisional or Full member in the future. U.S.-based Cheesemans' Ecology Safaries joined IAATO as a Provisional member in 2000. The company has previously booked tours through Canadian-based Marine Expeditions but now plans to organize expeditions to Antarctica beginning with the 2000-2001 season (IAATO IEE 2000).

Polar Star Expeditions/Karlsen Shipping of Halifax, Nova Scotia, Canada, plans to initiate Peninsula area tourism with the *Polar Star*, with about 90 passengers and 40 crew/staff, beginning with the 2001-2002 season. The company plans to operate nine voyages. Polar Star Expeditions is currently an IAATO Member (Landau 2001 and Biggs 2001).

McIntyre Marine (Australia) has operated in Antarctica since the mid-1990s and now plans to expand its operations in conjunction with its sister Australian organization, Ocean Frontiers. Vessels to be operated include the *Sir Hubert Hilkins* and five yachts which are intended to support adventure tours beginning in 2002-2003. The *Sir Hubert Hilkins* has a 20-passenger capacity and carries a single helicopter; long-term plans include operation of a small submarine from the vessel. The companies' planned expedition activities include: educational programs, film expeditions, scientific research, environmental monitoring and private ventures. Currently, Ocean Frontiers (Australia) is an IAATO member (ANAN -21/01 May 10, 2000, and Landau 2001).

An Australian ship builder, Oceanfast, plans to begin construction on the "Norman Expedition Yacht" series during 2000 with commissioning of the first yacht, *Aussie Rules*, expected in 2002. Expeditions to Antarctic waters are planned but details are not yet available about the expeditions' operator(s), the types of activities, or the number of yachts to be produced. The *Aussie Rules* will accommodate up to 12 passengers with 14 crew. The yacht will carry a boat for offloading and other water craft including tenders and submersibles; a decompression chamber will also be onboard (ANAN-22/04 May 24, 2000).

A slow increase is projected for the out-years for the small vessel operators. The number of Full and Provisional IAATO members has increased from 7 to 19, an increase of about one to two members per year since its founding in 1991. Since 1998, four of the new IAATO members have been U.S.-based. This increasing trend in the number of small vessel operators may continue as long as there is growth potential for the Antarctic niche of the growing overall world cruise market. Alternately, rising costs (especially fuel) and a stabilization of the passenger base to about 10,000 per

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<sup>115</sup> Expeditions, Inc., became an Associate member of IAATO when it was unable to complete charter arrangements for a vessel for its planned 1999-2000 expeditions (Landau Jun. 3, 2000).

year would likely limit the number of new small vessel operators entering the market. The number of small vessel operators could even decrease if the present operators become more economically competitive and secured 90-100% of the vessel capacity or if large vessels, such as the *Marco Polo*, capture more of the market.

Yacht expeditions in Antarctica are projected to increase in the out-years. Though typically carrying fewer passengers than the small vessels,<sup>116</sup> yachts are increasingly being used to support adventure tourism in both the Peninsula and Ross Sea areas. Currently, there are no U.S.-based yacht operators, but this is not precluded if market demand supports increases in yacht-based tourism.

The typical activities associated with small vessel Antarctic tourism are expected to continue. In addition, other somewhat unique small vessel and yacht-based activities are also likely to continue. IAATO-member Aurora Expeditions (Australia) will probably continue to offer SCUBA diving and kayaking, and the U.S.-based operator, Lindblad Special Expeditions, also plans to offer SCUBA diving and kayaking beginning with the 2000-2001 season (Biggs Jul. 19 2000). Because of the special equipment and preparations required for these activities and the limited interest and participation, it is not anticipated that other operators will offer these activities in the near future. Yacht-based surfing expeditions may continue, but since good surfing conditions were found at only two locations in the Peninsula area, the number of participants in this activity will likely remain very limited.

### **3.14.3. Continental and Other Adventure Tourism**

In addition to the usual Antarctic continental touring, adventure and trekking expeditions and activities, the number of participants in certain adventure activities is likely to increase in the out-years along with the types of activities offered.

Mountaineering activity in Antarctica has increased particularly over the past two seasons.<sup>117</sup> Climbers may be recognizing the potential for mountaineering in the Antarctic in both the continental and Peninsula areas, particularly as Internet publicity associated with reconnaissance expeditions generates interest in the range of opportunities commercially available. Mountaineering reconnaissance supported by ANI (including one small group of U.S. citizens) has been underway in the Queen Maud Land and Peninsula areas (ANAN-19/06 Apr. 12, 2000; ANAN-17/02 Mar. 15,

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<sup>116</sup> IAATO-member, Pelagic Expeditions, operates the six-passenger *S/Y Pelagic*. For the 1999-2000 season, 16 yachts carried an average of nine passengers on 22 voyages (IAATO SATCM/IP 33 2000).

<sup>117</sup> During the 1999-2000 season, the number of ascents of Vinson Massif were expected to pass 500. The summit was first reached on December 18, 1966, and since then, over 80% of the climbs have been undertaken in the past decade. From about 1985-1990, between 5 and 20 people made the ascent each year, but in the 1990s, this rose to 40-60 ascents per year. Of the estimated 485 individual ascents, all but about 35 reached Antarctica and were supported by ANI (ANAN-19/06 Apr. 12, 2000).

2000; ANAN-16/01 Mar. 1, 2000; ANAN-19/09 Apr. 12, 2000; and ANAN-21/09 May 10, 2000).<sup>118</sup> Adventure Consultants (Australia), has used ANI for its continental climbing expeditions for the past 10 seasons. For the 2000-2001 season, the company plans to offer mountaineering and/or skiing trips to the Peninsula area via ship, with the program's support ship stationed offshore of climbing areas to act as a mobile base camp for those in the field (ANPN-1/2 Aug. 4, 1999). During the 1999-2000 season, High Jinx (Australia) operated a climbing expedition in the Peninsula area, and plans to market two yacht-based expeditions to the Peninsula area in the 2000-2001 season aimed at mountaineering, skiing, and general sightseeing (ANAN-21/09 May 10, 2000).<sup>119</sup> Mountaineering/skiing expeditions generally involve 10 or less participants, thus it is most likely that yachts will be the Peninsula area support vessel for these expeditions.

Heritage Expeditions (New Zealand) is exploring plans to use all-terrain vehicles (ATVs) for ship-shore passenger transport in the Ross Sea area to improve opportunities for delivering tourists to such locations as McMurdo Station, Scott Base, and Capes Royds and Evans, and to land passengers to within walking distance of the Lower Taylor Valley, one of the Dry Valleys (ANAN-17/04 Mar. 15, 2000).<sup>120</sup> Currently, all nongovernmental visits to the Dry Valleys are made using helicopters from the *Kapitan Khlebnikov*. The U.S.-based operators with Ross Sea area tours, have not indicated their interest or intent to similarly use ATVs, but this could be possible in the future. If ATVs prove to be practical and cost-effective for transporting tourists to the Dry Valleys, this could potentially increase the number of visitors to this area.

Polar Sky Diving Ltd. (PSD), was formed in the United Kingdom in 1999 as a sister operation to Adventure Network International. PSD plans to offer sky diving opportunities at both the South and North Geographic Poles. For the Antarctic operations, air transportation and logistics will be provided by ANI.<sup>121</sup> Although there was insufficient interest for the 1999-2000 season, the company plans to continue to offer such opportunities to select groups of experienced skydivers (ANPN-1/1 Aug. 4, 1999 and ANAN-11/14 Dec. 22, 1999).

McIntyre Marine (Australia) will likely continue to offer the opportunity to winter over at its small overwintering facility at Commonwealth Bay, George V Land, and it is conceivable that

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<sup>118</sup> Activities occurred on King George Island, adjacent to Cuverville Island, Paradise Bay area, Neko Harbor, and near Port Lockroy on Weincke Island. From: Mountain Zone at: <http://www.mountainzone.com/ski/2000/peninsula/dispatches.html>.

<sup>119</sup> High Jinx has affiliated with several of the yachts operating in the Peninsula area for a number of years. (ANAN-21/09 May 10, 2000).

<sup>120</sup> ATVs have been used at New Zealand's Scott Base since 1998. Other national programs have used them with mixed success. New Zealand requires its tour operators to comply with the Dry Valleys Code of Conduct which requires that ground vehicles be restricted to ice and snow areas (ANAN-17/04 Mar. 15, 2000).

<sup>121</sup> ANI provided operational support for a previous sky diving expedition (see Section 3.10).



individuals may also attempt their own wintering over expeditions (e.g., Australian Trevor Robertson at Port Lockroy). However, the number of wintering over participants has been extremely limited and this is not expected to change in the out-years.

With regard to one-time expeditions by U.S.-based operators, Base Camp Promotions organized a 2000-2001 expedition for a U.S./Norwegian two-woman team to trek across the continent, the first such journey by an all-woman team (Base Camp Promotions IEE 2000). This is the second U.S.-based one-time expedition during the past three seasons.<sup>122 123</sup> One-time expeditions by U.S.-based operators are likely to continue to occur occasionally.<sup>124</sup>

#### **3.14.4. Overflights and Other Air Operations**

Qantas Airways Ltd. in conjunction with Croydon Travel Centre (Australia) has offered overflights of the continent every year since 1994-1995. Six flights were offered in 1994-1995 with this increasing to nine in 1995-1996; nine flights were undertaken in 1999-2000. The number of passengers has increased by about 500 between the 1995-1996 and 1999-2000 seasons, with passenger loads increasing from about 330 per flight in the second season to nearly 390 per flight in 1999-2000. Through the 1999-2000 season, 52 flights have carried about 17,500 passengers. This level of activity is expected to continue by this operator in this area (Australia XX ATCM/INF 34 1996; ANAN-7/04 Oct. 27, 1999; and ANAN-16/05 Mar. 1, 2000).

Over the past decade, DAP<sup>125</sup> has carried an estimated 150 tourists on available seats on its national program supply flights from Chile to the Presidente Eduardo Frei station on King George Island. DAP has indicated it is considering expanding its small party operations in the Peninsula area, possibly in conjunction with yacht-based excursions, and potentially to Patriot Hills (where the Chilean national program has been operating in recent years) in conjunction with continental touring, and adventure and trekking expeditions (ANAN-17/03 Mar. 15, 2000).<sup>126</sup> However, unless

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<sup>122</sup> See: White Mountain Films, Section 3.12.2.

<sup>123</sup> This covers the time period that EPA's Interim Final Rule at 40 CFR Part 8 has been in effect; e.g., the 1997-98, 1998-99, 1999-2000, and 2000-2001 austral summer seasons.

<sup>124</sup> UK-based ANI is the operator for nearly all of the trekking expeditions, including those with U.S. citizens, and, because of the equipment and logistics involved, ANI is expected to continue to serve as the operator for most or all of these expeditions.

<sup>125</sup> The Chilean regional air line, La Linea Aerea de la Patagonia.

<sup>126</sup> Weather is the primary factor for flight operations to both the Peninsula area and the continent impacting both take off and landings. Should air navigation systems improve to allow take offs and landings to proceed in what is now unacceptable weather conditions, more reliable flight schedule service could be developed (ANAN-17/03 Mar. 15, 2000).

‘scheduled’ flights can be established, DAP will likely carry only a limited number of passengers annually under its proposed expanded flight operations.

An Australian businessman, in conjunction with McIntyre Marine (Australian), has expressed interest in establishing a blue ice runway facility and base camp on Rennick Glacier in Victoria Land. Reconnaissance and field surveys are planned for coastal regions of the George V. Oates and northern Victoria Lands areas during the 2000-01 season (ANAN-21/01 May 10, 2000).<sup>127</sup> If successful, these air operations could increase adventure tourism in this continental area.

Currently, there are no U.S.-based airline operators in Antarctica, nor are any projected to enter the market.

### **3.14.5. Nongovernmental Research and Greenpeace International**

The U.S.-based Oceanites completed its sixth season of the Site Inventory Project with continued collection of baseline data at tourist landing sites in the Peninsula area (see Section 3.11). Out-year projections are that Oceanites will continue its tourism-related research in the Peninsula area as long as it continues to receive private and/or government funding support.

As discussed in Section 3.12.1, Greenpeace International continued its nongovernmental expeditions during the 1999-2000 season by harassing whaling and fishing operations in the Southern Ocean. Greenpeace has indicated its plans to continue these expeditions as long as whaling and illegal fishing occur in the Southern Ocean.

During the 1999-2000 season, the Australian Oceanic Research Foundation undertook initial field work to examine the feasibility of recovering three anchors lost overboard from the historic expedition vessel, *Aurora*,<sup>128</sup> and the Australian Mawson’s Hut Foundation was working on plans to complete restoration work on Sir Douglas Mawson’s 1911-14 expedition hut at Cape Denison (ANAN-21/02 May 10, 2000 and ANAN-21/05 May 10, 2000). It is conceivable that these projects, and nongovernmental projects similar to them, will occur in the out-years, though none are anticipated as U.S.-based nongovernmental expeditions.

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<sup>127</sup> According to the proceedings from a series of workshops on the use of blue ice runways in Antarctica, East Antarctica is a prime candidate, not only because of commercial tourism potential, but also as an operational support hub for several different nations’ research stations in that region. Specifically, an Australian businessman has publically expressed interest in a runway and base camp (ANAN-21/02 May 10, 2000).

<sup>128</sup> The *Aurora* was lost in 1912 during Mawson’s Australasian Antarctic Expedition.

### 3.14.6. Summary of Out-Year Projections for U.S.-Based Operators

Antarctic tourism is forecasted to increase by about 11% over the next five years with most expeditions to the Peninsula area. These expeditions are expected to continue to be conducted primarily by IAATO-member operators aboard small vessels with 40% to 50% of these being U.S. operators. Although the number of IAATO-member operators is not forecasted to increase over the next five years, including U.S.-based IAATO-member operators, significant tourism increases could occur if additional new small vessel operators enter the market and offer multiple expeditions annually, or if current IAATO-member operators increase their annual operations.

Any significant increase in tourism in the out-years, particularly in the Peninsula area, will likely be due to large vessels entering the market or to increases by a current operator in its annual operations. One new U.S.-based large vessel operator has expressed interest in the Antarctic market; the expedition would likely involve cruising only with no passenger landings.<sup>129</sup> U.S.-based Orient Lines is expected to continue its annual Antarctic program. The company plans for the *Marco Polo* include elimination of its Peninsula area to Ross Sea area semi-circumnavigation with the addition of one Peninsula area cruise for a total of six Peninsula area voyages. To date, U.S.-based HALW's has not established an annual schedule for operation of its very large vessels in Antarctica; the *Rotterdam* operated in 1999-2000, and two cruises are planned for the *Ryndam* in 2001-2002.

With regard to activities and vessel operations, to date, the HALW large vessel voyages involve cruising only with no passenger landings. However, the company had originally proposed using the ship's tenders to put passengers ashore in the Peninsula area and it is possible that the company could plan for this activity in the future. Regarding other large/small vessel operations, the feasibility of transferring passengers between a large vessel and several small vessels already in the Peninsula area was demonstrated during the 1999-2000 season. Such an operation provides a savings of time and fuel costs for the small vessels, and also provides the opportunity for more passengers to tour the various Peninsula area landing sites. It is possible that U.S.-based operators could undertake this type of operation in the out-years.

Yacht expeditions in both the Peninsula and Ross Sea areas are projected to increase in the out-years, particularly in support of land-based adventure expeditions. Though no yacht expeditions are anticipated, it is possible that U.S.-based yacht operators could enter the Antarctic tourism market.

Continental touring, adventure and trekking expeditions are expected to continue to be operated by ANI out of its Patriot Hills base camp. If the proposal to establish a new blue ice runway facility and base camp on Rennick Glacier in Victoria Land is realized, this could increase adventure

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<sup>129</sup> Crystal Cruises has had only preliminary discussions with EPA about its possible plans to enter the Antarctic cruise market.

tourism in this continental area. The out-year projections do not foresee entry of a U.S.-based operator into the continental sector of the Antarctic tourism market.

Currently, there are no U.S.-based airline operators in Antarctica, nor are any projected to enter the market. This out-year projection is based on U.S.-operator access to departure terminals, the limited market associated with either Peninsula or continental overflights, and the difficulties associated with siting and operating a runway and base camp in either the Peninsula or continental areas.

Finally, U.S.-based Oceanites is expected to continue its tourism-related research in the Peninsula area as long as it continues to receive private and/or government funding support.

*Chapter 4: Alternatives for the Final Rule:  
Environmental Impact Assessment of  
Nongovernmental Activities in Antarctica*

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## **Chapter 4. Alternatives for the Final Rule: Environmental Impact Assessment of Nongovernmental Activities in Antarctica**

### **4.1. Introduction**

Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act), amends the Antarctic Conservation Act of 1978, 16 U.S.C. §2401 *et seq.*, to implement the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The Act provides that EPA promulgate regulations to provide for:

... the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty, and

... coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol.

On April 30, 1997, EPA promulgated an Interim Final Rule that establishes requirements for the environmental impact assessment of nongovernmental activities and coordination of the review of information regarding environmental impact assessment received by the United States, as specified above (40 CFR §8.1(a)); the Interim Final Rule is reproduced in Appendix 19.

EPA issued the Interim Final Rule without public notice or an opportunity for public comment.<sup>1</sup> In doing so, EPA stated its plans for public comment in the development of the final regulations.<sup>2</sup> The final rule will be proposed and promulgated in accordance with the provisions of the Administrative Procedure Act (5 U.S.C. §553) which requires notice to the public, description of the substance of the proposed rule and an opportunity for public comment. Further, EPA committed to prepare an EIS to consider the environmental impacts of the proposed rule and alternatives, and that would address the environmental and regulatory issues raised by interested agencies, organizations, groups and individuals (40 CFR Part 8, Preamble I.B). The purpose of this Chapter is to describe and analyze the alternatives for the final rule and the public participation process used in developing these alternatives.

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<sup>1</sup> Although the Act gave EPA two years to promulgate regulations, the U.S. sought immediate ratification of the Protocol which, in turn, required EPA to have regulations in effect contemporaneous with ratification since the regulations provide nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Accordingly, immediate promulgation of the Interim Final Rule was necessary so that the U.S. could ratify the Protocol and implement its obligations under the Protocol as soon as the Protocol entered into force. Because of the importance of facilitating the Protocol's prompt entry into force, EPA believed it had good cause under 5 U.S.C. §553(b)(B) to find that implementation of notice and comment procedures for the Interim Final Rule would be contrary to the public interest and unnecessary (40 CFR Part 8 Preamble I.B).

<sup>2</sup> The Interim Final Rule states in Section 8.1(d) that it will be replaced by a final rule.

## 4.2. Proposed Alternatives for the Final Rule

Based on its experience with the Interim Final Rule and the comments and information received during scoping, EPA has identified five alternatives for the final rule.<sup>3</sup> Alternative 1, the “No Action” Alternative, would propose to promulgate the Interim Final Rule as the final rule. The other four alternatives involve modifications to the Interim Final Rule, and thus Alternative 1. The modifications are based on consideration of the issues raised by EPA and on the comments received on these issues and other information received during scoping. EPA’s preferred alternative is Alternative 2, the Interim Final Rule with certain procedural and administrative modifications. Table 4.1 lists the five proposed alternatives. The proposed alternatives are discussed and analyzed in Section 4.3.

|                |   |
|----------------|---|
| Alternative 1: | No Action Alternative - Promulgate the Interim Final Rule as the final rule                         |
| Alternative 2: | Preferred Alternative - Interim Final Rule with certain procedural and administrative modifications |
| Alternative 3: | Interim Final Rule with modifications beyond those considered to be procedural or administrative    |
| Alternative 4: | "Substantive" rule  |
| Alternative 5: | "Discretionary" rule  |

## 4.3. Process for Delineating the Final Rule Alternatives

EPA relied on the scoping process to identify the significant issues that need detailed analysis and those issues which are not significant (40 CFR §1501.7).<sup>4</sup> As discussed in Section 1.3, EPA conducted two public scoping meetings. Written comments were received from the International Association of Antarctica Tour Operators (IAATO), individual tour operators, The Antarctica Project/Antarctic and Southern Ocean Coalition (TAP/ASOC), the public, and the National Science Foundation. Copies of the letters and written statements received are presented in Appendix 20.

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<sup>3</sup> EPA initially suggested not promulgating a final rule as a No Action Alternative (F.R. 62 No. 90). However, this is not an acceptable alternative because it does not meet the purpose and need to which EPA is responding in proposing the alternatives including the proposed action. EPA is directed by the Act to promulgate such a rule because such regulations are necessary so that the U.S. has the ability to implement its obligations under the Protocol.

<sup>4</sup> Scoping is the early and open process for determining the scope of issues to be addressed in an EIS and for identifying the significant issues related to the proposed action. Significant issues are those to be analyzed in depth in the EIS and issues which are not significant are identified and eliminated from detailed study. (40 CFR Part 1501.7, Scoping) For purposes of developing the alternatives for this EIS, issues are considered significant if EPA received conflicting, negative, or otherwise substantive comment on them, including environmental concerns.

EPA used its experience with the Interim Final Rule and the comments and information received during scoping in developing the alternatives for the final rule.

As part of the scoping process, EPA stated its intent to consider ten specific issues along with any other relevant issues raised by the public (F.R. 62, No. 90). In some cases, EPA for reasons of completeness, addresses issues which the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations be consistent with Annex I to the Protocol with respect to nongovernmental activities. Many of the issues for which the U.S. government does not have authority to implement were raised by the public during scoping.

The ten issues summarized for the initial public scoping meeting are as follows:<sup>5</sup>

1. Time frames for environmental documentation submittal and review;
2. Level of definition of EPA's review criteria;
3. Appropriate monitoring regime, if any;
4. Options for streamlining documentation requirements;
5. Mitigation: what measures and for which activities;
6. Cumulative impacts;
7. Possible "categorical exclusions;"
8. Public comment on IEEs;
9. Reconsideration of the process for review of environmental documents received from other Parties; and
10. Reevaluation of the paperwork projections in the Interim Final Rule.

#### **4.3.1. Scoping Issues and Other Items That Do Not Require Detailed Analysis**

During the scoping process, EPA did not receive conflicting, negative, or otherwise substantive comment on six of the ten above listed issues posed during scoping. Five of these (Items 1, 3, 5, 6 and 9) involve operative provisions in the Interim Final Rule, and Item 10 addresses the accuracy of EPA's estimate of the burden on the operators to comply with the Interim Final Rule as delineated in the Preamble.<sup>6</sup> Table 4.2 correlates these items with their coverage in the Interim Final Rule or its Preamble. These provisions will be carried forth in the five alternatives in the same manner

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<sup>5</sup> Public Scoping Meeting for Draft Environmental Impact Statement in support of Final Rule-Making for "Environmental Impact Assessment of Nongovernmental Activities in Antarctica." EPA. July 8, 1997.

<sup>6</sup> See Appendix 19 for the Interim Final Rule and its Preamble.



they are included in the Interim Final Rule, and because they are not significant they will be retained in the five alternatives without detailed analysis.<sup>7</sup>

| <b>Table 4.2. Scoping Issues That Do Not Need Detailed Analysis and Their Associated Provision in the Interim Final Rule</b>  |   |
|---|---|
| <b>EPA Scoping Issue</b>  | <b>Delineated in 40 CFR Part 8, Section 8.X</b> |
| <b>Scoping Issue 1. Time frames for environmental documentation submittal and review</b>  |   |
| A. Specific schedules for submitting EIA documentation are listed in the Interim Final Rule for each of the three levels of documentation: Preliminary Environmental Review Memorandum (PERM), Initial Environmental Evaluation (IEE), and Comprehensive Environmental Evaluation (CEE)   | 8.6, 8.7, 8.8                                   |
| B. Provision for waiver or modification of deadlines for submitting environmental documentation   | 8.5(b)  |
| <b>Scoping Issue 3. Appropriate monitoring regime, if any</b>   |   |
| [TAP/ASOC noted that as more guidance and information on monitoring is developed under the Antarctic Treaty System, such guidance could be incorporated into the regulations at a later date.]  | 8.7, 8.8, 8.9                                   |
| <b>Scoping Issue 5. Mitigation: what measures and for which activities</b>  |   |
| [The National Science Foundation noted that if an operator preparing an IEE chooses to mitigate and the mitigation reduces the impact from more than minor or transitory to minor or transitory, the operator should be required to follow through with the proposed mitigation; otherwise, to comply with the regulations, the operator's decision would be to prepare a CEE.] | 8.4(a)(7), 8.7, 8.8                             |
| <b>Scoping Issue 6. Cumulative impacts<sup>8</sup></b>  |   |
|   | 8.4, 8.7, 8.8                                   |
| <b>Scoping Issue 9. Reconsider process for review of environmental documents received from other Parties</b>  |   |
|   | 8.12  |
| <b>Scoping Issue 10. Reevaluate paperwork projections in Interim Final Rule</b>   |   |
|   | Preamble, VII                                   |

Under the Interim Final Rule, Section 8.11 provides that it is unlawful for any operator to violate the regulations, and that violators are subject to civil and criminal enforcement proceedings, and penalties, pursuant to the Antarctic Conservation Act. The National Science Foundation is

<sup>7</sup> For the final rule, the general process for determining the burden will remain unchanged even though the estimated burden on the operators will need to be revised to reflect the current number of operators.

<sup>8</sup> E.g., the process for considering cumulative impacts as stated in the Interim Final Rule.

responsible for civil penalties and taking other administrative enforcement actions, and the Department of Justice is responsible for civil and criminal judicial enforcement.<sup>9</sup> EPA did not receive conflicting, negative, or otherwise substantive comment on this provision. Accordingly, this provision will be included in Alternatives 1 through 4 without detailed analysis. It is not a provision of Alternative 5 for reasons discussed in Section 4.4.5 for this Alternative.

During scoping, commentors provided information concerning Antarctic tourism which has a general bearing on the development of a final rule but does not raise issues that need to be analyzed in detail. Appendix 21 lists this information and indicates how it was considered in the development of the alternatives.

Suggestions were also made to EPA during scoping which are beyond the scope of the final rule. These suggestions included producing a film explaining the concept of the Protocol, and preparing recommendations for travelers and scientists on avoiding environmental impacts in Antarctica.<sup>10</sup>

#### **4.3.2. Significant Issues Identified During Scoping That Require Detailed Analysis**

During the scoping process, EPA received conflicting, negative, or otherwise substantive comment on four of the ten above listed issues posed during scoping. Three of these (Items 4, 7, and 8) relate to possible procedural provisions that could be incorporated into the final rule. The fourth, Item 2, involves the potential for provisions that are more than procedural in nature. These issues that require detailed analysis have been grouped into the following three categories:

- A. Issues related to the requirements to be applied to operators and EPA's role in the EIA process for nongovernmental operators.<sup>11</sup>
- B. Issues concerning the scope of the application of the final rule and consideration of other Parties' requirements.

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<sup>9</sup> Enforcement actions may include civil and criminal proceedings, and penalties, pursuant to Sections 7, 8, and 9 of the Antarctic Conservation Act, as amended by the Act; 16 U.S.C. §§2407, 2408, 2409, and 45 CFR part 672.

<sup>10</sup> It should be noted that "Guidance for Visitors to the Antarctic" has been adopted by the ATCM for nongovernmental activities through Recommendation XVIII-1. Also, most U.S.-based tour operators use the video, "Behold Antarctica," produced by the National Science Foundation, and an IAATO-produced slide show to brief passengers.

<sup>11</sup> This category includes issues relevant to EPA Scoping Issue 2: *Level of definition of EPA's review criteria* as list in Section 4.3.

C. Process-oriented issues.<sup>12</sup>

The issues in these three categories are listed in Table 4.3. The considerations associated with them have been proposed as modifications under one or more of the Alternatives, as appropriate. The analysis of the five Alternatives includes an analysis of each of the modifications that would be made to the Interim Final Rule under that Alternative with the modification analyzed in detail under the Alternative where it is first proposed. For each of these issues, Appendix 22 identifies the commentors and summarizes their comments on the issue; the Appendix also lists the requirements, if any, under the Interim Final Rule that are related to the issue.

Alternatives 3 and 4 incorporate modifications related to issues for which the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. Alternative 5 incorporates modifications under which the U.S. government would not be able to ensure that its obligations under the Protocol would be fulfilled. In this case, Alternative 5 would also be inconsistent with the provisions of the Protocol and, thus, contrary to the requirements of the Act. These three Alternatives incorporate modifications related to issues raised during scoping which EPA, for reasons of completeness, addressed. These Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

| <b>Table 4.3. Significant Issues Identified During Scoping</b>   |
|--|
| <b>Category A: Issues related to the requirements to be applied to operators and EPA's role in the EIA process for nongovernmental operators</b>   |
| 1. <u>Article 3 of the Protocol</u> . Consider a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation (see Appendix 23).  |
| 2. <u>Prevention of Activities</u> . Consider preventing an activity from proceeding if the anticipated impacts are determined to be unacceptable.   |
| 3. <u>Requirement for Insurance and Bonding</u> . If substantive provisions cannot be included in the final rule, consider requiring insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause actual environmental harm.   |
| 4. <u>EPA Review and Determination on EIA Documentation</u> . Consider whether EPA should continue to review EIA documentation to determine if it meets the requirements of Article 8 and Annex I of the Protocol the provisions of the rule, and whether the associated enforcement provision should be retained (see Appendix 23). |

<sup>12</sup> This category includes issues relevant to EPA Scoping Issues, as listed in Section 4.3, as follows:  
 Scoping Issue 4: *Options for streamlining documentation requirements*;  
 Scoping Issue 7: *Possible "categorical exclusions;"* and  
 Scoping Issue 8: *Public comment on IEEs*.

| <b>Table 4.3. Significant Issues Identified During Scoping</b>   |
|--|
| 5. <u>Elaboration of Factors to be Considered in the EIA</u> . Consider whether EIA documentation should be required to address compliance with other applicable provisions of the Protocol and relevant U.S. statutes.  |
| 6. <u>New Sites</u> . Consider whether a CEE should be required for planned tourist expeditions to new sites.  |
| <b>Category B: Issues concerning the scope of the application of the final rule and consideration of other Parties' requirements</b>   |
| 1. <u>Definition of Operator</u> . Consider whether the definition of operator should include foreign operators "doing business in the United States" in order to cover foreign-based operators carrying U.S. citizens. If this is not feasible, consider applying the EIA requirements to all U.S. citizens going to Antarctica on nongovernmental expeditions. |
| 2. <u>Reciprocity Provision</u> . Consider an automatic reciprocity provision for environmental documentation prepared for other Parties and submitted by a U.S.-based operator.   |
| <b>Category C: Process-oriented issues</b>   |
| 1. <u>Multi-Year Environmental Impact Assessments (EIA)s</u> . Consider including a provision for multi-year EIAs.   |
| 2. <u>PERMs</u> . Consider eliminating the PERM provision in the Interim Final Rule.   |
| 3. <u>Categorical Exclusions</u> . Consider including a provision for categorical exclusions and categorically exclude Antarctic ship-based tourism conducted according to the "Lindblad Model."   |
| 4. <u>Public Comment on IEEs</u> . Consider requiring a formal public review process for IEEs similar to that provided for CEEs.   |
| 5. <u>Threshold for "More Than a Minor or Transitory Impact."</u> Consider including a definition, or other provision, that would establish a threshold for "more than a minor or transitory impact."  |

#### 4.4. Analysis of the Alternatives for the Final Rule

##### 4.4.1. Alternative 1: No Action Alternative - Promulgate the Interim Final Rule as the Final Rule

Under Alternative 1, the No Action Alternative, EPA would propose to promulgate the Interim Final Rule as the final rule without modification,<sup>13</sup> except for changing the effective date of the rule and making necessary edits including: changing the mailing address to be used for submitting EIA documentation, removing the schedule for CEEs for the 1998-1999 season (Section 8.8(b)(1)), and updating the paperwork projections based on the current number of operators (Preamble VII). As required by the Act, Alternative 1 provides for:

<sup>13</sup> The following elements were raised by EPA as Scoping Issues. However, EPA did not receive significant comment on any of these. Therefore, the associated provisions from the Interim Final Rule, as delineated in Table 4.2, will be carried forth in Alternative 1: Time frames for environmental documentation submittal and review (Scoping Issue 1); Appropriate monitoring regime, if any (Scoping Issue 3); Mitigation: what measures and for which activities (Scoping Issue 5); Cumulative impacts (Scoping Issue 6); Reconsider process for review of environmental documents received from other Parties (Scoping Issue 9); and Reevaluate paperwork projections in Interim Final Rule (Scoping Issue 10; see Preamble).

... the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty, and

... coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol.

Selection of Alternative 1 for proposed promulgation would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. The procedures in Alternative 1 are consistent with and implement the EIA provisions of Article 8 and Annex I to the Protocol.<sup>14</sup>

Alternative 1 would retain the definitions of “operator” and “persons”<sup>15</sup> and the approach in the Interim Final Rule of not applying the requirements of the rule to individual U.S. citizens where the individual is not acting as an operator.<sup>16</sup>

Selection of Alternative 1 would reflect a decision to continue with a procedural rule which does not impose obligations beyond preparation of the EIA documentation and the associated assessment and verification procedures. This alternative retains EPA’s authority with the concurrence of the National Science Foundation to make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations.

Further, Alternative 1 retains the associated enforcement provision that it is unlawful for any operator to violate the regulations.<sup>17</sup> Therefore, even though the Interim Final Rule is procedural, if an operator chooses to mitigate and the planned mitigation measures are the basis for the level of environmental documentation, there is an obligation on the part of the operator to implement the planned mitigation.

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<sup>14</sup> As provided in the Interim Final Rule at Section 8.1(b).

<sup>15</sup> As provided in the Interim Final Rule at Section 8.3.

<sup>16</sup> As provided in the Preamble to the Interim Final Rule in Section II.D.(1). Alternative 1 would also carry forth the provision of the Interim Final Rule at Section 8.2(c) that the final rule would “... not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the Conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*” (See Section 5.4.)

<sup>17</sup> As provided in the Interim Final Rule at Section 8.11.

The Interim Final Rule is consistent with U.S. obligations under Article 8 and Annex 1 of the Protocol. By the time the final rule is promulgated, operators and agencies will have had a total of four seasons to become familiar with its requirements and to determine the “workability” of its requirements (F.R. 63, No. 72). EPA did not receive comment during scoping that the Interim Final Rule is not “workable.”

#### **4.4.2. Alternative 2: Preferred Alternative - Interim Final Rule with Certain Procedural and Administrative Modifications**

Alternative 2, EPA’s preferred alternative, would modify the Interim Final Rule to respond to recommendations made during the scoping process to enhance the EIA process by including changes that would ensure consistency between the governmental and nongovernmental EIA processes and that could reduce the time and cost of the EIA process for the nongovernmental operators. This is the alternative EPA believes would best fulfill its statutory mission and responsibilities giving consideration to (F.R. 46, Pg. 18026):

- The ability to ensure that the U.S. is able to comply with its obligations under the Protocol;
- The need for the regulations to be, as directed by the Act, “consistent with Annex I to the Protocol;”
- The preference to ensure consistency between governmental and nongovernmental EIA processes and regulations;
- The assessment of the environmental and other consequences of the alternatives (see Chapter 5);
- The current voluntary standards of the U.S.-based Antarctic tour industry; and
- Concern that U.S.-based operators continue to do business as U.S. operators and not move their Antarctic business operations to a non-Party country because of any undue burden imposed by the final rule.<sup>18</sup>

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<sup>18</sup> EPA is concerned that the final rule not place undue burden on operators, including small business operators. Should this occur, there is a potential for one or more U.S.-based operators to move their operations to another country, including a country not Party to the Protocol. A move to another country cannot be ruled out given the international nature of the tour industry. Adverse consequences on the Antarctic environment could be created if the final rule has the effect of driving U.S.-based operators to non-Party countries where they would become foreign-based operators. If this were to happen, in most instances there would be no obligation on the part of the operator to comply with the planning processes delineated in Article 8 and Annex I of the Protocol leading to decisions about any activities undertaken in Antarctica.

Under Alternative 2, the following modifications would be incorporated into the Interim Final Rule:<sup>19</sup>

1. Make necessary technical modifications and edits including: changing the effective date of the rule, changing the mailing address to be used for submitting EIA documentation, removing the schedule for CEEs for the 1998-1999 season (Section 8.8(b)(1)), and updating the paperwork projections (Preamble VII).
2. Add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five austral seasons.
3. Add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

As with Alternative 1, Alternative 2 would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. These procedures, including the proposed procedural and administrative modifications, would be consistent with and implement the EIA provisions of Article 8 and Annex I to the Protocol.

Alternative 2 retains the definitions of “operator” and “persons” and the approach in the Interim Final Rule of not applying the requirements of the rule to individual U.S. citizens where the individual is not acting as an operator.<sup>20</sup>

Selection of Alternative 2 for proposed promulgation would reflect a decision to continue with a procedural rule which does not impose obligations beyond preparation of the EIA documentation and the associated assessment and verification procedures. Alternative 2 retains EPA’s authority with the concurrence of the National Science Foundation to make a finding that the

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<sup>19</sup> The following elements were raised by EPA as Scoping Issues. However, EPA did not receive significant comment on any of these. Therefore, the associated provisions from the Interim Final Rule, as delineated in Table 4.2, will be carried forth in Alternative 2: Time frames for environmental documentation submittal and review (Scoping Issue 1); Appropriate monitoring regime, if any (Scoping Issue 3); Mitigation: what measures and for which activities (Scoping Issue 5); Cumulative impacts (Scoping Issue 6); Reconsider process for review of environmental documents received from other Parties (Scoping Issue 9); and Reevaluate paperwork projections in Interim Final Rule (Scoping Issue 10; see Preamble).

<sup>20</sup> Alternative 2 would also carry forth the provision of the Interim Final Rule at Section 8.2(c) that the final rule would “... not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*” (See Section 5.4.)

documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. As in Alternative 1, if an operator chooses to mitigate and the mitigation measures are the basis for the level of environmental documentation, EPA assumes the operator will proceed with these mitigation measures. Otherwise, the documentation may not have met the requirements of Article 8 and Annex I and the provisions of the regulations. Alternative 2 retains an enforcement provision that it is unlawful for any operator to violate the regulations.

Multi-Year EIA Documentation. Alternative 2 would add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons. For expeditions that are specifically identified and assessed on a multi-year basis, this provision would eliminate the need for annual submission of EIA documentation provided that the conditions described in the multi-year document, including the assessment of cumulative impacts, are unchanged. The multi-year provision also would allow operators to update basic information and to provide information on additional activities to supplement the multi-year environmental document without having to revise and re-submit the entire document.<sup>21</sup> Adding a provision to allow for submission of multi-year EIA documentation could reduce the burden on the operators.<sup>22 23</sup>

Threshold for “more than a minor or transitory impact”: Alternative 2 would add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.” The Protocol does not define “minor or transitory.” Under the added definition (or provision), the term “more than a minor or transitory impact” would have the same meaning as “significantly affecting the quality of the human environment.” This is consistent with EPA’s implementation of the Interim Final Rule.<sup>24</sup> This is also the same threshold definition applied to the environmental impact assessment of governmental activities in Antarctica (16 U.S.C. §2401 *et seq.*). Thus, adding such a definition (or provision) would ensure consistency between the governmental and nongovernmental EIA

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<sup>21</sup> The other paperwork reduction provisions now in Section 8.4(d) of the Interim Final Rule also would be part of the final rule under Alternative 2 and could be applied, as appropriate.

<sup>22</sup> Under the Paperwork Reduction Act, 44 U.S.C. §3501 *et seq.*, “burden” means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency.

<sup>23</sup> This provision would also reduce the burden on the federal government in terms of the effort to review the documentation and the effort associated with filing and maintaining the files associated with annual documentation.

<sup>24</sup> As provided in the interpretive information for the Interim Final Rule in the Preamble, Section II.D.4: “In evaluating whether a CEE is the appropriate level of environmental documentation, the EPA will consider the impact in terms of the context of the Antarctic environment and the intensity of the activity. ... EPA believes a comparable threshold should be applied in determining whether an activity may have an impact that is more than minor or transitory under these interim final regulations as is used in determining if the activity will have a ‘significant’ effect for purposes of the National Environmental Policy Act. C.f. 40 CFR §1508.27”



requirements and would provide guidance to nongovernmental operators on the EIA documentation requirements for their proposed activities.

#### **4.4.3. Alternative 3: Interim Final Rule with Modifications Beyond Those Considered to be Procedural or Administrative**

Alternative 3 describes modifications to the Interim Final Rule beyond those of Alternative 2 that are considered to be procedural or administrative, but does not go as far as Alternatives 4 and 5 in changing the basic approach set out in the Interim Final Rule. These modifications are based on issues raised in the scoping process. Under Alternative 3, the following modifications, which are inconsistent with the provisions of the Protocol and for which there is no legal authority under the Act,<sup>25</sup> would be incorporated into the Interim Final Rule:<sup>26</sup>

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Broaden the definition of operator to include foreign operators “doing business in the United States.” If this is not feasible, then apply the final rule to all U.S. citizens going to Antarctica on nongovernmental expeditions.
3. Require that EIA documentation demonstrate compliance with other applicable provisions of the Protocol and relevant U.S. statutes.

As with Alternatives 1 and 2, Alternative 3 would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol.

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<sup>25</sup> Alternative 3 is one of the Alternatives that incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>26</sup> The following elements were raised by EPA as Scoping Issues. However, EPA did not receive significant comment on any of these. Therefore, the associated provisions from the Interim Final Rule, as delineated in Table 4.2, will be carried forth in Alternative 3: Time frames for environmental documentation submittal and review (Scoping Issue 1); Appropriate monitoring regime, if any (Scoping Issue 3); Mitigation: what measures and for which activities (Scoping Issue 5); Cumulative impacts (Scoping Issue 6); Reconsider process for review of environmental documents received from other Parties (Scoping Issue 9); and Reevaluate paperwork projections in Interim Final Rule (Scoping Issue 10; see Preamble).

Alternative 3 with the proposed changes under modifications 2 and 3 would not be consistent with the Protocol as required by the Act; these modifications are discussed below. Selection of Alternative 3 for proposed promulgation would reflect a decision to continue with a procedural rule which does not impose obligations beyond preparation of the EIA documentation and the associated assessment and verification procedures. Alternative 3 retains EPA's authority with the concurrence of the National Science Foundation to make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. As with Alternatives 1 and 2, if an operator chooses to mitigate and the mitigation measures are the basis for the level of environmental documentation, EPA assumes the operator will proceed with these mitigation measures. Otherwise, the level of documentation may not have met the requirements of Article 8 and Annex I and the provisions of the regulations. Alternative 3 retains an enforcement provision that it is unlawful for any operator to violate the regulations.

Broadened Definition of "Operator": Under Alternative 3, a provision would be added to broaden the definition of operator to include foreign operators "doing business in the United States."<sup>27</sup> Parties to the Protocol require that their nongovernmental operators undertake environmental impact assessment of proposed activities in accordance with Article 8 and Annex I to the Protocol. Countries that are not Parties have no such obligations.<sup>28</sup> The reason to broaden the definition of "operator" would be to require foreign-based operators from countries that are not Parties to the Treaty that carry U.S. passengers to submit EIA documentation to EPA.

Article 8 requires Parties to ensure that the assessment procedures set out in Annex I are applied to "...tourism and all other ... nongovernmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty ...". Article VII(5) provides that a Party must give notice for "... all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory." Similarly, the Act explicitly requires environmental impact assessments of nongovernmental activities organized in or proceeding from the U.S. for which the United States is required to give advance notice under Article VII(5) of the Treaty. Thus, for purposes of the Act, the United States can assert jurisdiction over operators only where the relevant expedition is organized in or proceeding from the

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<sup>27</sup> Alternative 4 would retain the provision of the Interim Final Rule at Section 8.2(c) that the final rule would "... not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*" (See Section 5.4.)

<sup>28</sup> For example, Canada has not yet ratified the Protocol. Marine Expeditions, a Canadian-based operator, has no legal obligation to undertake an environmental impact assessment of its proposed expeditions. Based on information in IAATO's annual passenger estimates, it is estimated that Marine Expeditions may carry about 12% of the U.S. citizens traveling to Antarctica. (This estimate assumes that for 10,000 total ship-based Antarctic tourists, Marine Expeditions carries about 12% of these passengers and that 40% of these are U.S. citizens.) However, in 2001, Marine Expeditions filed for bankruptcy; its future status as an Antarctic tour operator is unknown.

United States. It is conceivable that a non-U.S. based operator could conduct such a level of activity within the United States that it could be deemed to be organizing an activity in the United States, and thus the United States would have jurisdiction in such a circumstance. Nevertheless, mere sale of tickets by a foreign operator, for example, would not rise to the level of organizing an expedition in the United States. In these circumstances, EPA believes that a provision amending the definition of “operator” to any foreign operator merely “doing business in the United States” would be too broad and thus inconsistent with the Treaty’s requirement that the expedition be organized in or proceeding from the United States.

Require that the EIA Documentation Demonstrate Compliance with Applicable Provisions of the Protocol and Relevant U.S. Statutes: Alternative 3 would include a provision requiring that EIA documents demonstrate compliance with other applicable provisions of the Protocol and relevant U.S. statutes. Such a provision is not required by Annex I or the Act. Further, certain provisions of the Act are the responsibility of other federal agencies. Under the Interim Final Rule, operators may, and do, reference compliance with appropriate Protocol provisions and U.S. regulations as planned mitigation measures for their activities, measures which support the level of EIA documentation for the planned activities. The environmental documentation provides a useful mechanism to identify whether a proposed activity raises issues under other obligations of the Protocol or domestic law which need further review by the responsible authority. Based on its experience to date, EPA does not believe that a blanket requirement to demonstrate compliance would necessarily reduce environmental impacts.<sup>29</sup> Such a provision would impose obligations and a burden on U.S. nongovernmental operators not required under Annex I or the Act, nor would it be fully consistent with the U.S. governmental EIA requirements regarding U.S. governmental activities in Antarctica.

#### **4.4.4. Alternative 4: “Substantive” Rule**

Alternative 4 would modify the Interim Final Rule to include substantive requirements in association with the environmental documentation requirements for nongovernmental activities in Antarctica, and to provide for federal direction over the level of environmental documentation required. Under Alternative 4, the following modifications, which are inconsistent with the provisions

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<sup>29</sup> Under Article 8, the assessment procedures set out in Annex I are to be applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area. Annex I requires that the environmental impacts of proposed activities be considered.

of the Protocol and for which there is no legal authority under the Act,<sup>30</sup> would be incorporated into the Interim Final Rule.<sup>31</sup>

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Incorporate the two additional modifications proposed in Alternative 3.
3. Add a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation.
4. Add a provision which would allow the federal government to prevent an activity from proceeding if anticipated impacts are determined to be unacceptable. If a substantive provision cannot be included in the final rule, include a provision to require insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause actual environmental harm.
5. Add a provision for public notice and comment on IEEs similar to the process for CEEs.
6. Add a provision to require a CEE when any new landing sites are included, or are proposed as possible landing sites, in the itinerary of expeditions by nongovernmental operators.

As with Alternatives 1, 2 and 3, Alternative 4 would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol.

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<sup>30</sup> Alternative 4 is one of the Alternatives that incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>31</sup> The following elements were raised by EPA as Scoping Issues. However, EPA did not receive significant comment on any of these. Therefore, the associated provisions from the Interim Final Rule, as delineated in Table 4.2, will be carried forth in Alternative 3: Time frames for environmental documentation submittal and review (Scoping Issue 1); Appropriate monitoring regime, if any (Scoping Issue 3); Mitigation: what measures and for which activities (Scoping Issue 5); Cumulative impacts (Scoping Issue 6); Reconsider process for review of environmental documents received from other Parties (Scoping Issue 9); and Reevaluate paperwork projections in Interim Final Rule (Scoping Issue 10; see Preamble).

Alternative 4 retains EPA's authority with the concurrence of the National Science Foundation to make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. Alternative 4 also retains an enforcement provision that it is unlawful for any operator to violate the regulations. As with the first three Alternatives, if planned mitigation measures are the basis for the level of documentation there is an obligation on the part of the operator to implement the planned mitigation. Otherwise, the level of documentation might not have met the requirements of the Protocol and the regulations.

Alternative 4 would include the two additional modifications listed under Alternative 3. These would be: a provision to broaden the definition of "operator" to include foreign-based operators "doing business in the U.S.," or to apply EIA requirements to all U.S. citizens, and a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes.<sup>32</sup>

Substantive Provisions and Insurance and Bonding: Selection of Alternative 4 would reflect a decision to propose to promulgate a final rule which would impose substantive obligations beyond the procedural requirements for preparation of the EIA documentation and the associated assessment and verification procedures inherent in Alternatives 1, 2 and 3. First, Alternative 4 would include a provision that would require that an operator demonstrate in the EIA that the proposed activities will be planned and conducted to ensure they take place in a manner consistent with the principles in Article 3, and be modified, suspended or canceled if they result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems. Further, Alternative 4 would include a provision that would prevent an activity from proceeding if EPA's review of the EIA, with the concurrence of the National Science Foundation, determined that the projected impacts would be unacceptable under Article 3.

However, under the Act, the U.S. government does not have any authority to prevent activities for which proper environmental assessments have been undertaken provided the proposed activities are not otherwise in conflict with U.S. law.<sup>33</sup> Further, Article 3 of the Protocol is implemented through the Annexes to the Protocol and is not capable of direct implementation. Thus, it in and of itself does not impose mandatory requirements. Moreover, Article 8 provides for an EIA process but does not impose substantive requirements (Scully 1993). Therefore, the two substantive modifications proposed under Alternative 4 are inconsistent with the Protocol and the Act.

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<sup>32</sup> See discussion of these issues under Alternative 3.

<sup>33</sup> Certain activities may be illegal under U.S. laws or may be legal only with a permit issued by the responsible authority. For example, it is illegal to "take" a native bird or mammal, or engage in harmful interference with plants, unless such activities are reviewed and permitted by the National Science Foundation. Further, under the Interim Final Rule and this Alternative, persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.* (see Appendix 27).

This federal policy is also consistent with NEPA requirements since NEPA's implementing regulations at 40 CFR Parts 1500-1508 provide procedural requirements for environmental impact assessment and do not impose obligations to carry out substantive environmental measures. Because NEPA is the model for governmental EIAs in Antarctica,<sup>34</sup> the substantive elements proposed under Alternative 4 would result in an inconsistency with the way that EIA provisions are applied to governmental and nongovernmental operators.

If a provision cannot be added which would allow the federal government to prevent an activity from proceeding if anticipated impacts are determined to be unacceptable, then Alternative 4 would impose an insurance and bonding requirement on operators for mitigation in case there are unacceptable impacts that require corrective action. Such a provision is not required under Annex I, nor is it consistent with it since Annex I contemplates activities that may have impacts that could be more than minor or transitory (e.g., CEE-level activities). It would, however, impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act.

Public Notice and Comment on IEEs: Alternative 4 would add a provision for public notice and comment on IEEs similar to the process for CEEs including an obligation on the part of preparers to respond to points raised in the public comment process. This process is not required by Article 8 and Annex I for EIA documentation except for CEEs. Under the Interim Final Rule, EPA publishes notice of receipt of IEEs on one of its websites and makes copies available to the public upon request.<sup>35</sup> Based on its experience to date, there has been no evidence that interested parties have been unable to obtain IEEs and to offer comments to the operators under this notification scheme. Such a provision would not necessarily reduce environmental impacts. It would, however, impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and would not be consistent with the EIA requirements that apply to U.S. governmental entities.

CEE Requirement for Proposed New Landing Sites: Alternative 4 would establish a requirement that a CEE be prepared when any new sites are proposed as possible landing sites in the itinerary of expeditions by nongovernmental operators. It is reasonable for operators to identify when any new landing sites are included or are proposed as possible landing sites. Consistent with Article 8 and Annex I, Section 8.4(b) of the Interim Final Rule directs that operators preparing an IEE or CEE should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment; this would also include the environment of any new site. To the extent that a visit to a new site would have the potential to result in impacts that are more than minor or transitory, an operator would prepare a CEE to be in compliance with the regulations. However, there is not a scientific basis for concluding that any visit to a new site would always have the likelihood of

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<sup>34</sup> Governmental activities must comply with the EIA requirements of the Act which states that “[t]he obligations of the United States under Article 8 of and Annex I to the Protocol shall be implemented by applying the National Environmental Policy Act of 1969 (42 U.S.C. §4321 *et seq.*) to proposals for Federal agency activities in Antarctica as specified in this section.” 16 U.S.C. §2403a.

<sup>35</sup> As provided in the Preamble to the Interim Final Rule in Section II.D.3.(b).

a greater than minor or transitory impact; thus, the conclusion that a CEE should be prepared in every case is not supported. Such a provision would not necessarily reduce environmental impacts, but would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and would not be consistent with the EIA requirements that apply to U.S. governmental entities.

#### **4.4.5. Alternative 5: “Discretionary” Rule**

Alternative 5 would modify the Interim Final Rule by eliminating EPA’s responsibility for making a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I and the provisions of the regulations. This would eliminate the U.S. government’s ability to ensure that the United States is able to comply with its obligations under the Protocol.

Under Alternative 5, the following modifications, which would not adequately ensure that the U.S. is fulfilling its obligations under the Protocol,<sup>36</sup> would be incorporated into the Interim Final Rule:<sup>37</sup>

1. Incorporate all three of the procedural and administrative modifications proposed under Alternative 2.
2. Eliminate the provisions in the Interim Final Rule that provide for EPA to make a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations.<sup>38</sup>

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<sup>36</sup> Alternative 5 is one of the three Alternatives that incorporate modifications related to issues which EPA included for reasons of completeness. Alternative 5 incorporates modifications under which the U.S. government would not be able to ensure that its obligations under the Protocol would be fulfilled. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>37</sup> The following elements were raised by EPA as Scoping Issues. However, EPA did not receive significant comment on any of these. Therefore, the associated provisions from the Interim Final Rule, as delineated in Table 4.2, will be carried forth in Alternative 5: Time frames for environmental documentation submittal and review (Scoping Issue 1); Appropriate monitoring regime, if any (Scoping Issue 3); Mitigation: what measures and for which activities (Scoping Issue 5); Cumulative impacts (Scoping Issue 6); Reconsider process for review of environmental documents received from other Parties (Scoping Issue 9); and Reevaluate paperwork projections in Interim Final Rule (Scoping Issue 10; see Preamble).

<sup>38</sup> As provided in the Interim Final Rule at Section 8.6(a), 8.7(c) and 8.8(b)(2).

3. Eliminate the enforcement provision in the Interim Final Rule.<sup>39</sup>
4. Eliminate the preliminary environmental review provision in the Interim Final Rule.<sup>40</sup>
5. Add a provision to provide for an automatic reciprocity when environmental documentation prepared for other Parties is submitted by a U.S.-based operator.
6. Add a provision for “Categorical Exclusions” including a categorical exclusion for Antarctic ship-based tourism conducted according to the “Lindblad Model.”

Similar to Alternatives 2 through 4, Alternative 5 would make the necessary technical modifications and edits and would add provisions that would provide for submission of multi-year EIA documentation and a threshold for “more than a minor or transitory impact.” Alternative 5 would retain the Interim Final Rule’s definitions of “operator” and “persons” and the approach of not applying the requirements of the rule to individual U.S. citizens where the individual is not acting as an operator.<sup>41</sup> Selection of Alternative 5 for proposed promulgation would reflect a decision to continue with a procedural rule which does not impose obligations beyond preparation of the EIA documentation and the associated assessment and verification procedures.

Elimination of EPA Review and Determination on EIA Documentation and the Associated Enforcement Provision: Under Alternative 5, nongovernmental operators would be required to identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; consider these impacts in deciding whether or how to proceed with proposed activities; and provide environmental documentation pursuant to the Act and Annex I of the Protocol. However, under modification 2, the U.S. government would not have a role in determining when the environmental documentation does not meet the requirements of Article 8 and Annex I of the Protocol.<sup>42</sup> While EPA could offer comments to the operator, there would be no obligation for the operator to address EPA’s comments. Thus, although the documentation may not meet the requirements of Article 8 and Annex I, under Alternative 5, the United States would not be able to

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<sup>39</sup> As provided in the Interim Final Rule at Section 8.11.

<sup>40</sup> As provided in the Interim Final Rule at Section 8.6.

<sup>41</sup> Alternative 5 would also carry forth the provision of the Interim Final Rule at Section 8.2(c) that the final rule would “... not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*” (See Section 5.4.)

<sup>42</sup> E.g., with consideration of the planned mitigation procedures to be applied to the activities, a PERM must be able to conclude that impacts will be less than minor or transitory; an IEE must be able to conclude that impacts will be no more than minor or transitory; and a CEE concludes that impacts will be more than minor or transitory.



ensure it is able to comply with its obligations under the Protocol.<sup>43</sup> In keeping with the discretionary nature of Alternative 5, modification 3 would eliminate the enforcement provision.<sup>44</sup>

The Interim Final Rule was constructed to ensure that the United States would be able to comply with its obligations under the Protocol (40 CFR Part 8, Preamble Section I.B.). It has been EPA's experience over the past four years in carrying out reviews in consultation with other interested federal agencies, that the initial draft of the environmental documentation provided by the U.S.-based operators did not always support a conclusion consistent with the level of impact for the proposed activities described.<sup>45</sup> Based on this experience, EPA does not believe that the approach under modification 2 would allow the U.S. government to ensure that the assessment procedures set out in Annex I are appropriately applied by U.S.-based operators in the planning processes leading to their decisions about any activities undertaken in the Antarctic Treaty area.

PERM Provision: Alternative 5 would eliminate the preliminary environmental review provision of the Interim Final Rule at Section 8.6.<sup>46</sup> The operator would not be required to submit a PERM for proposed activities where the operator determines that the proposed activity would have less than a minor or transitory impact. The operator would be required to submit the basic information requirements listed in Section 8.4, information similar to the information sent to the Department of State for purposes of Advance Notice of expeditions to Antarctica.

However, Section 8.6 of the Interim Final Rule directs that the preliminary review process assess the potential direct and reasonably foreseeable indirect impacts on the Antarctic environment of the proposed expedition in sufficient detail to assess whether the proposed activity may have less than a minor or transitory impact, a requirement that leads to consistency with Article 8 and Annex I of the Protocol. This process is not part of or inherent in the information requirements of Section 8.4. For operators who provide only Advance Notice for their expeditions, the U.S. government would be in the position of assuming first, that these operators have undertaken this assessment process, and second, that they have conducted it in such a manner that it met the requirements of the

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<sup>43</sup> By removing the provisions whereby EPA can make a finding with the concurrence of the National Science Foundation that the documentation does not meet the requirements of Article 8 and Annex I of the Protocol, the stated purpose of the Interim Final Rule at Section 8.1 is nullified along with the applicability and effect statement at Section 8.2(a). Under Alternative 5, these provisions of the Interim Final Rule would also need to be eliminated, or modified accordingly.

<sup>44</sup> As provided in the Interim Final Rule at Section 8.11.

<sup>45</sup> In all cases, EPA subsequently found that the revised or supplemented environmental documentation submitted by the operators met the requirements of Article 8 and Annex I and the requirements of the Interim Final Rule.

<sup>46</sup> Under the Interim Final Rule, a *Preliminary Environmental Review Memorandum (PERM)* means the documentation supporting the conclusion of the preliminary environmental review that the impact of a proposed activity will be less than minor or transitory on the Antarctic environment. (40 CFR §8.3.)

Protocol. As noted above, it has been EPA's experience over the past four years, that operators' initial draft EIAs did not always support a conclusion consistent with the level of impact for the proposed activities described in the documentation, including the draft PERM submitted for a planned 1999-2000 expedition. Based on past experience, EPA does not believe that eliminating the PERM provision would allow EPA, and thus the U.S. government, to ensure that the assessment procedures set out in Annex I are appropriately applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area. Further, the U.S. governmental EIA regulations include a provision for preliminary environmental reviews; thus, elimination of the PERM provision would not be consistent with the U.S. governmental EIA procedures and regulations.

Reciprocity Provision: Under modification 5, Alternative 5 would add a provision to provide for an automatic reciprocity when environmental documentation prepared for other Parties is submitted by a U.S.-based operator.<sup>47</sup> However, it is the responsibility of the United States to comply with its obligations under the Protocol. Thus, while this is a "workable" provision, the U.S. government would need to determine whether, in an appropriate case, it should rely on the regulatory procedures of another Party.

Categorical Exclusions: Under modification 6, Alternative 5 would add a provision for categorical exclusions including a categorical exclusion for Antarctic ship-based tourism conducted according to the "Lindblad Model." The National Environmental Policy Act defines 'categorical exclusion' as "a category of actions which do not individually or cumulatively have a significant effect on the human environment ... and for which, therefore, neither an environmental assessment nor an environmental impact statement is required" (40 CFR §1508.4.). Under federal NEPA regulations, only narrow and specific classes of activities are categorically excluded from environmental review.<sup>48</sup> IAATO recommended that Antarctic ship-based tourism organized under a carefully defined "Lindblad Model" be categorically excluded.<sup>49</sup> However, IAATO's proposal to categorically exclude Antarctic ship-based tourism conducted under a "Lindblad Model" does not fit well with the approach used by the U.S. government for categorical exclusions because it does not identify actions to be excluded in sufficient detail. Further, more needs to be known about potential cumulative impacts of nongovernmental activities undertaken by U.S.-based ship-based tour operators before deciding to exclude some or all of these specific activities. A categorical exclusion provision could, however, be

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<sup>47</sup> "Automatic" implies that there are no previous agreements between the U.S. and other Parties on reciprocity for EIA documentation.

<sup>48</sup> For example, EPA in its NEPA regulations at 40 CFR Part 6.107(d) excludes "...actions which are solely directed toward minor rehabilitation of existing facilities..." and NSF in its environmental assessment regulations at CFR 45 Part 641 (c) (1) and (2) excludes certain scientific activities (e.g., use of weather/research balloons that are to be retrieved) and interior remodeling and renovation of existing facilities.

<sup>49</sup> IAATO did not provide a specific definition for the "Lindblad Model."

an amendment to the final rule in the future if one or more appropriate categorical exclusions are identified.<sup>50</sup>

#### **4.5 Summary of the Alternatives for the Final Rule and EPA’s Preferred Alternative**

In summary, five alternatives have been identified for the final rule:

Alternative 1: No Action Alternative - Promulgate the Interim Final Rule as the final rule

Alternative 2: Preferred Alternative - Interim Final Rule with certain procedural and administrative modifications

Alternative 3: Interim Final Rule with modifications beyond those considered to be procedural or administrative

Alternative 4: “Substantive” rule

Alternative 5: “Discretionary” rule

Alternative 1, the “No Action” Alternative, would propose to promulgate the Interim Final Rule as the final rule. The other four alternatives involve modifications to the Interim Final Rule, and thus Alternative 1.

Alternatives 3, 4 and 5 incorporate modifications related to issues raised during scoping which EPA addressed for reasons of completeness, but for which the U.S. government does not have authority under the Act to implement because they are inconsistent with the provisions of the Protocol. The Act requires that the regulations be consistent with it, thus, EPA (or any other federal agency) lacks statutory authority under the Act to incorporate such provisions into regulations. These Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

Alternative 2 is EPA’s preferred Alternative. As required by the Act, Alternative 2 would provide for:

... the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty, and

... coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol.

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<sup>50</sup> The final rule would have to be amended through the appropriate rule-making procedures to add a provision for categorical exclusions.

Alternative 2 would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. These procedures, including the proposed procedural and administrative modifications, would be consistent with and implement the EIA provisions of Article 8 and Annex I to the Protocol. This is the alternative EPA believes would best fulfill its statutory mission and responsibilities giving consideration to:

- The ability to ensure that the U.S. is able to comply with its obligations under the Protocol;
- The need for the regulations to be, as directed by the Act, “consistent with Annex I to the Protocol;”
- The preference to ensure consistency between governmental and nongovernmental EIA processes and regulations;
- The assessment of the environmental and other consequences of the alternatives as discussed in Chapter 5;
- The current voluntary standards of the U.S.-based Antarctic tour industry; and
- Concern that U.S.-based operators continue to do business as U.S. operators and not move their Antarctic business operations to a non-Party country because of any undue burden imposed by the final rule.

## *Chapter 5: Environmental Consequences*

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## **Chapter 5. Environmental Consequences**

### **5.1. Introduction**

In order to assess the potential environmental consequences of the five alternatives for the final rule, these alternatives will be considered within the context of the following elements:

1. The nature of the Antarctic environment including the natural and physical environment of Antarctica and its dependent and associated ecosystems as described in Chapter 2, Affected Environment - the Physical and Biological Environment.
2. The nature of the nongovernmental activities being undertaken by U.S.-based operators in Antarctica, including those of ship-based tour operators, as discussed in Chapter 3, Affected Environment - Human Activities in Antarctica.
3. The potential for environmental impacts on the Antarctic environment and its dependent and associated ecosystems by the activities undertaken by U.S. nongovernmental operators, including ship-based tour operators; and
4. The domestic statutes and regulations, relative to the Antarctic Treaty System, that already govern the activities of U.S.-based nongovernmental operators in Antarctica.

In order to provide the basis for the assessment of the potential environmental consequences for each of the proposed alternatives for the final rule, the following sections summarize: the salient points of the affected environment with a focus on ship-based tourism, the principle U.S.-based nongovernmental activity; the potential environmental impacts, including potential cumulative impacts, associated with nongovernmental activities conducted by U.S.-based operators; and a summary overview of the systems currently governing human activities, including nongovernmental activities, in Antarctica.

### **5.2. Summary of the Affected Environment Relevant to U.S.-Based Nongovernmental Activities in Antarctica**

Antarctica is the coldest, driest, windiest, highest, and most isolated continent on Earth, unique in its physical and biological characteristics. It is this uniqueness, the remoteness and the natural beauty of the physical and biological setting, that draws tourists to visit Antarctica. The Antarctic Peninsula, the northern-most extension of the continent, and the surrounding islands support the continent's greatest diversity of native flora and fauna. It is this same area that is visited most by ship-based tour operators because of its proximity to South America, its milder summer climate relative to other areas of the Antarctic continent, the diversity of wildlife, the area's relative freedom from pack ice, and its concentration of research stations.

Ship-based tourism occurs primarily during the austral summer from about mid-November through mid-February; over 10,000 U.S. and non-U.S. tourists now visit Antarctica each year. This is the same period that flora and fauna flourish, and includes the breeding season for penguins and flying sea birds nesting in the Peninsula area. The austral summer is also the height of activity for the national science programs with the total number of scientists and support personnel over the entire continent increasing about 4-fold to a peak of about 4,000. Most stations are on the coast and in the Peninsula area, and many nations operate their stations and additional camps for field work that is feasible only during the summer.

Currently, tourism is the primary nongovernmental activity in Antarctica with more than 98% of the tourists visiting by cruise ship.<sup>1</sup> Although ship-based tour expeditions visit both the Peninsula and Ross Sea areas, the Peninsula area is by far the most heavily visited area with about 95% of the tour expeditions, more than 95% of the passengers, and nearly 98% of the landings.

As of the 1999-2000 season, nine U.S.-based tour operators seasonally offer ship-based tours to Antarctica; these include eight IAATO-member small vessel operators and one non-IAATO member large vessel operator.<sup>2 3</sup> The eight U.S. IAATO-member small vessel operators represent over 40% of the for-profit IAATO-member companies that organize and/or operate travel programs to Antarctica. These eight operators carry nearly 55% of the passengers. IAATO membership has increased over 400% in nearly 10 years with about 40% of the increase in the number of U.S.-based operators.

Information on total ship-borne tourist numbers and landings for the ten austral seasons during the period 1989-1999, shows the following:<sup>4</sup>

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<sup>1</sup> Less than 2% of the tourism is land-based.

<sup>2</sup> Orient Lines is the only U.S.-based non-IAATO member large vessel operator with scheduled seasonal tours to Antarctica. The *Marco Polo* carries an average of about 500 passengers per voyage; current IAATO By-laws require that IAATO-member vessels carry no more than 400 passengers per voyage.

<sup>3</sup> During the 1999-2000 season, the *Rotterdam*, operated by U.S.-based HALW, was the largest tour vessel operating in Antarctica. The ship carried nearly 1,000 passengers during its world cruise which included 72-hours in the Peninsula area; during this time, none of the passengers went ashore. HALW submitted an IEE for a similar world cruise, including 72 hours cruising in the Peninsula area, by the *Ryndam* during the 2001-02 season.

<sup>4</sup> Unless otherwise noted, figures are for all tour operators reporting information to the National Science Foundation; this includes U.S.- and foreign-based IAATO-member operators and the U.S.-based large vessel operator that operated in Antarctica during the 10-year period, 1989-1999.

- The overall number of visitors to Antarctica increased over 400% with over 10,000 tourists reported in 1998-1999.<sup>5</sup>
- Of the five countries with the largest number of its citizens traveling to Antarctica, over 40% are from the U.S.
- Landings were made by tour operators at 165 Peninsula area sites. Of these, only 16 sites averaged 100 or more landings per season.
- The ten Peninsula area sites with the most number of landings consistently accounted for more than 55% of the season's landings and just over 50% of that season's visitors. The twenty Peninsula area sites with the most number of landings consistently accounted for more than 75% of that season's landings and nearly 80% of that season's visitors.
- Three of the top eight ranked Peninsula area sites for both the number of landings and annual visitors are included in the itinerary of the U.S.-based large vessel operator seasonally offering Antarctic tours (Orient Lines IEE 1998 and Orient Lines IEE 2000).
- Not all Peninsula area sites that have had previous landings are visited each year; just over 30% of the sites were visited by Zodiac landings only once a season. On average, the number of new landing sites in the Peninsula area has been 14 sites per year.
- Visits to research stations are popular with Antarctic tourists; visits to U.S. stations are scheduled through the National Science Foundation. Visits to other stations are arranged through the appropriate national programs.
- Visits to historic monuments and certain specially managed areas are also popular with Antarctic tourists; visits to these monuments and areas are scheduled through the national programs, as appropriate, and are conducted in accordance with specific management provisions, where designated.

Ship-based Antarctic tourism is expected to increase by about 11% over the next five years with most expeditions to the Peninsula area. These expeditions are expected to continue to be conducted primarily by IAATO-member operators aboard small vessels; 40% to 50% of the IAATO-member operators will continue to be U.S.-based and carry over 50% of the U.S. citizen tourists. Since IAATO members, including U.S.-based members, are projected to continue at approximately

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<sup>5</sup> A record 14,762 ship-borne passengers were reported during the 1999-2000 "Millennium Year." IAATO's forecast for ship-borne Antarctic tourism projects a 11% increase (14,175 to 16,000 passengers) over the next five seasons (IAATO SATCM/IP 32 2000).



the same levels as the 2000-01 season for the next five years (IAATO IEE 2000), any significant increases in the tourism numbers in the out-years would likely be due to one or more new large vessel operators entering the market and/or increases in the number of large vessel expeditions by operators already in the Antarctic tour market. Likewise, significant increases could also occur if additional new small vessel operators enter the market and offer multiple expeditions annually, or if current IAATO-member operators increase their annual operations. With regard to U.S.-based operators, it is likely that U.S.-based small vessel operators will continue to enter the market as IAATO members with expeditions to the Peninsula area. It is also possible that at least one U.S.-based large vessel operator could enter the Antarctic tourism market.<sup>6</sup>

### **5.3. Potential Environmental Impacts and Mitigation Measures**

#### **5.3.1. Potential Direct and Indirect Environmental Impacts of Expeditions by U.S.-Based Operators**

Concern with the potential environmental impacts associated with tourism<sup>7</sup> center on the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research. At the same time, tourism, along with scientific research programs and all other governmental and nongovernmental activities, is recognized as a legitimate activity in Antarctica.

Naveen has evaluated Peninsula area sites visited by tour ships in terms of their species diversity, attractiveness to visitors, and sensitivities, and has identified nine potential factors suggesting a site's sensitivity to environmental damage (Naveen 1997). These are listed in Table 5.1.

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<sup>6</sup> IAATO identified two new operators for the 2000-01 season. Both, however, were previously Associate Members and booked tourists on other IAATO-member expeditions and vessels; both plan to continue to charter on other IAATO-member's vessels. U.S.-based large-vessel operator Crystal Cruises discussed with EPA its initial plan to include cruising in Antarctic waters as part of its 2001-02 world cruise. Yachts now carry about 1% to 2% of the ship-borne tourists to Antarctica, and the number of yachts carrying passengers to Antarctica is expected to increase in the out-years, particularly in support of land-based adventure tours in the Peninsula area. Currently, there are no U.S.-based yacht operators but it is possible that one or more U.S.-based operators could enter the Antarctic tourism market. Out-year projections do not include entry of U.S.-based operators into the continental or overflight sectors of the Antarctic tourism market. The U.S.-based research foundation, Oceanites, is expected to continue its tourism-related research in the Peninsula area. EPA also anticipates there will likely be an occasional U.S.-based one-time expedition to Antarctica (e.g., such as the White Mountain Films and Bancroft Arnesen trekking expeditions).

<sup>7</sup> Ship-based tourism in the Peninsula area is the primary U.S.-based nongovernmental activity in Antarctica; thus, the discussion of environmental impacts will focus on those associated with ship-based tourism. Other U.S.-based nongovernmental expeditions have also been ship-based (e.g., research by Oceanites, one-time filming by White Mountain Films). The IEE for the one-time trans-continent trek by two women addresses the potential environmental impacts for the expedition which are similar in nature to those for the other U.S.-based operators (e.g., fuel and waste management).

| <b>Table 5.1. Potential Factors Suggesting a Site's Sensitivity to Environmental Damage</b> |  |
|---|--|
| •   | Unusually high science values which have the potential of being easily disturbed (e.g., the possibility of disturbing a major project being conducted on site, or disturbing a site like the Dry Valleys, which has clearly "recognized" science value). |
| •   | Presence of an unusually high species diversity.   |
| •   | Presence of geological or physical features that may be easily disturbed (e.g., rare penguin fossils on Seymour Island; potentially serious erosion).  |
| •   | Close proximity to a boundary of a Site of Special Scientific Interest (SSSI) or Specially Protected Area (SPA) which boundary is poorly defined or easily encroached.   |
| •   | Presence of environmental elements that focus visitor attention and may be disrupted (e.g., a species with very limited distribution or rare occurrence in the area such as macaroni penguins at Hannah Point).  |
| •   | Close proximity to any southern giant petrel nests, this being one species of flying bird that is very easily disturbed.   |
| •   | Situations where nests of regularly encountered flying birds, such as blue-eyed shags, kelp gulls or Antarctic turns, may be easily disturbed.   |
| •   | Restricted visitor space at a particular site where there are only very narrow (or perhaps non-existent) pathways between visitors and penguins.   |
| •   | Presence of large beds or patches of moss or foliose-fruticose lichens which may be easily accessed and trampled.  |

From: Naveen, 1997

Nongovernmental expeditions, by their nature, involve the transport of persons to Antarctica which will result in physical impacts. These may include but are not limited to: air emissions, discharges to the ocean, noise from engines, landings for sight-seeing, and activities by visitors near wildlife (40 CFR Part 8, Preamble II.D.3(b)). Under EPA's Interim Final Rule, U.S.-based nongovernmental operators must prepare an environmental impact assessment that identifies and assesses the potential impacts of their proposed activities on the Antarctic environment (40 CFR §8.1). In making the determination what level of environmental documentation is appropriate, U.S.-based operators consider, as applicable, whether and to what degree the proposed activity (40 CFR §8.4(b)):

- (1) Has the potential to adversely affect the Antarctic environment;
- (2) May adversely affect climate or weather patterns;
- (3) May adversely affect air or water quality;
- (4) May affect atmospheric, terrestrial (including aquatic), glacial, or marine environments;
- (5) May detrimentally affect the distribution, abundance, or productivity of species, or populations of species of fauna and flora;
- (6) May further jeopardize endangered or threatened species or populations of such species;

- (7) May degrade, or pose substantial risk to, areas of biological, scientific, historic, aesthetic, or wilderness significance;
- (8) Has highly uncertain environmental effects, or involves unique or unknown environmental risks; or
- (9) Together with other activities, the effects of any one of which is individually insignificant, may have at least minor or transitory cumulative environmental effects.

As a result of these considerations, U.S.-based operators have submitted IEEs as a means of evaluating the reasonably foreseeable potential effects of their proposed activities on the Antarctic environment. To date, their IEEs have contained sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact on the Antarctic environment and, in addition to the nine factors above, have included the following information as applicable:<sup>8</sup>

- (1) A description of the proposed activity, including its purpose, location, duration, and intensity; and
- (2) Consideration of alternatives to the proposed activity and any impacts that the proposed activity may have on the Antarctic environment including consideration of cumulative impacts in light of existing and known proposed activities.

As described in the U.S.-based operators' IEEs, the potentially adverse direct and indirect environmental impacts of ship-based tourism activities in Antarctica are generally associated with the ship's operations, Zodiac operations, and the activities of passengers and expedition staff during landings. Appendix 24 summarizes the potentially adverse direct and indirect environmental impacts identified in the IEEs prepared by the U.S.-based operators and the operators' proposed control measures to be employed to ensure that any impacts are no more than minor or transitory.<sup>9</sup> Table 5.2 is a summary listing of the potential direct and indirect environmental impacts associated with ship-based tourism by U.S.-based operators.<sup>10 11</sup>

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<sup>8</sup> 40 CFR §8.7(b) which is consistent with Article 8 and Annex I of the Protocol (see Appendix 23).

<sup>9</sup> Impacts may also include those resulting from actions which may have beneficial effects. Tour vessels provide transport for scientific personnel and supplies and, on occasion, carry scientists engaged in research. Experienced tour operators provide detailed information on landing sites, access routes, features and other information necessary to create site management plans. IAATO also maintains that Antarctic tourism builds a constituency of informed ambassadors for the conservation of Antarctica and support of national Antarctic science programs (IAATO 1997; IAATO XXI ATCM/Item 12, May 1997; and IAATO SATCM/IP 32 2000).

<sup>10</sup> The potential direct and indirect environmental impacts of U.S.-based nongovernmental researchers on fauna and flora include 'takings' and/or 'harmful interference,' activities addressed under a permit issued by the National Science Foundation.

<sup>11</sup> The IEEs do not include assessment of potential impacts associated with cases of emergency. Section 8.10 of the Interim Final Rule provides the notice and reporting requirements that apply to activities taken in cases of emergency relating to the safety of human life or of ships, aircraft, equipment and facilities of high value, or the

| <b>Table 5.2 Potential Direct and Indirect Environmental Impacts Associated with Ship-Based Tourism Conducted by U.S.-Based Operators</b>                                    |  |
|--|--|
| <u>Ship and Zodiac Operations:</u> Potential impacts to water, air, marine fauna/flora and/or science program research from:   |  |
| •  | Fuel and oil-related activities and/or incidents including burning fuel and/or stack emissions and fuel and/or oil spill   |
| •  | Waste-related activities/incidents including: discharges of sewage water to Antarctic Treaty waters, stack emissions from incineration of dry garbage, and accidental waste/litter releases. Wastes include: sewage water, food waste, medical waste, batteries, and any other garbage |
| •  | Ballast discharge  |
| •  | Ocean transit, maneuvering and ice breaking  |
| •  | Vessel noise and lights  |
| •  | Anchoring  |
| •  | Inadvertently entering protected areas   |
| •  | Zodiac operations including: fueling, waste disposal, marine incidents, and point source pollution   |
| <u>Landing Operations Including Helicopter Overflights/Landings:</u> <sup>12</sup> Potential impacts of human activity on fauna, flora and/or science program research from: |  |
| •  | Trampling nesting sites and fragile plant communities; noise; predation and scavenging of eggs and chicks if adults are forced to leave their nests or young unattended  |
| •  | Introduction of alien species or microbes; spread of disease from other colonies   |
| •  | Harm to protected areas  |
| •  | Harm to new sites  |
| •  | Harm to historic buildings and artifacts   |
| •  | Disruption of science program research and operations  |
| •  | Helicopter flight activity including fuel spill during refueling, dust creation and surface destruction from rotor down drought, increased predation following disturbance by aircraft/aircraft noise  |

protection of the environment, which require an activity to be undertaken without completion of the EIA procedures set out in the regulations, consistent with Article 8 and Annex I of the Protocol (see Appendix 23).

<sup>12</sup> Two U.S.-based operators use helicopters. Orient Lines and Quark Expeditions use helicopters for ice reconnaissance; Quark Expeditions also uses its helicopter to land passengers.

### 5.3.2. Potential Cumulative Environmental Impacts of Expeditions by U.S.-Based Operators

As noted above, in making the determination what level of environmental documentation is appropriate, U.S.-based operators must consider whether and to what degree the proposed activity may have at least minor or transitory cumulative environmental effects.<sup>13</sup> All U.S.-based nongovernmental operators, including the ship-based tour operators, thus far have concluded that the potential impacts, including cumulative impacts, are no more than minor or transitory for their planned expeditions.<sup>14</sup> Their conclusions to date, including that for cumulative impacts, have been supported by the information currently available.

However, the issue of cumulative impacts, particularly in the Peninsula area, remains a concern in light of such factors as the increasing number of tour operators, expeditions, and passengers landed; the number of sites visited; and the frequency at which certain sites are visited. To better address the issue of possible cumulative environmental impacts associated with ship-based Antarctic tourism, the EPA, the National Science Foundation and IAATO sponsored a workshop for scientists and government, industry and environmental interest group representatives to consider the research needed to assess whether any changes in the fauna and flora are related to natural variation or to tourism activities.<sup>15 16</sup> Appendix 25 provides a preliminary summary of this workshop.

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<sup>13</sup> Under 40 CFR §8.4(b), “In making the determination what level of environmental documentation is appropriate, the operator should consider, as applicable, whether and to what degree the proposed activity: ... [t]ogether with other activities, the effects of any one of which is individually insignificant, may have at least minor or transitory cumulative environmental effects.”

<sup>14</sup> Under 40 CFR §8.7(b), an IEE must contain sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact on the Antarctic environment and must include “... consideration of cumulative impacts in light of existing and known proposed activities.”

<sup>15</sup> “Assessment of the Possible Cumulative Environmental Impacts of Commercial Ship-Based Tourism in the Antarctic Peninsula Area: Proceedings of a Workshop Held in La Jolla, California, 7-9 June 2000.” Draft Report. Workshop sponsors: National Science Foundation, EPA, and IAATO. Undated.

<sup>16</sup> Amongst other things, the workshop discussions exemplified the difficulties of identifying cumulative impacts related specifically to tourism. For example, research findings suggest that most of the variability associated with the decline in Adelie penguins can be explained by the effects of climate change, and tourism is not having a measurable impact on Adelie penguin populations in the Palmer Station area. Evidence of impact on the penguins from human activity was noted with regard to the direct contact and intrusive research methods used in some scientific studies, contact activities not permitted by tourists. From: “Lessons Learned from Other Research.” Dr. William R. Fraser, Polar Oceans Research Group, June 30, 2000. Draft text prepared for “Assessment of the Possible Cumulative Environmental Impacts of Commercial Ship-Based Tourism in the Antarctic Peninsula Area: Proceedings of a Workshop Held in La Jolla, California, 7-9 June 2000.” Draft Report. Workshop sponsors: National Science Foundation, EPA, and IAATO. Undated.

### 5.3.3. Mitigation Measures Employed by U.S.-Based Operators

The IEEs of U.S.-based operators have to date included mitigation measures to be employed in order to ensure that any impacts associated with their planned activities are no more than minor or transitory. These planned mitigation measures are an integral component of the IEE documentation in that the planned mitigation helps support of conclusions of the operators that the potential environmental impacts for the planned expeditions will be no more than minor or transitory (40 CFR Part 8 Preamble II.D.3.[b]).

To eliminate or reduce potential environmental impacts during the course of their expeditions, U.S.-based operators use ship crews and expedition staff with Antarctic experience and provide the crew and staff with training on the provisions of the Antarctic Treaty, the Protocol and other relevant agreements, conventions, laws and regulations. In general and in summary, the operators employ standard operating procedures including adherence to:<sup>17</sup>

- The Antarctic Treaty of 1959;
- Convention for the Conservation of Antarctic Seals (CCAS);
- Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR);
- Protocol on Environmental Protection to the Antarctic Treaty;
- International Convention for the Prevention of Pollution from Ships (MARPOL 1973/78);
- International Convention for the Safety of Life at Sea (SOLAS);
- Recommendations and other measures adopted under the Antarctic Treaty System including Recommendation XVIII-1, *Guidance for Those Organizing and Conducting Tourism and Non-Governmental Activities in the Antarctic* and *Guidance for Visitors to the Antarctic*;
- International Convention on Oil Pollution, Preparedness, Response and Cooperation;
- The Antarctic Conservation Act of 1978 (Public Law 95-541);
- 33 CFR Part 151, U.S. Coast Guard regulations implementing the Protocol;
- Antarctic Science, Tourism, and Conservation Act of 1996 (Public Law 104-227);
- 40 CFR Part 8, EPA's interim final rule, Environmental Impact Assessment of Nongovernmental Activities in Antarctica; and
- IAATO-member operators adherence to the IAATO Bylaws.<sup>18</sup>

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<sup>17</sup> Although the U.S.-based tour operators include most or all of the listed items, it is the implementing domestic legislation that gives effect to the Conventions, the Treaty and the Protocol. Further, it is the obligation of the flag states of the vessels chartered by the operators to ensure compliance with the obligations related to vessel operations (e.g., MARPOL 73/78 and SOLAS).

<sup>18</sup> U.S.-based operators who are not members of IAATO (e.g., Orient Lines) also claim to adhere to the principles of the IAATO Bylaws, namely, landing no more than 100 passengers at a site at one time.

To eliminate or minimize potential environmental impacts from ship and Zodiac operations, the ship's command and expedition leaders closely monitor weather conditions, and maintain regular communications and coordination with other tour operators who are conducting ship, and airborne, tourism. For safety purposes, the vessels used by U.S. ship-based operators maintain lifesaving equipment including lifeboats and the expedition Zodiacs, and the operators have emergency medical contingency plans. Additional measures employed for Zodiac operations include: controlled fueling of the craft on the parent ship, attention to weather conditions regarding a decision to employ their use at a given location, and use of personnel experienced in their operations and trained on the provisions of the Protocol and related documents as listed above.

U.S.-based operators also employ standard operating procedures that include various procedures to eliminate or reduce potential environmental impacts during passenger landings. These procedures rely heavily on passenger education throughout the cruise on the provisions of the Protocol (and related documents as listed above) and what can and cannot be done by tourists while in Antarctica, the general process for landings, and the specific procedures for each landing site. In addition, passengers are supervised on a 1:20 staff to passenger ratio, experienced staff are used to manage passenger landings, and all staff are trained on the provisions of the Protocol and other appropriate requirements. For flagrant violation of the landing rules, the ship's captain may revoke a passenger's future landing privilege.

Even with advance planning and standard operating procedures, including operative mitigation measures, U.S.-based operators may occasionally be involved in incidents. However, the impacts of the few incidents that have been reported by U.S.-based operators have been no more than minor or transitory.<sup>19 20</sup>

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<sup>19</sup> IAATO reported that during the 1999-2000 season, the *Clipper Adventurer*, operated by U.S.-based Clipper Cruise Line, became ice bound and was assisted by the Argentine Navy; other IAATO-member vessels would have assisted but locations were such that an Argentine national program ship arrived to assist. In another incident, the *A. Vavilov*, operated by U.S.-based Quark Expeditions, struck a whale while cruising in Antarctic waters at about 64° latitude; the whale surfaced and appeared to be injured but was not killed. According to IAATO, this is possibly the first time this has happened with a tourist vessel (Biggs Feb. 2, 2000).

Orient Lines reported that: "On one occasion in the season 1999-2000, the number of passengers on shore at Port Lockroy exceeded 100 by more than a minor amount. This was caused by a prolonged hold-up in zodiac operation at the landing site, caused by floating ice, coinciding with the staff on board Marco Polo mistakenly sending a batch of zodiacs laden with new passengers. Those sitting on the zodiacs were getting cold, while those waiting on land to leave were impatient to return to the ship. In the circumstances, more passengers were landed than should have been to clear the bottleneck. But the excess passengers on shore were all gathered on rocks near the landing point, so were not causing more than a minor or transitory impact. Lessons were learned from this incident, which should not recur (Orient Lines IEE 2000 and Orient Lines Sep. 14, 2000)."

<sup>20</sup> The two most significant incidents in Antarctica did not involve U.S.-based operators. In 1989, the *Bahia Paraiso*, an Argentine government program supply ship that was also carrying passengers, ran aground and eventually sank, after striking submerged coastal rocks; all passengers and crew were safely rescued. The environmental consequences, including physical damage and petroleum contamination, are being monitored by

#### **5.4. Systems Governing the Activities of U.S.-Based Nongovernmental Operators in Antarctica**

In addition to the physical and biological environment, and the potential for environmental impacts, the environmental consequences of the five alternatives for the final rule need to be considered within the context of the existing international and domestic legal framework applicable to Antarctica and the controls on nongovernmental activities imposed by this framework, including those of U.S.-based operators. These international and domestic systems are summarized in the following two subsections.

##### **5.4.1. The Antarctic Treaty and the Treaty System**

The Antarctic Treaty. The Antarctic Treaty (Treaty), which concluded in 1959 and entered into force in 1961, applies to the area south of 60 degrees south latitude including all ice shelves. Amongst other things, the Treaty: guarantees freedom of scientific research in Antarctica and provides the basis for peaceful international cooperation; establishes Antarctica as a zone of peace, bans all military activities including weapons testing, and prohibits nuclear explosions and radioactive waste disposal; and provides an absolute right of on-site inspection of all stations and installations in Antarctica to promote the objectives of the Treaty and ensure compliance with its provisions. The Treaty provides a mechanism for dealing with new activities and new circumstances. This mechanism provides for meetings of the contracting Parties for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica and recommending to their governments measures in furtherance of the principles and objectives of the Treaty (Dept. of State 1999).

The Antarctic Treaty Consultative Meetings (ATCMs), as they are now called, are open to participation by representatives of all contracting Parties.<sup>21</sup> The 1999 ATCM marked the twenty-third such meeting since the Treaty entered into force. As a result of these ATCMs, approximately two hundred agreed recommendations have been adopted by the Antarctic Treaty Consultative Parties (ATCPs) (Dept. of State 1999).

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various national programs. In 1979, an Air New Zealand sightseeing plane carrying 257 passengers and crew crashed into Mt. Erebus killing all onboard; science program personnel in the Ross Sea area, including those at McMurdo Station, undertook search and rescue efforts. As a result of this crash, more stringent over-flight requirements were instituted by New Zealand.

<sup>21</sup> There are now twenty-seven Antarctic Treaty Consultative Parties (ATCPs) with rights to block consensus at Consultative Meetings: Argentina, Australia, Belgium, Brazil, Bulgaria, Chile, China, Ecuador, Finland, France, Germany, India, Italy, Japan, Republic of Korea, the Netherlands, New Zealand, Norway, Peru, Poland, the Russian Federation, South Africa, Spain, Sweden, the United Kingdom, the United States and Uruguay. There are eighteen such non-Consultative Parties (NCPs): Austria, Canada, Colombia, Cuba, the Czech Republic, Denmark, Estonia, Greece, Guatemala, Hungary, the Democratic People's Republic of Korea, Papua-New Guinea, Romania, the Slovak Republic, Switzerland, Turkey, Ukraine and Venezuela (Dept. of State 1999).



The Antarctic Treaty System (ATS). The Antarctic Treaty and the related measures and independent agreements adopted by the Treaty Parties are known collectively as the Antarctic Treaty System.

‘The agreed recommendations adopted at the ATCMs incorporate a wide range of measures to give effect and elaborate the principles and purposes of the Antarctic Treaty. A significant portion of these recommendations deal with protection of the Antarctic environment.

Equally important from the environmental perspective, the ATCMs have provided the mechanism for the ATCPs to delineate and respond to the challenge of possible resource activities in Antarctica. Recommendations adopted at ATCMs have included initiatives that have led to the conclusion of separate agreements which in whole or in part seek to address resource issues. Three of these are in force (Dept. of State 1999).

The three agreements that address resource issues are the Convention for the Conservation of Antarctic Seals (CCAS), the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), and the Protocol on Environmental Protection to the Antarctic Treaty. In addition to these three, one other convention has relevance to nongovernmental activities in Antarctica, the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). These four are summarized in Appendix 26.

#### **5.4.2. U.S. Domestic Regulatory System Applicable to Nongovernmental Activities in Antarctica**

The United States accomplishes compliance with its obligations under the Antarctic Treaty System through domestic legislation and regulations which govern the actions of persons subject to the jurisdiction of the United States.<sup>22</sup> Pertinent statutes with regard to nongovernmental activities in Antarctica include the following:

- The Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.*, governs nongovernmental activities undertaken in the Antarctic Treaty Area that are covered by CCAS and CCAMLR.<sup>23</sup>

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<sup>22</sup> *Person* has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States.

<sup>23</sup> As provided in the Protocol, the Interim Final Rule does not apply to activities undertaken in the Antarctic Treaty area that are governed by CCAMLR or CCAS. Under the Marine Mammal Protection Act, the National Marine Fisheries Service’s regulations govern commercial fishing in Antarctic waters and apply to all marine biota, including bird and mammal populations. However, persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act including the prohibition on the taking of marine mammals (see Appendix 27 and Appendix 19, 40 CFR §8.2(c)).

- The Antarctic Conservation Act of 1978 (ACA), Public Law 95-541, as amended, 16 U.S.C. §2401 *et seq.*, conserves and protects the native mammals, birds, and plants of Antarctica (45 CFR §670). The ACA, as amended, restricts entry into and activities conducted in Antarctic Specially Protected Areas. The ACA, as amended, also restricts introduction of certain prohibited products into Antarctica, prohibits disposal of certain types of waste, and requires permits for use and disposal of designated pollutants in Antarctica (45 CFR §671).
- The Antarctic Science, Tourism, and Conservation Act of 1996 (the Act), Public Law 104-227, amended the ACA and includes the following provisions which are pertinent to nongovernmental activities in Antarctica:
  - Environmental Impact Assessment of Nongovernmental Activities (16 U.S.C. §2401 *et seq.*, as amended, 16 U.S.C. §2403a);
  - Environmental Protection Information (F.R. 63, No. 107); and
  - Emergency Response Plans (F.R. 63, No. 107).
- The Act to Prevent Pollution from Ships (APPS), Public Law 96-478, 33 U.S.C. §1901 *et seq.*, implements MARPOL 73/78. It designates Antarctica as a special area with significant restrictions on discharges of garbage, oil, and noxious liquid substances from ships.

Appendix 27 summarizes the U.S. domestic statutes and regulations that implement the Conventions and the Protocol of the Antarctic Treaty System that are applicable to nongovernmental activities in Antarctica.

### **5.5. Potential Consequences of the Proposed Alternatives for the Final Rule**

The purpose of EPA's final rule is to implement the requirements of Article 8 and Annex I to the Protocol as required by the Act (16 U.S.C. §2403a).<sup>24</sup> EPA has identified five alternatives for the final rule. These alternatives, described in detail in Chapter 4, are as follows:

Alternative 1: No Action Alternative - Promulgate the Interim Final Rule as the final rule

Alternative 2: Preferred Alternative - Interim Final Rule with certain procedural and administrative modifications

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<sup>24</sup> The Act also requires EPA to provide for coordination of the review of information regarding environmental impact assessment received by the United States from other Parties under the Protocol. Section 8.12 of the Interim Final Rule provides for this. As discussed in Section 4.3.1 of this EIS, this provision is included in all five of the alternatives for the final rule.

Alternative 3: Interim Final Rule with modifications beyond those considered to be procedural or administrative

Alternative 4: “Substantive” rule

Alternative 5: “Discretionary” rule

All five alternatives are variations of the Interim Final Rule (see Appendix 19) and set forth procedures for environmental impact assessment through a process of one or more stages of assessment.<sup>25</sup> Under this process, if an activity will have an impact that is less than minor or transitory, a preliminary environmental review would suffice; for an activity that will have no more than a minor or transitory impact, an IEE would be the appropriate level of assessment; and for an activity that is likely to have more than a minor or transitory impact, a CEE would be appropriate. The intent of each of the five alternatives is to implement the requirements of Article 8 and Annex I to the Protocol and, as required by the Act, to be “consistent with Annex I.” However, the alternatives vary in meeting this intent as discussed in Chapter 4 and the following sections of this Chapter.

Unlike some other rules promulgated by EPA, this final rule will not set out a numerical or performance-based environmental standard (e.g., a water or air quality standard or a permitted discharge or confinement standard) by which potential environmental impacts and potential activity-level modifications can be quantified and compared. Instead, the final rule sets out environmental impact assessment procedures consistent with Article 8 and Annex I to be applied by operators in the planning processes leading to decisions about any nongovernmental activities, including tourism, undertaken in the Antarctic Treaty area (Protocol Article 8).

The purpose of this Chapter is to assess the environmental consequences of the five proposed alternatives for the final rule. However, this is a regulatory action, and as such the consequences of the selected alternative may entail other consequences that are not explicitly environmental in nature but that affect the efficacy (and thus the ultimate environmental impacts) of the rule. For this reason, EPA believes that the assessment of the consequences associated with each of the alternatives must include assessment of the potential environmental consequences associated with each of the following elements:

- The ability of the alternative to ensure that the U.S. is able to comply with its obligations under the Protocol;
- Assurance that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;”

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<sup>25</sup> All five alternatives also include provision for coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol.

- The ability of the alternative to ensure consistency between the governmental<sup>26</sup> and nongovernmental EIA processes; and
- The burden imposed on the operators.<sup>27</sup>

While these elements do not involve environmental consequences *per se*, they have a bearing on how effectively the final rule can be implemented and, thus, could have indirect environmental consequences.<sup>28</sup>

As noted above, the five alternatives are variations of the Interim Final Rule and, thus, Alternative 1, the “No Action” alternative (e.g., promulgation of the Interim Final Rule as the final rule). For this reason, the assessment of environmental consequences for Alternative 1 is based on the assessment of the environmental and other consequences for the Interim Final Rule with projection of this assessment into the out-years. The assessment of the consequences for the other four alternatives is then based on comparisons with the consequences assessment for Alternative 1.

#### **5.5.1. Potential Consequences of Alternative 1: No Action Alternative - Promulgate Interim Final Rule as the Final Rule**

Alternative 1, the “No Action” Alternative, would be the proposed promulgation of the Interim Final Rule as the final rule. Thus, an assessment of the consequences, including both environmental and other consequences, for the Interim Final Rule and projection of these consequences into the out-years constitutes an assessment of the consequences associated with Alternative 1.

Assessment of the Environmental Consequences of the Interim Final Rule: The Interim Final Rule implements the requirements of Article 8 and Annex I to the Protocol (40 CFR §8.1(a)). These procedures ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; and that operators consider

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<sup>26</sup> As managed by the National Science Foundation for all U.S. government activities under the U.S. Antarctic Program.

<sup>27</sup> EPA is concerned that the final rule not place undue burden on operators, including small business operators. Should this occur, there is a potential for one or more U.S.-based operators to move their operations to another country, including a country not Party to the Treaty. A move to another country cannot be ruled out given the international nature of the tour industry; e.g., see reference in Section 3.14.3 to take-overs by world-wide groups of certain U.S.-based operators and written statements submitted to EPA during its July 14, 1998 scoping meeting (Appendix 20).

<sup>28</sup> Adverse consequences on the Antarctic environment could be created if the final rule has the effect of driving U.S.-based operators to countries not Party to the Protocol. If this were to happen, in most circumstances there would be no obligation on the part of the operator to comply with the planning processes delineated in Article 8 and Annex I of the Protocol leading to decisions about any activities undertaken in the Antarctic Treaty area.

these impacts in deciding whether or how to proceed with proposed activities. The procedures are intended to ensure that potential environmental effects of nongovernmental activities are appropriately identified and considered by the operator during the planning process and that to the extent practicable, appropriate environmental safeguards which would mitigate or prevent adverse impacts on the Antarctic environment are identified by the operator (40 CFR §8.1(2)(b) and 40 CFR §8.2(a)).

It has been EPA's view that the types of nongovernmental activities that are currently being carried out will typically be unlikely to have impacts that are more than minor or transitory assuming that activities will be carried out in accordance with the guidelines in the ATCM Recommendation XVIII-1 (Appendix 8), the relevant provisions of other U.S. statutes, and Annexes II-V to the Protocol (40 CFR Part 8 Preamble II.D.3(b)). Consequently, under the Interim Final Rule, it has been EPA's view that an IEE is the appropriate level of environmental documentation for proposed activities where multiples of the activity over time are likely and may create a cumulative impact.

During the time the Interim Final Rule has been in effect, U.S.-based operators have submitted IEEs as a means of evaluating the reasonably foreseeable potential effects of their proposed activities on the Antarctic environment. In reviewing this documentation, EPA has not had to make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations.<sup>29</sup> Thus, by notifying the operators that their IEEs meet the requirements of Article 8 and Annex I, EPA<sup>30</sup> has agreed that the operators have considered "... any impacts that the activity may have, including consideration of cumulative impacts in the light of existing and known planned activities" (Protocol Article 2(b)).<sup>31 32</sup>

The EPA believes that the IEEs prepared by the U.S.-based operators have identified the potential environmental consequences associated with the implementation of the Interim Final Rule.<sup>33</sup> Section 5.3 discusses the potential direct, indirect and cumulative impacts on the Antarctic environment of the activities conducted by U.S.-based operators for the expeditions reviewed to date,

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<sup>29</sup> Any such finding would be made with the concurrence of the National Science Foundation.

<sup>30</sup> Reviews are conducted in consultation with other interested federal agencies.

<sup>31</sup> Under 40 CFR §8.10, the regulations do not apply to activities taken in cases of emergency relating to the safety of human life or of ships, aircraft, equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in the regulations.

<sup>32</sup> Based on the current scientific studies, there is no evidence of cumulative environmental impacts related to tourism.

<sup>33</sup> The environmental impact assessment process includes consideration of the Antarctic environment as a whole with specific reference to, amongst other things: certain physical and biological aspects (including threatened species or populations of such species); areas of biological, scientific, historic, aesthetic, or wilderness significance; and highly uncertain environmental effects, or unique or unknown environmental risks. See Appendix 19: 40 CFR §8.4(b).

and assesses the potential impacts of these activities in concert with the planned mitigation measures.<sup>34</sup> Thus, EPA believes that Section 5.3 also presents the potential environmental consequences associated with EPA's implementation of the Interim Final Rule. In the context of the Protocol, these environmental consequences are no more than minor or transitory. Therefore, EPA believes that for purposes of this EIS these impacts are unlikely to have a 'significant' effect.<sup>35 36</sup>

The EPA recognizes that the Interim Final Rule requires only that environmental documentation be prepared and does not specifically require implementation of either the activities, as described, or the planned mitigation measures. However, if, for example, an operator proposes to mitigate the potential environmental impacts associated with a proposed activity, and the assessment of the proposed activity without the mitigative measures would be greater than minor or transitory effects, EPA assumes the operator will proceed with these mitigation measures. Otherwise, to be in compliance with the provisions of the Interim Final Rule, the operator's decision might have been to prepare a CEE, the different level of EIA documentation used when the reasonably foreseeable potential environmental effects of a proposed activity are likely to be more than minor or transitory.<sup>37</sup> Further, EPA assumes the activities will be undertaken as planned and described because the planned mitigation measures are generally one of the following:<sup>38</sup>

- requirements or prohibitions of federal laws;<sup>39</sup>

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<sup>34</sup> Also see Appendix 24.

<sup>35</sup> The Act also requires EPA to promulgate regulations, consistent with Annex I of the Protocol, for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol; this is Section 8.12 of the Interim Final Rule. For the same reasons as for the provisions for the environmental impact assessment of nongovernmental activities, EPA believes that, in the context of the Protocol, the environmental consequences are no more than minor or transitory for Section 8.12.

<sup>36</sup> Under the Interim Final Rule, EPA has applied a comparable threshold in determining whether an activity may have an impact that is more than minor or transitory to that used in determining if the activity will have a 'significant' effect for purposes of the National Environmental Policy Act. (C.f. 40 CFR §1508.27) 40 CFR Part 8, Preamble II.D.4.

<sup>37</sup> If planned mitigation measures are the basis for the level of documentation there is an obligation on the part of the operator to implement the planned mitigation. Otherwise, the level of documentation might not have met the requirements of the Protocol and the regulations.

<sup>38</sup> Based on experience to date, this has generally been true.

<sup>39</sup> Appendix 27 summarizes the domestic legislation implementing pertinent elements of the ATS and MARPOL 73/78. Potential environmental impacts and operator mitigation measures are identified in Appendix 24. For example, tour vessels are operated according to the domestic legislation of its flag state that gives effect to MARPOL, and U.S.-based tour operators adhere to applicable domestic statutes and regulations, and staff are trained and passengers educated on the mandates and prohibitions of the Antarctic Treaty, the Protocol, and U.S. regulations.

- adopted recommendations under the ATS;<sup>40</sup> and
- for most U.S.-based ship-based tour operators, requirements for membership under IAATO's Bylaws.<sup>41</sup>

Assessment of Environmental Consequences for Alternative 1: Alternative 1, the “No Action” alternative, is the promulgation of the Interim Final Rule as the final rule. Thus, the above assessment of environmental consequences for the Interim Final Rule is the same for Alternative 1. EPA assumes this assessment of the environmental consequences under the Interim Final Rule is also valid for the out-years and that the environmental consequences will remain no more than minor or transitory. This assumption is consistent with the information presented in Chapter 3 and summarized in Section 5.3 about the level and intensity of activity, including mitigation measures, for U.S.-based operators. EPA acknowledges that tourism intensity (e.g., the number of voyages, visitors, and landings) is projected to increase in the out-years. However, as acknowledged in Section 5.3.2, the data and information are not yet available to predict or project cumulative environmental impacts, if any. Likewise, the same is true for the ability to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 1. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

This assessment of the potential environmental consequences of the Interim Final Rule, and thus Alternative 1, is based on the IEE level of documentation and is consistent with the environmental documentation submitted by U.S.-based operators under the Interim Final Rule. As discussed in Section 3.14, these activities are projected to continue into the out-years. However, under Alternative 1, it is possible that in the out-years a preliminary environmental review will be selected by an operator as the level of documentation to assess whether the proposed activity may have less than a minor or transitory impact on the Antarctic environment (40 CFR §8.6). In this case, the nature of the potential environmental impacts are likely to be similar to those already identified though, when taken together with the planned mitigation measures, not of similar impact. The environmental consequences for this type of activity under Alternative 1 would also be less than minor or transitory.

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<sup>40</sup> Potential environmental impacts and operator mitigation measures are identified in Appendix 24. Certain mitigation measures include staff training and passenger education on Recommendation XVIII-1 (see Appendix 8).

<sup>41</sup> Potential environmental impacts and operator mitigation measures are identified in Appendix 24. Certain mitigation measures include adherence to the membership provisions of the IAATO Bylaws, specifically, agreement not having more than 100 passengers ashore at any one site at the same time. Although not an IAATO member, Orient Lines espouses IAATO's Bylaws and includes the same passenger limitation in its mitigation measures.

Under Alternative 1, it is also possible that in the out-years a CEE will be selected by an operator as the level of documentation necessary to enable informed consideration of the reasonably foreseeable potential environmental effects of a proposed activity and possible alternatives to the proposed activity (40 CFR §8.8). A CEE would be required if the environmental impacts of the proposed activity, including planned mitigation measures, are likely to be more than minor or transitory. The nature of the potential environmental impacts may be similar to those already identified though, when taken together with the planned mitigation measures, not of similar impact, or new potential impacts could be identified. In the context of the Protocol, the environmental consequences under Alternative 1 would also be more than minor or transitory under CEE-level documentation. Therefore, for purposes of this EIS, if activities proceed under CEE-level documentation the environmental consequences would be ‘significant.’

As summarized in Sections 3.14.7 and 5.2, out-year projections for U.S.-based nongovernmental operators are most likely to be the same level of activity as those conducted under the Interim Final Rule. Although it is possible that an out-year activity level would result in environmental consequences that are more than minor or transitory, this is not the anticipated level of environmental consequence for out-year activities by U.S.-based nongovernmental operators.

In summary, the environmental consequences, including cumulative impacts, for Alternative 1 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, the impacts of Alternative 1 are unlikely to have ‘significant’ environmental consequences. The issue of cumulative impacts, particularly in the Peninsula area, remains a concern in light of such intensity factors as the increasing number of tour operators, expeditions, and passengers landed; the number of sites visited; and the frequency at which certain sites are visited. However, the data and information are not yet available to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 1. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

Assessment of Other Consequences: As discussed above, the environmental consequences assessment process must also assess each alternative with regard to the following:

- The ability of the alternative to ensure that the U.S. is able to comply with its obligations under the Protocol;
- Assurance that the regulations under the alternative would be, as directed by the Act, “consistent with Annex I to the Protocol;”
- The ability of the alternative to ensure consistency between the governmental and nongovernmental EIA processes; and
- The burden imposed on the operators under the alternative.



Similar to the process for assessment of the environmental consequences, the following assesses the other consequences for the Interim Final Rule and then for Alternative 1.

***The ability of Alternative 1 to ensure that the U.S. is able to comply with its obligations under the Protocol:***

Interim Final Rule: Promulgation of the Interim Final Rule under the statutory authority of section 2403a of the Act enabled the U.S. to implement its obligations under the Protocol by providing nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol as specified in 40 CFR §8.1(b) and as delineated in the specific provisions of the regulations.<sup>42</sup>

Alternative 1: Selection of Alternative 1 for proposed promulgation would ensure that the U.S. is able to continue to comply with its obligations under the Protocol by providing nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Alternative 1 would accomplish this by carrying forth Section 8.1(b) and the specific requirements as delineated in the provisions of the Interim Final Rule.<sup>43</sup>

***Assurance that the regulations under Alternative 1 would be, as directed by the Act, “consistent with Annex I to the Protocol:”***

Interim Final Rule: As provided in 40 CFR §8.1(b), “[t]hese procedures are consistent with and implement the environmental impact assessment provisions of Article 8 and Annex I to the Protocol on Environmental Protection to the Antarctic Treaty.”

Alternative 1: Selection of Alternative 1 for proposed promulgation would assure that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol” by carrying forth Section 8.1(b) of the Interim Final Rule and the specific requirements as delineated in the provisions of the Interim Final Rule.

***The ability of Alternative 1 to ensure consistency between the governmental and nongovernmental EIA processes:***

Interim Final Rule: The Interim Final Rule does not apply to governmental activities. However, in promulgating the Interim Final Rule, EPA believed that, to the extent practicable, similar

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<sup>42</sup> This also includes the requirement for the U.S. government to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

<sup>43</sup> This also includes the requirement for the U.S. government to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

procedures should generally be used for assessing both governmental and nongovernmental activities. Consistent with this, the Interim Final Rule generally established procedures for assessing the impacts of nongovernmental activities in Antarctica similar to those used for governmental activities under the National Science Foundation regulations (40 CFR Part 8 Preamble II.D.2).<sup>44</sup> Further, the Preamble to the Interim Final Rule provides criteria for CEEs that included use of a threshold to be applied in determining whether an activity may have an impact that is more than minor or transitory which is similar to that used in determining if an activity will have a ‘significant’ effect for purposes of the National Environmental Policy Act (40 CFR Part 8, Preamble II.D.4). This threshold is consistent with the threshold established by the Act for EIA of governmental activities (Public Law 104-227, Section 4A.(B)).

Alternative 1: Selection of Alternative 1 for proposed promulgation would provide consistency between the governmental and nongovernmental EIA processes by carrying forth the specific requirements as delineated in the provisions of the Interim Final Rule, procedures that are similar to those used for governmental activities under the National Science Foundation regulations. Further, the Preamble for Alternative 1 would continue to provide criteria for CEEs that would include use of a threshold to be applied in determining whether an activity may have an impact that is more than minor or transitory which is similar to that used in determining if an activity will have a ‘significant’ effect for purposes of the National Environmental Policy Act. As with the Interim Final Rule, this threshold would be consistent with the threshold established by the Act for EIA of governmental activities.

***The burden imposed on the operators under Alternative 1:***

Interim Final Rule: In promulgating the Interim Final Rule, EPA considered the potential burden<sup>45</sup> imposed on the operators, including the effects on small businesses. Under the Interim Final Rule, nongovernmental operators, including tour operators, conducting expeditions to Antarctica are required to submit environmental documentation to EPA that evaluates the potential environmental impact of their proposed activities. The type of environmental documentation required depends on the nature and intensity of the environmental impacts that could result from the activity under consideration. If EPA has no comments, or if the documentation is satisfactorily revised in response to EPA comments, and the operator does not receive a notice from EPA that the environmental

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<sup>44</sup> The issue of consistency with the U.S. governmental program does not apply to the requirement for the U.S. to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

<sup>45</sup> As defined in 40 CFR Part 8, Preamble VII, ‘burden’ means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to: review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations, the operator has no further obligations under the Interim Final Rule provided that any required procedures, which may include appropriate monitoring, are put in place to assess and verify the impact of the activity. The requirements are no greater than necessary to ensure that the U.S. will be in compliance with its international obligations under the Protocol and the Treaty. Further, EPA included a number of provisions, e.g., incorporation of information and consolidation of documentation, which should minimize the cost and reduce the burden on the operator (40 CFR Part 8 Preamble VII, 40 CFR Part 8 Preamble V).<sup>46 47</sup>

Under the Interim Final Rule, it has been EPA's experience that operators make one submittal per year for all their expeditions for that year. Further, most U.S.-based operators use the paperwork reduction provisions at Section 8.4(d) of the Interim Final Rule. For example, the IEE prepared by IAATO on behalf of its U.S.-based member operators the first year the Interim Final Rule was in effect has served as the basic document for the IAATO members in the ensuing years. This document addresses more than one proposed expedition within one environmental document and addresses expeditions being carried out by more than one operator. This document has since been incorporated by the U.S.-based IAATO-member operators, and by Oceanites, by referring to it in subsequent years' documentation. In another example, a U.S.-based operator and an Australian operator submitted the same IEE to their respective governments (Quark, Zegrahm, Aurora IEE 1998). In summary, the intent of the Interim Final Rule has been to provide for opportunities to minimize the cost and burden on the operators while maintaining the ability of the U.S. to ensure that it is able to comply with its obligations under the Protocol and consistency with Annex I as directed by the Act.

Alternative 1: Selection of Alternative 1 for proposed promulgation would not pose undue burden on the operators. This Alternative would carry forth the specific requirements as delineated in the provisions of the Interim Final Rule, requirements are no greater than necessary to ensure that the U.S. will be in compliance with its international obligations under the Protocol and the Treaty. Further, Alternative 1 would included the paperwork reduction provisions of Section 8.4(d) which are intended to minimize the cost and reduce the burden on the operator.

In summary, Alternative 1 ensures that the U.S. is able to comply with its obligations under the Protocol; assures that the regulations would be, as directed by the Act, "consistent with Annex I to the Protocol;" provides for consistency between the governmental and nongovernmental EIA processes; and does not impose undue burden on the operators.

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<sup>46</sup> No capital costs or operational and maintenance costs were anticipated to be incurred as a result of the Interim Final Rule; EPA is unaware of any such costs to the operators as a result of the implementation of the regulations.

<sup>47</sup> The requirement for the U.S. to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12 does not impose any potential burden on nongovernmental operators.

### **5.5.2. Potential Consequences of Alternative 2: Preferred Alternative - Interim Final Rule with Certain Procedural and Administrative Modifications**

Assessment of Environmental Consequences for Alternative 2: Alternative 2, EPA's preferred alternative, would modify the Interim Final Rule to respond to suggestions for certain changes in the EIA process including changes that would ensure consistency between the governmental and nongovernmental EIA processes and that could reduce the time and cost of the EIA process for the nongovernmental operators. The following assesses the environmental consequences for the modifications proposed under Alternative 2 relative to the basic assessment of environmental consequences for Alternative 1 as delineated in Section 5.5.1.

- Modification 1 consists of technical modifications and edits. These modifications and edits do not change the basic assessment of environmental consequences.
- Modification 2 would add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons. For expeditions that are specifically identified and assessed on a multi-year basis, this provision would eliminate the need for annual submission of EIA documentation provided that the conditions described in the multi-year document, including the assessment of cumulative impacts, is unchanged. The multi-year provision also would allow operators to update basic information and to provide information on additional activities to supplement the multi-year environmental document without having to revise and re-submit the entire document. Since this modification anticipates no changes in the planned activities or assessed impacts, this modification does not change the basic assessment of environmental consequences.
- Modification 3 would add a definition, or other provision, that would establish a threshold for "more than a minor or transitory impact." This is the same threshold definition applied to the environmental impact assessment of governmental activities in Antarctica, and is the criterion for CEEs that has been applied to the Interim Final Rule. This modification does not change the basic assessment of environmental consequences.

In summary, the environmental consequences, including cumulative impacts, for Alternative 2 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, these impacts are unlikely to have a 'significant' effect. As discussed under Alternative 1, the issue of cumulative impacts, particularly in the Peninsula area, remains a concern. However, the data and information are not yet available to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 2. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

Assessment of Other Consequences: Similar to the process for assessment of the environmental consequences, the following assesses the other consequences for Alternative 2 relative to Alternative 1 as delineated in Section 5.5.1.

***The ability of Alternative 2 to ensure that the U.S. is able to comply with its obligations under the Protocol:***

Selection of Alternative 2 for proposed promulgation would ensure that the U.S. is able to continue to comply with its obligations under the Protocol by providing nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Alternative 2 would accomplish this by carrying forth Section 8.1(b) and the specific requirements as delineated in the provisions of the Interim Final Rule.<sup>48</sup>

***Assurance that the regulations under Alternative 2 would be, as directed by the Act, “consistent with Annex I to the Protocol:”***

Selection of Alternative 2 for proposed promulgation would assure that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol” by carrying forth Section 8.1(b) of the Interim Final Rule and the specific requirements as delineated in the provisions of the Interim Final Rule.

***The ability of Alternative 2 to ensure consistency between the governmental and nongovernmental EIA processes:***

Selection of Alternative 2 for proposed promulgation would ensure consistency between the governmental and nongovernmental EIA processes by carrying forth the specific requirements as delineated in the provisions of the Interim Final Rule, procedures that are similar to those used for governmental activities under the National Science Foundation regulations.

Alternative 2 would, however, go beyond Alternative 1 in that it would ensure regulatory consistency with U.S. governmental EIA regulations for activities in Antarctica. Alternative 2 would add a definition (or other provision) that would establish a regulatory threshold for “more than a minor or transitory impact” to have the same meaning as “significantly affecting the quality of the human environment.” This is the same criterion EPA has applied in its implementation of the Interim Final Rule, criteria delineated in the Preamble to the Interim Final Rule. Under Alternative 1, non-regulatory consistency would be accomplished in the same manner; under Alternative 2, adding a definition (or other provision) would ensure regulatory consistency.

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<sup>48</sup> This also includes the requirement for the U.S. government to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

***The burden imposed on the operators under Alternative 2:***

Selection of Alternative 2 for proposed promulgation would not pose undue burden on the operators. This Alternative would carry forth the specific requirements as delineated in the provisions of the Interim Final Rule, requirements are no greater than necessary to ensure that the U.S. will be in compliance with its international obligations under the Protocol and the Treaty. Further, Alternative 2 would include the paperwork reduction provisions of Section 8.4(d) which are intended to minimize the cost and reduce the burden on the operator.

Alternative 2 would, however, go beyond Alternative 1 in that Alternative 2 would add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons.

In summary, Alternative 2 ensures that the U.S. is able to comply with its obligations under the Protocol; assures that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol;” ensures consistency between the governmental and nongovernmental EIA processes; and does not impose undue burden on the operators.

**5.5.3. Potential Consequences of Alternative 3: Interim Final Rule with Modifications Beyond Those Considered to be Procedural or Administrative**

Assessment of Environmental Consequences for Alternative 3: Alternative 3 proposes modifications to the Interim Final Rule beyond those of Alternative 2 that are considered to be procedural or administrative, but does not go as far as Alternatives 4 and 5 in changing the basic approach set out in the Interim Final Rule.<sup>49</sup> The following assesses the environmental consequences for the modifications proposed under Alternative 3 relative to the basic assessment of environmental consequences for Alternative 1 as delineated in Section 5.5.1.

- Modification 1 consists of incorporating all three of the procedural and administrative modifications proposed under Alternative 2:
  1. Incorporate the technical modifications and edits;
  2. Add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons; and

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<sup>49</sup> As first discussed in Section 4.3.2, Alternative 3 is one of the Alternatives that incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing for the most part even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

3. Add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

These modifications do not change the basic assessment of environmental consequences.

- Modification 2 would broaden the definition of operator to include foreign operators “doing business in the United States.”<sup>50</sup> As discussed in Section 4.4.3, the reason to broaden the definition of “operator” would be to require foreign-based operators from countries that are not Parties to the Protocol that carry U.S. passengers to submit EIA documentation to EPA. Since countries that are not Parties have not agreed to abide by the obligations of the Protocol, they do not require their nongovernmental operators to undertake environmental impact assessment of proposed activities in accordance with Article 8 and Annex I to the Protocol. Such operators may not have applied the assessment procedures set out in Annex I in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area.<sup>51</sup> Thus, for purposes of all U.S. citizens traveling to Antarctica, Alternative 3 with this modification would ensure that the basic assessment of environmental consequences does not change. This provision, which would provide for unilateral U.S. regulation of non-U.S. operators, could have the effect of reducing international efforts to bring these countries into the ATS and the Protocol, thus weakening the efficacy of environmental measures under the ATS.

However, as discussed in Section 4.4.3, a provision to broaden the definition of operator to include foreign operators who merely are “doing business in the U.S.” would be contrary to the U.S. government’s interpretation of the Protocol. Article 8 requires Parties to ensure that the assessment procedures set out in Annex I are applied to “...tourism and all other ... nongovernmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty ...” Article VII(5) provides that a Party must give notice for “... all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory.” Similarly, the Act explicitly requires environmental impact assessments of nongovernmental activities organized in or proceeding from the U.S. for which the United States is required to give advance notice under Article VII(5) of the Treaty. Thus, for purposes of the Act, the United States can assert jurisdiction over operators only where the relevant expedition is

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<sup>50</sup> This modification also proposes that if it is not feasible to broaden the definition of “operator” as proposed, then under Alternative 3, the final rule would apply to all U.S. citizens going to Antarctica on nongovernmental expeditions.

<sup>51</sup> For example, as long as it does not organize expeditions in the U.S., Canadian-based operator, Marine Expeditions, has no legal obligation to undertake an environmental impact assessment of its proposed expeditions. The company has, however, voluntarily prepared environmental documentation and provided a copy to EPA and others. Based on information in IAATO’s annual passenger estimates, it is estimated that Marine Expeditions may carry about 12% of the U.S. citizens traveling to Antarctica. However, in 2001, Marine Expeditions filed for bankruptcy; its future status as an Antarctic tour operator is unknown.

organized in or proceeding from the United States. It is conceivable that a non-U.S. based operator could conduct such a level of activity within the United States that it could be deemed to be organizing an activity in the United States, and thus the United States would have jurisdiction in such a circumstance. Nevertheless, mere sale of tickets by a foreign operator, for example, would not rise to the level of organizing an expedition in the United States. In these circumstances, a provision amending the definition of “operator” to any foreign operator merely “doing business in the United States” would be too broad and thus inconsistent with the Treaty’s requirement that the expedition be organized in or proceeding from the United States.

- Modification 3 would include a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes. This modification would ensure that operators have considered all applicable provisions of the Protocol and relevant U.S. statutes. Adding such a requirement would not change the assessment of environmental consequences since operators are already subject to compliance with applicable federal laws, and it would be inconsistent with the Act’s delineation of roles for various federal agencies. As discussed in Section 4.4.3, such a blanket requirement would not necessarily reduce environmental impacts.<sup>52</sup> Further, this modification does not change the three levels of environmental documentation and the associated levels of impact. Thus, this modification does not change the basic assessment of environmental consequences.

In summary, the environmental consequences, including cumulative impacts, for Alternative 3 are most likely to be no more than minor or transitory in the context of the Protocol. Therefore, for purposes of this EIS, these impacts are unlikely to have a ‘significant’ effect. As discussed under Alternative 1, the issue of cumulative impacts, particularly in the Peninsula area, remains a concern. However, the data and information are not yet available to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 3. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

Assessment of Other Consequences: Similar to the process for assessment of the environmental consequences, the following assesses the other consequences for Alternative 3 relative to Alternative 1 as delineated in Section 5.5.1.

***The ability of Alternative 3 to ensure that the U.S. is able to comply with its obligations under the Protocol:***

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<sup>52</sup> Under Article 8, the assessment procedures set out in Annex I are to be applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area. Annex I requires that the environmental impacts of proposed activities be considered.



Selection of Alternative 3 for proposed promulgation would ensure that the U.S. is able to continue to comply with its obligations under the Protocol by providing nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Alternative 3 would accomplish this by carrying forth Section 8.1(b) and the specific requirements as delineated in the provisions of the Interim Final Rule.<sup>53</sup>

***Assurance that the regulations under Alternative 3 would be, as directed by the Act, “consistent with Annex I to the Protocol:”***

Although selection of Alternative 3 for proposed promulgation would assure that the procedural requirements of the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol,” modifications 2 and 3 would not be consistent with Annex I to the Protocol. As discussed in Section 4.4.3, broadening the definition of “operator” to apply to foreign-based operators who organize expeditions outside the U.S. or to individual citizens is not consistent with the advance notice provision of Article 8 of the Protocol<sup>54</sup> and, thus, the statutory directive of the Act. Further, a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes is not required by Annex I and, thus, not the Act.

***The ability of Alternative 3 to ensure consistency between the governmental and nongovernmental EIA processes:***

As with Alternative 2, selection of Alternative 3 for proposed promulgation would ensure consistency between the governmental and nongovernmental EIA processes by carrying forth the specific requirements as delineated in the provisions of the Interim Final Rule, procedures that are similar to those used for governmental activities under the National Science Foundation regulations. Also like Alternative 2, Alternative 3 would further ensure regulatory consistency by adding a definition (or other provision) that would establish a threshold for “more than a minor or transitory impact” to have the same meaning as “significantly affecting the quality of the human environment.”

Selection of Alternative 3 for proposed promulgation would, however, not ensure consistency between the governmental and nongovernmental EIA processes. Alternative 3 includes a modification requiring EIA documents to include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes. Such a modification would require more of nongovernmental operators than is required of the U.S. government for its Antarctic activities, thus,

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<sup>53</sup> This also includes the requirement for the U.S. government to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

<sup>54</sup> Article 8 is referenced in Annex I: “The environmental impacts of proposed activities referred to in Article 8 of the Protocol shall ...”.

this modification would obligate nongovernmental operators to requirements that are not consistent with the EIA requirements applied to U.S. governmental entities (see Section 4.4.3).

***The burden imposed on the operators under Alternative 3:***

Alternative 3 would include the paperwork reduction provisions of Section 8.4(d) and would also add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons. However, selection of Alternative 3 for proposed promulgation would pose undue burden on the operators in that it would include specific requirements that are greater than necessary to ensure that the U.S. will be in compliance with its international obligations under the Protocol and the Treaty by including a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes. Operators may, and do, include such discussions in their environmental documentation, as appropriate. However, imposing this as a requirement places obligations and undue burden on U.S. operators not required under Annex I or the Act, or for U.S. government activities in Antarctica.

EPA is concerned that the final rule not place undue burden on operators, including small business operators. Should this occur, there is a potential for one or more U.S.-based operators to move their operations to another country, including a country not Party to the Protocol. A move to another country cannot be ruled out given the international nature of the tour industry.<sup>55</sup> For example, adverse consequences on the Antarctic environment could be created if the final rule has the effect of driving U.S.-based operators to non-Party countries. If this were to happen, in most circumstances there would be no obligation on the part of the operator to comply with the planning processes delineated in Article 8 and Annex I of the Protocol leading to decisions about any activities undertaken in the Antarctic Treaty area.

In summary, Alternative 3 ensures that the U.S. is able to comply with its obligations to require EIA documentation under the Protocol. However, modification 2 is not generally consistent with the Protocol, and modifications 2 and 3 are not required in order for the U.S. to ensure that it is able to comply with its obligations under the Protocol, nor would they be “consistent with Annex I to the Protocol,” as directed by the Act. Modification 3 would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act, and it would not be consistent with the EIA process or requirements applied to U.S. governmental entities.

**5.5.4. Potential Consequences of Alternative 4: “Substantive” Rule**

Assessment of Environmental Consequences for Alternative 4: Alternative 4 would modify the Interim Final Rule to include substantive requirements in association with the environmental

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<sup>55</sup> See reference in Section 3.14.3 to take-overs by world-wide groups of certain U.S.-based operators and written statements submitted to EPA during its July 14, 1998 scoping meeting (Appendix 20).

documentation requirements for nongovernmental activities in Antarctica, and to provide for federal direction over the level of environmental document required.<sup>56</sup> The following assesses the environmental consequences for the modifications proposed under Alternative 4 relative to the basic assessment of environmental consequences for Alternative 1 as delineated in Section 5.5.1.

- Modification 1 consists of incorporating all four of the procedural and administrative modifications proposed under Alternative 2:
  1. Incorporate the technical modifications and edits;
  2. Add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons; and
  3. Add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

These modifications do not change the basic assessment of environmental consequences.

- Modification 2 consists of incorporating the two additional modifications proposed in Alternative 3:
  1. Broaden the definition of operator to include foreign operators “doing business in the United States,”<sup>57</sup> and
  2. Include a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes.

As discussed in Section 5.5.3, the modification to broaden the definition of “operator” would, for purposes of all U.S. citizens traveling to Antarctica, ensure that the basic assessment of environmental consequences does not change.<sup>58</sup> Including a provision requiring that EIA documents

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<sup>56</sup> As first discussed in Section 4.3.2, Alternative 4 is one of the Alternatives that for the most part incorporates modifications related to issues raised during scoping which EPA, for reasons of completeness, is addressing even though the U.S. government does not have authority to implement because they are inconsistent with the provisions of the Protocol, EPA and other federal agencies lack statutory authority under the Act to issue regulations incorporating such provisions, and because the Act requires that the regulations with respect to nongovernmental activities be consistent with Annex I to the Protocol. These three Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

<sup>57</sup> This modification also proposes that if it is not feasible to broaden the definition of “operator” as proposed, then under Alternative 3, the final rule would apply to all U.S. citizens going to Antarctica on nongovernmental expeditions.

<sup>58</sup> However, as discussed in Section 4.4.3, a provision to broaden the definition of operator to include foreign operators who are merely “doing business in the U.S.” would be contrary to the U.S. government’s

include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes does not change the three levels of environmental documentation and the associated levels of impact. Thus, this modification does not change the basic assessment of environmental consequences.<sup>59</sup>

- Modification 3 would add a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation. This modification does not change the three levels of environmental documentation and the associated levels of impact. Thus, this modification does not change the basic assessment of environmental consequences.<sup>60</sup> However, as discussed in Section 4.4.4, the U.S. government does not have any authority to prevent activities for which proper environmental assessments have been undertaken provided the proposed activities are not otherwise in conflict with U.S. law.<sup>61</sup> Further, Article 3 of the Protocol is implemented through the Annexes to the Protocol. In and of itself it does not impose mandatory requirements. Moreover, Article 8 provides for an EIA process for impacts of planned activities but does not impose substantive requirements. Therefore, this proposed substantive modification is inconsistent with the Protocol and the Act. Further, based on EPA's assessment of the impacts from current and anticipated out-year nongovernmental activities, this provision would likely not result in substantial environmental benefits.
- Modification 4 would add a provision which would allow the federal government to prevent an activity from proceeding if anticipated impacts are determined to be unacceptable. If a substantive provision could not be included in the final rule, include a provision to require insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause actual environmental harm.

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interpretation of the Protocol and the Act.

<sup>59</sup> However, this provision, which would provide for unilateral U.S. regulation of non-U.S. operators, could have the effect of reducing international efforts to bring these countries into the ATS and the Protocol, thus weakening the efficacy of environmental measures under the ATS.

<sup>60</sup> Under this Alternative, the operator would be required to demonstrate in the documentation that the activity has been modified, suspended or canceled if it may result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems inconsistent with the principles of Article 3 of the Protocol. Regardless of the level of environmental documentation at which this may occur, the assessment of environmental consequences in Section 5.5.1.A remains the same; e.g., most likely no more than minor or transitory and, on occasion, less than, or more than, minor or transitory.

<sup>61</sup> Certain activities may be illegal under U.S. laws or may be legal only with a permit issued by the responsible authority. For example, it is illegal to "take" or to engage in harmful interference with any native bird or mammal or plants unless such activities are reviewed and permitted by the National Science Foundation. Further, under the Interim Final Rule and this Alternative, persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.* (see Appendix 27).

This modification does not change the three levels of environmental documentation and the associated levels of impact. Thus, this modification does not change the basic assessment of environmental consequences. However, as discussed in Section 4.4.4, the U.S. government does not have any authority to prevent activities for which proper environmental assessments have been undertaken provided the proposed activities are not otherwise in conflict with U.S. law.<sup>62</sup> The Protocol specifically anticipates that activities with greater than a minor or transitory impact may be conducted so long as a CEE is prepared. Further, Article 3 of the Protocol is implemented through the Annexes to the Protocol. In and of itself it does not impose mandatory requirements. Moreover, Article 8 provides for an EIA process for impacts of planned activities but does not impose substantive requirements. Therefore, this proposed substantive modification is inconsistent with the Protocol and the Act. Further, based on EPA's assessment of the impacts from current and anticipated out-year nongovernmental activities, this provision would likely not result in substantial environmental benefits.

- Modification 5 would add a provision for public notice and comment on IEEs similar to the process for CEEs. This modification would include an obligation on the part of preparers to respond to points raised in the public comment process. This modification does not, however, change these two levels of environmental documentation and the associated levels of impact. Thus, this modification does not change the basic assessment of environmental consequences.
- Modification 6 would add a provision to require a CEE when any new landing sites are included, or are proposed as possible landing sites, in the itinerary of expeditions by nongovernmental operators. This modification would require the more detailed directions for the CEE-level assessment but does not, however, change the potential level of impact associated with a CEE.<sup>63</sup> Thus, this modification does not change the basic assessment of environmental consequences for CEE-level of activity and, therefore, it also does not change the basic assessment of environmental consequences.

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<sup>62</sup> Certain activities may be illegal under U.S. laws or may be legal only with a permit issued by the responsible authority. For example, it is illegal to “take” or to engage in harmful interference with any native bird or mammal or plants unless such activities are reviewed and permitted by the National Science Foundation. Further, under the Interim Final Rule and this Alternative, persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. §1371 *et seq.* (see Appendix 27).

<sup>63</sup> There is not a scientific basis for concluding that any visit to a new site would always have the likelihood of a greater than minor or transitory impact; thus, the conclusion that a CEE should be prepared in every case is not supported. Such a provision would not necessarily reduce environmental impacts.

In summary, the environmental consequences, including cumulative impacts, for Alternative 4 are most likely to be no more than minor or transitory. Although substantive provisions could reduce the level of consequences, particularly for CEE-level activities, substantive provisions are not consistent with the Protocol and EPA lacks statutory authority to impose substantive requirements. As discussed under Alternative 1, the issue of cumulative impacts, particularly in the Peninsula area, remains a concern. However, the data and information are not yet available to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 4. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

Assessment of Other Consequences: Similar to the process for assessment of the environmental consequences, the following assesses the other consequences for Alternative 4 relative to Alternative 1 as delineated in Section 5.5.1.

***The ability of Alternative 4 to ensure that the U.S. is able to comply with its obligations under the Protocol:***

Selection of Alternative 4 for proposed promulgation would ensure that the U.S. is able to continue to comply with its obligations under the Protocol by providing nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Alternative 4 would accomplish this by carrying forth Section 8.1(b) and the specific requirements as delineated in the provisions of the Interim Final Rule.<sup>64</sup>

***Assurance that the regulations under Alternative 4 would be, as directed by the Act, “consistent with Annex I to the Protocol:”***

Selection of Alternative 4 for proposed promulgation would ensure that the procedural requirements of the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol.” However, as with Alternative 3, the modifications to broaden the definition of “operator” to apply to foreign-based operators who organize expeditions outside the U.S. or to individual citizens and to include a provision requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes would not be consistent with Annex I to the Protocol. Further, as discussed in Section 4.4.4, the two modifications that would impose substantive requirements on nongovernmental operators are contrary to the U.S. government’s interpretation of the Protocol and are not consistent with EPA’s statutory directive under the Act.

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<sup>64</sup> This also includes the requirement for the U.S. government to provide for coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol pursuant to 40 CFR §8.12.

***The ability of Alternative 4 to ensure consistency between the governmental and nongovernmental EIA processes:***

Selection of Alternative 4 for proposed promulgation would ensure consistency between the governmental and nongovernmental EIA processes by carrying forth the specific requirements as delineated in the provisions of the Interim Final Rule, procedures that are similar to those used for governmental activities under the National Science Foundation regulations. Also, like Alternative 2 and 3, Alternative 4 would further ensure regulatory consistency by adding a definition (or other provision) that would establish a threshold for “more than a minor or transitory impact” to have the same meaning as “significantly affecting the quality of the human environment.”

Selection of Alternative 4 for proposed promulgation would, however, not ensure consistency between the governmental and nongovernmental EIA processes. Like Alternative 3, Alternative 4 includes a modification requiring EIA documents to include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes. Such a modification would result in requirements that are not consistent with the EIA process or requirements that apply to U.S. governmental entities (see Section 4.4.3). Further, inclusion of any of substantive provisions would impose substantive requirements that are contrary to the U.S. government’s interpretation of Article 3 of the Protocol and as such, would not be consistent with EPA’s directive under the Act or with the EIA requirements that apply to U.S. government activities in Antarctica. The modification to establish a procedure for public notice and comment on IEEs similar to the process for CEEs is not required under Annex I and would be inconsistent with the process and requirements for the U.S. governmental program.

***The burden imposed on the operators under Alternative 4:***

Alternative 4 would include the paperwork reduction provisions of Section 8.4(d) and would also add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons. In addition, however, economic burden could be imposed on operators under the substantive provisions which would require compliance with the provisions of Article 3 and which would allow the federal government to prevent an activity from proceeding if the anticipated impacts are determined to be unacceptable. Further, selection of Alternative 4 for proposed promulgation would include specific requirements that are greater than necessary to ensure that the U.S. will be in compliance with its international obligations under the Protocol and the Treaty and would pose obligations and undue burden on the operators. These provisions are discussed in the analysis of Alternative 4 in Section 4.4.4 and include: requiring that EIA documents include a discussion of compliance with other applicable provisions of the Protocol and relevant U.S. statutes,<sup>65</sup> an insurance and bonding provision in lieu of

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<sup>65</sup> Operators may, and do, include such discussions in their environmental documentation, as appropriate.

substantive requirements,<sup>66</sup> establishing procedures for public notice and comment on IEEs similar to the process for CEEs,<sup>67</sup> and requiring that a CEE be prepared when any new sites are proposed as possible landing sites by nongovernmental operators.<sup>68</sup>

As expressed earlier, EPA is concerned that the final rule not place undue burden on operators, including small business operators. Should this occur, there is a potential for one or more U.S.-based operators to move their operations to another country, including a country not Party to the Treaty. A move to another country cannot be ruled out given the international nature of the tour industry.<sup>69</sup> For example, adverse consequences on the Antarctic environment could be created if the final rule has the effect of driving U.S.-based operators to non-Party countries. If this were to happen, there would be no obligation on the part of the operator to comply with the planning processes delineated in Article 8 and Annex I of the Protocol leading to decisions about any activities undertaken in the Antarctic Treaty area.

In summary, Alternative 4 ensures that the U.S. is able to comply with its obligations to require EIA documentation under the Protocol. However, certain of the proposed modifications are not required in order for the U.S. to ensure that it is able to comply with its obligations under the Protocol, nor would they be, as directed by the Act, “consistent with Annex I to the Protocol.” Further, certain modifications would not be consistent with the EIA process or requirements that apply to U.S. governmental entities, and several of the proposed modifications would impose obligations and undue burden on U.S. nongovernmental operators not required under Annex I or the Act.

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<sup>66</sup> Such an activity would most likely occur at the CEE level of documentation which, under Annex I of the Protocol, is legitimate; e.g., this is the level of documentation for which a proposed activity is likely to have more than a minor or transitory impact. To date, EPA has not received a CEE from an operator.

<sup>67</sup> Under the Interim Final Rule, EPA publishes notice of receipt of IEEs on one of its websites and makes copies available to the public upon request. Based on its experience to date, EPA has no evidence that interested parties have been unable to obtain IEEs and to offer comments to the operators under this notification scheme.

<sup>68</sup> For most activities undertaken by U.S.-based operators to date and projected to occur in the out-years, IEEs have been, and are most likely to continue to be, the appropriate level of documentation. For example, as described in Chapter 3 and summarized in Sections 5.2 and 5.3, on average, the number of new landing sites in the Peninsula area has been 14 sites per year, and the process for landings used by tour operators results in potential environmental impacts that are no more than minor or transitory. These same types of activities, with the appropriate mitigation measures, are anticipated to continue in the out-years with the same level of impact.

<sup>69</sup> See reference in Section 3.14.3 to take-overs by world-wide groups of certain U.S.-based operators and written statements submitted to EPA during its July 14, 1998 scoping meeting (Appendix 20).



### 5.5.5. Potential Consequences of Alternative 5: “Discretionary” Rule

Assessment of Environmental Consequences for Alternative 5: Alternative 5 would modify the Interim Final Rule by eliminating EPA’s responsibility for making a finding, with the concurrence of the National Science Foundation, that the documentation submitted does not meet the requirements of Article 8 and Annex I and the provisions of the regulations.<sup>70</sup> The following assesses the environmental consequences for the modifications proposed under Alternative 5 relative to the basic assessment of environmental consequences for Alternative 1 as delineated in Section 5.5.1.

- Modification 1 consists of incorporating all three of the procedural and administrative modifications proposed under Alternative 2:
  1. Incorporate the technical modifications and edits;
  2. Add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons; and
  3. Add a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

These modifications do not change the basic assessment of environmental consequences.

- Modification 2 would eliminate the provisions in the Interim Final Rule that provide for EPA to make a finding with the concurrence of the National Science Foundation that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations; and modification 3 would eliminate the associated enforcement provision. These modifications do not change the three levels of environmental documentation and the associated levels of impact. However, under these proposed modifications, the environmental impacts for a specific activity, or set of activities, may not be accurately described if the operator has not selected the correct level of documentation. Under this Alternative, there is a potential for the environmental consequences to be greater than would otherwise be indicated by the level of EIA documentation prepared by the operator.<sup>71</sup> As

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<sup>70</sup> As first discussed in Section 4.3.2, Alternative 5 is one of the three Alternatives that incorporate modifications related to issues which EPA included for reasons of completeness. Alternative 5 incorporates modifications under which the U.S. government would not be able to ensure that its obligations under the Protocol would be fulfilled. These modifications would be inconsistent with the provisions of the Protocol and, thus, contrary to the requirements of the Act.

<sup>71</sup> As discussed in Section 5.5.1, the basic assessment of environmental consequences for the alternatives is derived from the assessment of environmental consequences for the Interim Final Rule and then projected into the out-years (e.g., the assessment of environmental consequences for Alternative 1). Under this process, the basic assessment of environmental consequences for the Interim Final Rule is derived from the environmental impact assessment of the activities undertaken by U.S.-based operators in compliance with the Interim Final Rule.

discussed in Section 4.4.5, EPA does not believe, based on past experience, that these modifications would allow the U.S. government to ensure that the assessment procedures set out in Annex I are appropriately applied by U.S.-based operators in the planning processes leading to their decisions about any activities undertaken in the Antarctic Treaty area (Protocol Article 8). Thus, this is not a viable modification.

- Modification 4 would eliminate the preliminary environmental review provision in the Interim Final Rule. As discussed under Section 4.4.5, the preliminary review process is intended to assess the potential direct and reasonably foreseeable indirect impacts on the Antarctic environment of the proposed expedition in sufficient detail to assess whether the proposed activity may have less than a minor or transitory impact. This process is not part of or inherent in the basic information requirements (Interim Final Rule Section 8.4) that would be retained under the final rule, a provision consistent with the Advance Notice information provided by operators to the Department of State. It has been EPA's experience under the Interim Final Rule, that the initial draft EIAs prepared by the operators have not always supported a conclusion consistent with the level of potential impact associated with the proposed activities described in the documentation, including draft PERM-level documentation. Thus, under this Alternative, there is a potential for the environmental consequences to be greater than would otherwise be indicated by the level of EIA documentation prepared by the operator. As discussed in Section 4.4.5, eliminating the PERM provision would not allow EPA, and thus the U.S. government, to ensure that the assessment procedures set out in Annex I are appropriately applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area (Protocol Article 8).
- Modification 5 would add a provision to provide for an automatic reciprocity when environmental documentation prepared for other Parties is submitted by a U.S.-based operator. This modification does not change the three levels of environmental documentation and the associated levels of impact. However, as discussed in Section 4.4.5, it is the responsibility of the United States to comply with its obligations under the Protocol. Thus, while this is a "workable" provision, the U.S. government would need to determine whether, in an appropriate case, it should rely on the regulatory procedures of another Party.
- Modification 6 would add a provision for "Categorical Exclusions." As discussed in Section 4.4.5, Alternative 5 would include a provision for categorical exclusion including a categorical exclusion for Antarctic ship-based tourism conducted according to the "Lindblad Model." IAATO's proposal to categorically exclude Antarctic ship-based tourism conducted under a "Lindblad Model" does not fit well with the approach used by the U.S. government for categorical exclusions because it does not identify actions to be excluded in sufficient detail. Further, more needs to be known about potential cumulative impacts of nongovernmental activities

undertaken by U.S.-based ship-based tour operators before deciding to exclude some or all of these specific activities. A categorical exclusion provision could, however, be an amendment to the final rule in the future if one or more appropriate categorical exclusions are identified.<sup>72</sup> An activity that could be designated in the future as categorically excluded would have the potential for environmental impacts that are less than minor or transitory; thus, the environmental consequences under this modification would also be less than minor or transitory under the Protocol.<sup>73</sup>

In summary, the environmental consequences, including cumulative impacts, for certain of the modifications under Alternative 5 have the potential to be greater than would otherwise be indicated by the level of EIA documentation prepared by the operator. As discussed under Alternative 1, the issue of cumulative impacts, particularly in the Peninsula area, remains a concern. However, the data and information are not yet available to assess out-year cumulative environmental consequences, if any, that would be associated with implementation of Alternative 5. As data and information become available on cumulative impacts, the operators may, as appropriate, decide to modify their activities and/or their mitigation measures, or they may determine that a different level of environmental documentation is appropriate.

Assessment of Other Consequences: Similar to the process for assessment of the environmental consequences, the following assesses the other consequences for Alternative 5 relative to Alternative 1 as delineated in Section 5.5.1.

***The ability of Alternative 5 to ensure that the U.S. is able to comply with its obligations under the Protocol:***

Selection of Alternative 5 for proposed promulgation would not ensure that the U.S. is able to comply with its obligations under the Protocol. This would be the case under all modifications except for modification 1.

***Assurance that the regulations under Alternative 5 would be, as directed by the Act, “consistent with Annex I to the Protocol:”***

Selection of Alternative 5 for proposed promulgation would not assure that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol.” As discussed in Section

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<sup>72</sup> The final rule would have to be amended through the appropriate rule-making procedures to add a provision for categorical exclusions.

<sup>73</sup> Section 4.4.5 discusses why the proposed categorical exclusion of Antarctic ship-based tourism conducted according to a “Lindblad Model” does not fit with the approach used by the U.S. government for categorical exclusions. Activities associated with ship-based tourism conducted by the U.S.-based operators have been at the IEE-level of documentation; e.g., the potential environmental impacts are no more than minor or transitory rather than less than minor or transitory.

4.4.5, the discretionary approach and elimination of the PERM provision does not allow the U.S. government to ensure that U.S.-based operators are applying the assessment procedures consistent with Annex I.

***The ability of Alternative 5 to ensure consistency between the governmental and nongovernmental EIA processes:***

Selection of Alternative 5 for proposed promulgation would enhance consistency between the governmental and nongovernmental processes and requirements by including a definition (or other provision) for “more than minor or transitory” and a provision for categorical exclusions. However, elimination of the PERM provision would be inconsistent with the EIA processes and requirements that apply to U.S. governmental entities.

***The burden imposed on the operators under Alternative 5:***

Alternative 5 would include the paperwork reduction provisions of Section 8.4(d), and would also add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons and a provision for categorical exclusions. In addition, Alternative 5 would eliminate the PERM provision thus eliminating the paperwork burden associated with submission of this documentation to EPA for review,<sup>74</sup> and it would include an automatic deferral reciprocity provision which could eliminate any further burden for a U.S.-based operator to prepare any additional documentation.<sup>75</sup>

In summary, even though Alternative 5 would provide maximum reduction of burden on the operators, it would not: ensure that the U.S. is able to comply with its obligations under the Protocol; assure that the regulations would be, as directed by the Act, “consistent with Annex I to the Protocol” or ensure consistency between the governmental and nongovernmental EIA processes.

**5.6. Summary of the Consequences Assessment Process and the Potential Consequences for the Five Alternatives**

The five Alternatives are variations of the Interim Final Rule and, thus, Alternative 1, the “No Action” alternative (e.g., promulgation of the Interim Final Rule as the final rule). Alternative 2, the Interim Final Rule with certain procedural and administrative modifications, is EPA’s Preferred Alternative.

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<sup>74</sup> The U.S. would not be able to ensure that it is able to comply with its obligations under the Protocol, nor is this consistent with Annex I to the Protocol or the EIA requirements for U.S. governmental activities in Antarctica.

<sup>75</sup> However, it is the responsibility of the United States to comply with its obligations under the Protocol and a reciprocity provision would not be consistent with these obligations

Alternatives 3 and 4 and, for the most part, Alternative 5 incorporate modifications related to issues raised during scoping which EPA addressed for reasons of completeness, but for which the U.S. government does not have authority under the Act to implement because they are inconsistent with the provisions of the Protocol. The Act requires that the regulations be consistent with it, thus, EPA (or any other federal agency) lacks statutory authority under the Act to incorporate such provisions into regulations. These Alternatives are included for purposes of public disclosure. However, the U.S. government does not advocate pursuing these Alternatives.

## *Chapter 6: Comments on the Draft EIS*

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## Chapter 6. Comments on the Draft EIS

The Draft EIS was circulated to the public on February 8, 2001, and the Notice of Availability was published on February 16, 2001 (F.R. 66, no. 33). Comments were received from the following entities:

United States Department of State  
National Science Foundation  
International Association of Antarctica Tour Operators (IAATO)  
IAATO Representative  
Zegrahm Expeditions  
Oceanites, Inc.  
The Antarctica Project (TAP)  
Marine Expeditions

The two government entities have foreign policy and scientific interests and expertise in matters related to Antarctica including the National Science Foundation's responsibility for environmental impact assessment of governmental activities in Antarctica. IAATO's comments were submitted on behalf of eleven U.S. member companies and two non-member companies.<sup>1</sup> IAATO's Representative also offered comment, and IAATO-member, Zegrahm Expeditions provided separate comment. The Antarctica Project's comments were offered on behalf of the Antarctic and Southern Ocean Coalition (TAP/ASOC).<sup>2</sup> Marine Expeditions is a Canadian-based Antarctic tour operator.<sup>3</sup>

As part of the rule-making process, the Office of Management and Budget reviewed the Draft EIS and discussed its comments with EPA.

The comment letters are reproduced in Appendix 28. Comments are bracketed and EPA's response to each comment is annotated to the comment.

EPA assessed the comments both individually and collectively. As a result, certain factual corrections were made in the Final EIS. EPA did not receive any new information that would lead

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<sup>1</sup> IAATO is the principle representative of the Antarctic tour industry. The U.S. member companies represented by IAATO's letter are: Abercrombie and Kent/Explorer Shipping, Lindblad Expeditions (formerly Special Expeditions), Mountain Travel•Sobek, Clipper Cruise Line/New World Ship Management Company LLC, Quark Expeditions, Society Expeditions, Zegrahm Expeditions, Inc., Cheesemans' Ecology Safaris, Victor Emanuel Nature Tours, LifeLong Learning and Radisson Seven Seas Cruises. The two non-members are: Orient Lines and Holland America Line Westours, Inc. (Landau 2001).

<sup>2</sup> TAP/ASOC's listed representation includes: TAP Director, TAP Counsel, ASOC Senior Advisor, Director, Government Relations - World Wildlife Fund, and Director, International Program - Sierra Club.

<sup>3</sup> Marine Expeditions filed for bankruptcy in 2001; its future status as an Antarctic tour operator is unknown.

the Agency to modify the alternatives including the proposed action or to develop and evaluate alternatives not previously given serious consideration. EPA believes its responses to comments, as annotated to the copies of the comment letters in Appendix 28, offer explanation as to why the comments do not warrant further agency response.

Appendix 29 provides a summary of major changes made between the Draft and Final Environmental Impact Statements.



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*Appendix 1: Statutes and Executive Orders  
to be Considered by EPA in the Final  
Rule-Making*

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## Appendix 1

### Statutes and Executive Orders to be Considered by EPA in the Final Rule-Making

| Statutes  | Summary  |
|---|--|
| <i>Paperwork Reduction Act (PRA)</i> (44 U.S.C. 3501 <i>et seq.</i> )                         | Directs federal agencies to minimize paperwork burden; requires timely and equitable dissemination of public information   |
| <i>Regulatory Flexibility Act (RFA)</i> 5 U.S.C. 601 <i>et seq.</i>                           | Requires federal agencies to identify and appraise regulatory burdens on small entities; requires consideration of regulatory alternatives to minimize those burdens   |
| <i>Congressional Review Act (CRA)</i> (SBREFA, Subtitle E, 5 U.S.C. 801-808)                  | Requires federal agencies to assess all final rules to determine if Congressional review requirements apply  |
| <i>National Technology Transfer and Advancement Act (NTTAA)</i> (15 U.S.C. 272 <i>note</i> )  | Requires federal agencies to utilize already existing technical standards in regulatory activities; requires ongoing participation in the development of these technical standards   |
| <i>Unfunded Mandates Reform Act (UMRA)</i> 2 U.S.C. 602, 658, 1501-4, 1511-16, 1531-8, 1551-6 | Requires federal agencies to assess the effects of regulatory actions on state, local, and tribal governments (SLTGs) and the private sector; requires notification of potentially affected small governments and opportunity for their participation in the rule making process |

| Executive Orders  | Summary   |
|---|---|
| <i>EO 12866 Regulatory Planning and Review</i>                        | Requires federal agencies to seek involvement of those who will benefit or be burdened by a proposed rule; requires submission of Asignificant@ regulatory actions for OMB review                                       |
| <i>EO 13132 Federalism</i>  | Requires federal agencies to develop an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications              |
| <i>EO 12898 Environmental Justice</i>                                 | Requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations |
| <i>EO 13045 Children=s Health Protection (CHP)</i>                    | Requires federal agencies to provide additional information if there is reason to believe that a rule concerns an environmental or safety risk that may disproportionately affect children                              |
| <i>EO 13084 Consultation and Coordination with Tribal Governments</i> | Requires federal agencies to have an effective process to permit elected officials and other representatives of Tribal governments to provide meaningful and timely input in development of regulatory policies         |

***Appendix 2: Stations of SCAR Nations  
Operating in the Antarctic, Winter 1999***

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**Appendix 2**  
**Stations of SCAR Nations Operating in the Antarctic,**  
**Winter 1999**

THE INTERNATIONAL COUNCIL FOR SCIENCE  
SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

**SCAR BULLETIN**  
**No 135, October 1999**

**Stations of SCAR Nations operating in the Antarctic,**  
**Winter 1999**

Stations are numbered clockwise from the Greenwich Meridian

\*Stations north of 60°S    +Stations on King George Island

**Argentina**

|                |            |            |
|----------------|------------|------------|
| 40 Belgrano II | 77°52'29"S | 34°37'37"W |
| 36 Esperanza   | 63°23'42"S | 56°59'46"W |
| 32 +Jubany     | 62°14'16"S | 58°39'52"W |
| 37 Marambio    | 64°14'42"S | 56°39'25"W |
| 38 Orcadas     | 60°44'20"S | 44°44'17"W |
| 22 San Martin  | 68°07'47"S | 67°06'12"W |

**Australia**

|                      |            |             |
|----------------------|------------|-------------|
| 16 Casey             | 66°17'00"S | 110°31'11"E |
| 13 Davis             | 68°34'38"S | 77°58'21"E  |
| 18 *Macquarie Island | 54°29'58"S | 158°56'09"E |
| 8 Mawson             | 67°36'17"S | 62°52'15"E  |

**Brazil**

|                       |            |            |
|-----------------------|------------|------------|
| 34 +Comandante Ferraz | 62°05'00"S | 58°23'28"W |
|-----------------------|------------|------------|

**Chile**

|                               |            |            |
|-------------------------------|------------|------------|
| 25 Capitan Arturo Prat        | 62°30'S    | 59°41'W    |
| 35 General Bernardo O'Higgins | 63°19'S    | 57°54'W    |
| 28 +Presidente Eduardo Frei   | 62°12'S    | 58°58'W    |
| 26 +Escudero                  | 62°11'57"S | 58°58'35"W |

**China**

|                |            |            |
|----------------|------------|------------|
| 27 +Great Wall | 62°12'59"S | 58°57'44"W |
| 10 Zhongshan   | 69°22'16"S | 76°22'11"E |

**France**

|                                      |            |             |
|--------------------------------------|------------|-------------|
| 7 *Alfred Faure, Iles Crozet         | 46°25'48"S | 51°51'40"E  |
| 17 Dumont d'Urville                  | 66°39'46"S | 140°00'05"E |
| 12 *Martin de Viviès, Ile Amsterdam  | 37°49'48"S | 77°34'12"E  |
| 9 *Port aux Français, Iles Kerguelen | 49°21'05"S | 70°15'20"E  |

**Germany**

|             |            |            |
|-------------|------------|------------|
| 43 Neumayer | 70°38'00"S | 08°15'48"W |
|-------------|------------|------------|

**India**

|          |            |            |
|----------|------------|------------|
| 2 Maitri | 70°45'57"S | 11°44'09"E |
|----------|------------|------------|

**Japan**

|         |            |            |
|---------|------------|------------|
| 5 Syowa | 69°00'25"S | 39°35'01"E |
|---------|------------|------------|

**Korea**

|                 |            |            |
|-----------------|------------|------------|
| 31 +King Sejong | 62°13'24"S | 58°47'21"W |
|-----------------|------------|------------|

**New Zealand**

|               |            |             |
|---------------|------------|-------------|
| 20 Scott Base | 77°50'60"S | 166°45'46"E |
|---------------|------------|-------------|

**Poland**

|               |            |            |
|---------------|------------|------------|
| 33 +Arctowski | 62°09'34"S | 58°28'15"W |
|---------------|------------|------------|

**Russia**

|                    |         |          |
|--------------------|---------|----------|
| 29 +Bellingshausen | 62°12'S | 58°58'W  |
| 14 Mirny           | 66°33'S | 93°01'E  |
| 6 Molodezhnaya     | 67°40'S | 45°51'E  |
| 3 Novolazarevskaya | 70°46'S | 11°50'E  |
| 11 Progress        | 69°23'S | 76°23'E  |
| 15 Vostok          | 78°28'S | 106°48'E |

**South Africa**

|                  |            |            |
|------------------|------------|------------|
| 42 *Gough Island | 40°21'S    | 09°52'W    |
| 4 *Marion Island | 46°52'34"S | 37°51'32"E |
| 44 SANAE IV      | 71°40'25"S | 02°49'44"W |

**Ukraine**

|              |            |            |
|--------------|------------|------------|
| 23 Vernadsky | 65°14'43"S | 64°15'24"W |
|--------------|------------|------------|

**United Kingdom**

|                 |            |            |
|-----------------|------------|------------|
| 39 *Bird Island | 54°00'31"S | 38°03'08"W |
| 41 Halley       | 75°35'23"S | 26°25'28"W |
| 21 Rothera      | 67°34'10"S | 68°07'12"W |

**United States**

|                  |            |             |
|------------------|------------|-------------|
| 1 Amundsen-Scott | 89°59'51"S | 139°16'22"E |
| 19 McMurdo       | 77°50'53"S | 166°40'06"E |
| 24 Palmer        | 64°46'30"S | 64°03'04"W  |

**Uruguay**

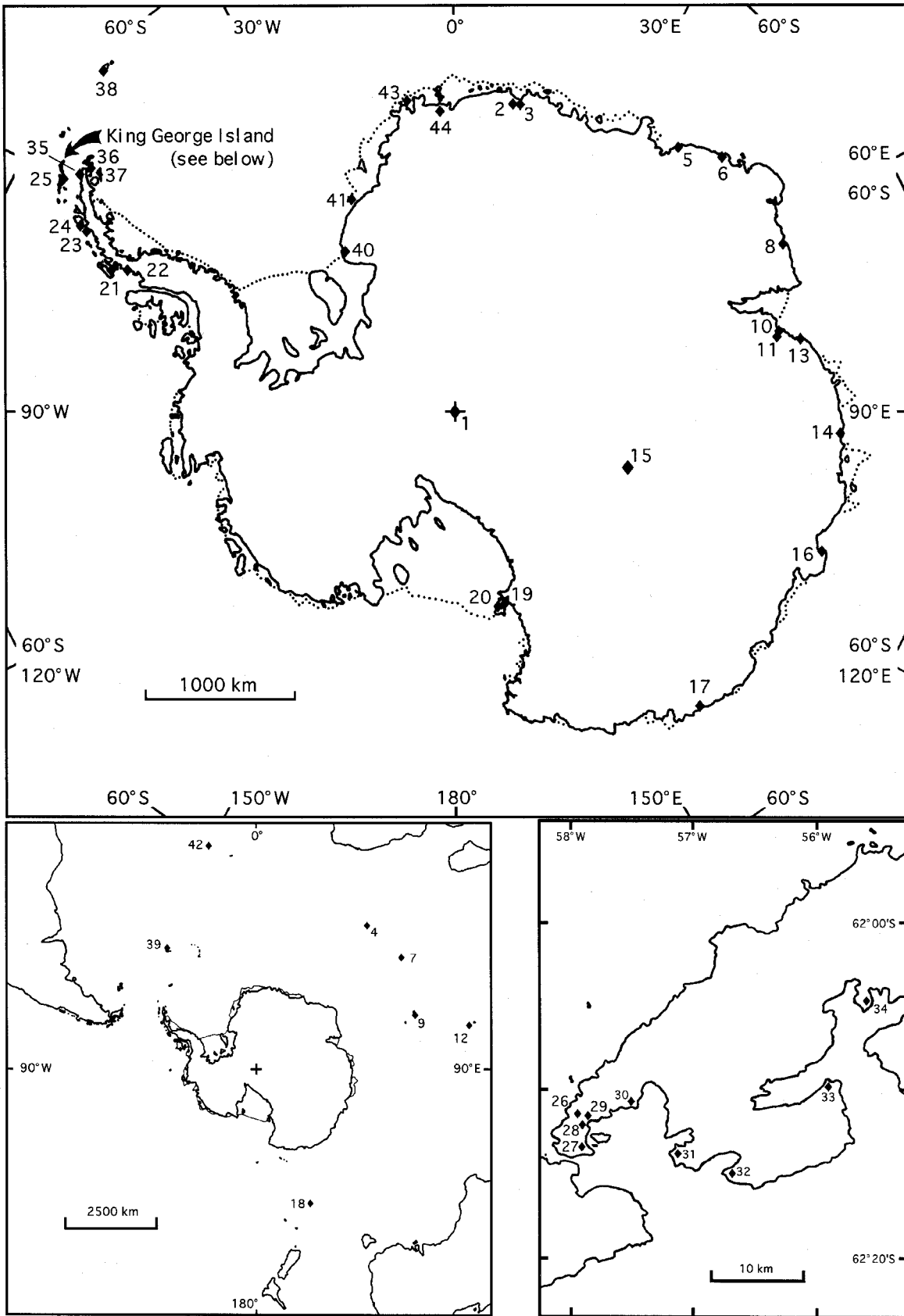
|             |            |            |
|-------------|------------|------------|
| 30 +Artigas | 62°11'04"S | 58°54'09"W |
|-------------|------------|------------|

**Stations of SCAR Nations operating in the Antarctic,  
Winter 1999**

Stations are numbered clockwise from the Greenwich Meridian.

\*Stations north of 60°S      +Stations on King George Island

|    |                                    |                |            |             |
|----|------------------------------------|----------------|------------|-------------|
| 1  | Amundsen-Scott                     | United States  | 89°59'51"S | 139°16'22"E |
| 2  | Maitri                             | India          | 70°45'57"S | 11°44'09"E  |
| 3  | Novolazarevskaya                   | Russia         | 70°46'S    | 11°50'E     |
| 4  | *Marion Island                     | South Africa   | 46°52'34"S | 37°51'32"E  |
| 5  | Syowa                              | Japan          | 69°00'25"S | 39°35'01"E  |
| 6  | Molodezhnaya                       | Russia         | 67°40'S    | 45°51'E     |
| 7  | *Alfred Faure, Iles Crozet         | France         | 46°25'48"S | 51°51'40"E  |
| 8  | Mawson                             | Australia      | 67°36'17"S | 62°52'15"E  |
| 9  | *Port aux Français, Iles Kerguelen | France         | 49°21'05"S | 70°15'20"E  |
| 10 | Zhongshan                          | China          | 69°22'16"S | 76°22'11"E  |
| 11 | Progress                           | Russia         | 69°23'S    | 76°23'E     |
| 12 | *Martin de Viviès, Ile Amsterdam   | France         | 37°49'48"S | 77°34'12"E  |
| 13 | Davis                              | Australia      | 68°34'38"S | 77°58'21"E  |
| 14 | Mirny                              | Russia         | 66°33'S    | 93°01'E     |
| 15 | Vostok                             | Russia         | 78°28'S    | 106°48'E    |
| 16 | Casey                              | Australia      | 66°17'00"S | 110°31'11"E |
| 17 | Dumont d'Urville                   | France         | 66°39'46"S | 140°00'05"E |
| 18 | *Macquarie Island                  | Australia      | 54°29'58"S | 158°56'09"E |
| 19 | McMurdo                            | United States  | 77°50'53"S | 166°40'06"E |
| 20 | Scott Base                         | New Zealand    | 77°50'60"S | 166°45'46"E |
| 21 | Rothera                            | United Kingdom | 67°34'10"S | 68°07'12"W  |
| 22 | San Martin                         | Argentina      | 68°07'47"S | 67°06'12"W  |
| 23 | Vernadsky                          | Ukraine        | 65°14'43"S | 64°15'24"W  |
| 24 | Palmer                             | United States  | 64°46'30"S | 64°03'04"W  |
| 25 | Capitan Arturo Prat                | Chile          | 62°30'S    | 59°41'W     |
| 26 | +Escudero                          | Chile          | 62°11'57"S | 58°58'35"W  |
| 27 | +Great Wall                        | China          | 62°12'59"S | 58°57'44"W  |
| 28 | +Presidente Eduardo Frei           | Chile          | 62°12'S    | 58°58'W     |
| 29 | +Bellingshausen                    | Russia         | 62°12'S    | 58°58'W     |
| 30 | +Artigas                           | Uruguay        | 62°11'04"S | 58°54'09"W  |
| 31 | +King Sejong                       | Korea          | 62°13'24"S | 58°47'21"W  |
| 32 | +Jubany                            | Argentina      | 62°14'16"S | 58°39'52"W  |
| 33 | +Arctowski                         | Poland         | 62°09'34"S | 58°28'15"W  |
| 34 | +Comandante Ferraz                 | Brazil         | 62°05'00"S | 58°23'28"W  |
| 35 | General Bernardo O'Higgins         | Chile          | 63°19'S    | 57°54'W     |
| 36 | Esperanza                          | Argentina      | 63°23'42"S | 56°59'46"W  |
| 37 | Marambio                           | Argentina      | 64°14'42"S | 56°39'25"W  |
| 38 | Orcadas                            | Argentina      | 60°44'20"S | 44°44'17"W  |
| 39 | *Bird Island                       | United Kingdom | 54°00'31"S | 38°03'08"W  |
| 40 | Belgrano II                        | Argentina      | 77°52'29"S | 34°37'37"W  |
| 41 | Halley                             | United Kingdom | 75°35'23"S | 26°25'28"W  |
| 42 | *Gough Island                      | South Africa   | 40°21'S    | 09°52'W     |
| 43 | Neumayer                           | Germany        | 70°38'00"S | 08°15'48"W  |
| 44 | SANAE IV                           | South Africa   | 71°40'25"S | 02°49'44"W  |



Appendix 2-3

*Appendix 3: Peninsula Area Sites Visited  
by Ship Based Tours for the 8-Year Period,  
1989- 1997: Sites Grouped by Number of  
Visitors at the Sites*

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**Appendix 3**  
**Peninsula Area Sites Visited by Ship Based Tours for the 8-Year Period,**  
**1989-1997: Sites Grouped by Number of Visitors at the Sites**

| <u>Table</u> | <u>Title</u>                       | <u>Page</u>  |
|--------------|------------------------------------|--------------|
| Table 3.1.   | Sites with 10,000 or More Visitors | Appendix 3-2 |
| Table 3.2.   | Sites with 1,000 to 9,999 Visitors | Appendix 3-2 |
| Table 3.3.   | Sites with 100 to 999 Visitors     | Appendix 3-3 |
| Table 3.4.   | Sites with 0 to 99 Visitors        | Appendix 3-6 |

**Appendix 3**  
**Peninsula Area Sites Visited by Ship Based Tours for the 8-Year Period,**  
**1989-1997: Sites Grouped by Number of Visitors at the Sites**

The information for the following tables was initially compiled by the National Science Foundation based on information submitted by ship-based operators touring the Peninsula Area, and summarized by Naveen<sup>1</sup>.

| <b>Table 3.1. Sites with 10,000 or More Visitors</b> |                                 |                     |                 |                       |
|--|---------------------------------|---------------------|-----------------|-----------------------|
| <b>Rank</b>  | <b>Location</b>                 | <b>Region</b>       | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 1  | Whaler's Bay, Deception Island  | S. Shetland Islands | 296             | 24,554                |
|  | Half Moon Island                | S. Shetland Islands | 197             | 20,228                |
| 3  | Port Lockroy, Wiencke Island    | NW Peninsula        | 212             | 19,723                |
|  | Cuerverville Island             | NW Peninsula        | 251             | 19,571                |
| 5  | Pendulum Cove, Deception Island | S. Shetland Islands | 219             | 17,928                |
|  | Hannah Point, Livingston Island | S. Shetland Islands | 203             | 17,063                |
| 7  | Petermann Island                | SW Peninsula        | 198             | 16,911                |
|  | Almirante Brown St. Vic.        | NW Peninsula        | 208             | 16,778                |
| 9  | Waterboat Point, Paradise B     | NW Peninsula        | 116             | 15,358                |
|  | Paulet Island                   | NE Peninsula        | 151             | 14,355                |
| 11   | Arctowski St. Vic., KGI         | S. Shetland Islands | 142             | 12,627                |
| Totals for 1989-1997                                 |                                 |                     | 2,193           | 195,096*              |

\*The total visitors (PAX) represents the total number of passengers landed at the listed locations, not the total number of passengers to visit the Peninsula area during the listed 8-year period; passengers on a given cruise vessel may have landed at more than one site on this list.

| <b>Table 3.2. Sites with 1,000 to 9,999 Visitors</b> |                                |                                  |                 |                       |
|--|--------------------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>  | <b>Location</b>                | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 12   | Baily Hd/Rancho Pt, D. Island  | S. Shetland Islands              | 109             | 8,671                 |
| 13   | Palmer Station, Anvers Island  | NW Peninsula                     | 78              | 8,372                 |
| 14   | Hope Bay                       | NE Peninsula                     | 68              | 7,656                 |
| 15   | Penguin Island                 | S. Shetland Islands              | 83              | 6,224                 |
| 16   | Aitcho Islands                 | S. Shetland Islands              | 85              | 6,195                 |
| 17   | Point Lookout, Elephant Island | S. Orkney Island/Elephant Island | 43              | 4,857                 |
| 18   | Paradise Bay (nonspec)         | NW Peninsula                     | 58              | 4,511                 |

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<sup>1</sup> Naveen, Ron. *Compendium of Antarctic Peninsula Visitor Sites, A Report to the Governments of the United States and the United Kingdom*. Oceanites, Inc., Chevy Chase, MD. November 1997



| <b>Table 3.2.Sites with 1,000 to 9,999 Visitors</b> |                                 |                                  |                 |                       |
|---|---------------------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>   | <b>Location</b>                 | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 19  | Neko Harbor, Andvord Bay        | NW Peninsula                     | 83              | 4,503                 |
| 20  | Frei Station, KGI               | S. Shetland Islands              | 41              | 4,445                 |
| 21  | Yankee Harbor, Grnwich Island   | S. Shetland Islands              | 41              | 4,380                 |
| 22  | Pleneau Islands                 | SW Peninsula                     | 66              | 4,327                 |
| 23  | Georges Point, Ronge Island     | NW Peninsula                     | 88              | 4,286                 |
| 24  | Ferraz St. Vic., KGI            | S. Shetland Islands              | 41              | 3,816                 |
| 25  | Torgersen Island, Arthur Harbor | NW Peninsula                     | 39              | 3,738                 |
| 26  | Telefon Bay, Deception Island   | S. Shetland Islands              | 45              | 3,669                 |
| 27  | Portal Point                    | NW Peninsula                     | 46              | 3,367                 |
| 28  | Shingle Cove, Coronatn Island   | S. Orkney Island/Elephant Island | 22              | 2,521                 |
| 29  | Akad. Vernadskiy St             | SW Peninsula                     | 31              | 2,403                 |
| 30  | Bellingshausen St., KGI         | S. Shetland Islands              | 35              | 2,357                 |
| 31  | Jubany Station, KGI             | S. Shetland Islands              | 18              | 2,111                 |
| 32  | Lion's Rump, KGI - SSSI         | S. Shetland Islands              | 17              | 1,779                 |
| 33  | Hovgard Island                  | SW Peninsula                     | 9               | 1,707                 |
| 34  | Ardley Island - SSSI            | S. Shetland Islands              | 11              | 1,615                 |
| 35  | Orcadas Station Vic.            | S. Orkney Island/Elephant Island | 16              | 1,355                 |
| 36  | Yalour Islands                  | SW Peninsula                     | 20              | 1,336                 |
| 37  | Danco Island, Graham Land       | NW Peninsula                     | 25              | 1,223                 |
| 38  | Deception Island                | S. Shetland Islands              | 18              | 1,191                 |
| 39  | Point Wild, Elephant Island     | S. Orkney Island/Elephant Island | 12              | 1,098                 |
| 40  | Dorian Bay/Damoy Point          | NW Peninsula                     | 10              | 1,010                 |
| 41  | Devil Island                    | NE Peninsula                     | 13              | 1,009                 |
| Totals for 1989-1997                                |                                 |                                  | 1,268           | 105,546*              |

\*The total visitors (PAX) represents the total number of passengers landed at the listed locations, not the total number of passengers to visit the Peninsula area during the listed 8-year period; passengers on a given cruise vessel may have landed at more than one site on this list.

| <b>Table 3.3.Sites with 100 to 999 Visitors</b> |                   |                                  |                 |                       |
|---|-------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>                                     | <b>Location</b>   | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 42  | Detaille Island   | S. Shetland Islands              | 9               | 911                   |
| 43  | Brown Bluff       | NE Peninsula                     | 15              | 853                   |
| 44  | Coronation Island | S. Orkney Island/Elephant Island | 6               | 839                   |

| <b>Table 3.3.Sites with 100 to 999 Visitors</b> |                               |                                  |                 |                       |
|---|-------------------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>                                     | <b>Location</b>               | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 45  | Hydrurga Rocks                | NW Peninsula                     | 13              | 781                   |
| 46  | Camara St., Half Moon Island  | S. Shetland Islands              | 6               | 768                   |
| 47  | Snow Hill Island              | NE Peninsula                     | 10              | 741                   |
| 48  | Mikklesen Harbor, Trty Island | NW Peninsula                     | 15              | 723                   |
| 49  | Prospect Pt, Graham Land      | SW Peninsula                     | 9               | 718                   |
| 50  | Melchior Islands              | NW Peninsula                     | 11              | 701                   |
| 51  | Damoy Point, Wiencke Island   | NW Peninsula                     | 7               | 691                   |
| 52  | Orne Islands                  | NW Peninsula                     | 11              | 665                   |
| 53  | Turrett Point, KGI            | S. Shetland Islands              | 9               | 610                   |
| 54  | Aruro Prat St, Grnwich Island | S. Shetland Islands              | 7               | 583                   |
| 55  | Crystal Hill, Trnty Penisula  | NW Peninsula                     | 6               | 517                   |
| 56  | Astrolabe Island              | NW Peninsula                     | 12              | 512                   |
| 57  | Rothers St, Adelaide Island   | SW Peninsula                     | 4               | 502                   |
| 58  | Primavera Base (SSSI)         | NW Peninsula                     | 14              | 477                   |
| 59  | Charlotte Bay                 | NW Peninsula                     | 5               | 441                   |
| 60  | Laurie Island (nonspec)       | S. Orkney Island/Elephant Island | 4               | 395                   |
| 61  | Maxwell Bay, KGI (nonspec)    | S. Shetland Islands              | 6               | 392                   |
| 62  | King Sejong St, KGI           | S. Shetland Islands              | 3               | 371                   |
| 63  | Fish Islands, Graham Land     | SW Peninsula                     | 3               | 342                   |
| 64  | Penguin Point, Seymour Island | NE Peninsula                     | 5               | 341                   |
| 65  | Dorian Bay, Wiencke Island    | NW Peninsula                     | 3               | 319                   |
| 66  | Cierva Cove — SSSI            | NW Peninsula                     | 4               | 310                   |
| 67  | Elephant Island (nonspec)     | S. Orkney Island/Elephant Island | 4               | 309                   |
| 68  | Goudier Is, Pt Lockroy        | NW Peninsula                     | 4               | 306                   |
| 69  | View Pt, Trinity Pen          | NE Peninsula                     | 4               | 306                   |
| 70  | Orne Harbor, Graham Land      | NW Peninsula                     | 4               | 296                   |
| 71  | Crystal Sd, Pendelton Island  | SW Peninsula                     | 2               | 290                   |
| 72  | Signy Island (nonspec)        | S. Orkney Island/Elephant Island | 4               | 279                   |
| 73  | Skontrop Cove, Pardse Bay     | NW Peninsula                     | 7               | 257                   |
| 74  | Arago Glacier, And. Bay       | NW Peninsula                     | 6               | 251                   |
| 75  | Duthoit Point, Nelson Island  | S. Shetland Islands              | 2               | 244                   |
| 76  | Petrel St, Dundee Island      | NE Peninsula                     | 4               | 242                   |

| <b>Table 3.3.Sites with 100 to 999 Visitors</b> |                                  |                                  |                 |                       |
|---|----------------------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>                                     | <b>Location</b>                  | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 77  | Danger Island                    | NE Peninsula                     | 7               | 240                   |
| 78  | Rosamel Island                   | NE Peninsula                     | 2               | 236                   |
| 79  | Gosling Island, S. Orkney Island | S. Orkney Island/Elephant Island | 2               | 235                   |
| 80  | King George Island (nonspec)     | S. Shetland Islands              | 3               | 234                   |
| 81  | Molchanov Beach, Jnvlc Island    | NW Peninsula                     | 6               | 223                   |
| 82  | Artigas Station, KGI             | S. Shetland Islands              | 3               | 212                   |
| 83  | Chang Chen St., KGI              | S. Shetland Islands              | 3               | 206                   |
| 84  | Foyn Harbor                      | NW Peninsula                     | 4               | 199                   |
| 85  | Admiralty Sound                  | NE Peninsula                     | 3               | 185                   |
| 86  | Adelaide Island                  | SW Peninsula                     | 2               | 183                   |
| 87  | Robert Point, Robert Island      | S. Shetland Islands              | 3               | 163                   |
| 88  | Gin Cove, James Ross Island      | NE Peninsula                     | 2               | 161                   |
| 89  | Cape Gage, James Ross Island     | NE Peninsula                     | 2               | 158                   |
| 90  | Seymour Island (nonspec)         | NE Peninsula                     | 3               | 158                   |
| 91  | Hanusse Bay                      | SW Peninsula                     | 2               | 148                   |
| 92  | Cape Valentine, Elphnt Island    | S. Orkney Island/Elephant Island | 2               | 146                   |
| 93  | Cape Dundas, Laurie Island       | S. Orkney Island/Elephant Island | 1               | 138                   |
| 94  | Curtiss Bay, Graham Land         | NW Peninsula                     | 4               | 137                   |
| 95  | Bradbrooke Island, Aitcho Island | S. Shetland Islands              | 1               | 136                   |
| 96  | Trinity Island                   | NW Peninsula                     | 2               | 135                   |
| 97  | False Bay, Livingston Island     | S. Shetland Islands              | 1               | 127                   |
| 98  | Cormorant Island, vic.           | NW Peninsula                     | 1               | 125                   |
| 99  | South Bay, Livingston Island     | S. Shetland Islands              | 1               | 125                   |
| 100   | Argentine Island (unspec)        | SW Peninsula                     | 1               | 112                   |
| 101   | Pr Gustav Chn (unspec)           | NE Peninsula                     | 1               | 105                   |
| 102   | Heywood Island, (Roberts Island) | S. Shetland Islands              | 1               | 102                   |
| Totals for 1989-1997                            |                                  |                                  | 304             | 21,798*               |

\*The total visitors (PAX) represents the total number of passengers landed at the listed locations, not the total number of passengers to visit the Peninsula area during the listed 8-year period; passengers on a given cruise vessel may have landed at more than one site on this list.

| <b>Table 3.4.Sites with 0 to 99 Visitors</b> |                                   |                                  |                 |                       |
|--|-----------------------------------|----------------------------------|-----------------|-----------------------|
| <b>Rank</b>                                  | <b>Location</b>                   | <b>Region</b>                    | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 103  | Lagarrigue Cove                   | NW Peninsula                     | 1               | 99                    |
| 104  | Bernardo O'Higgins St             | NW Peninsula                     | 1               | 95                    |
| 105  | San Martin Station                | SW Peninsula                     | 1               | 95                    |
| 106  | Alcock Island                     | NW Peninsula                     | 2               | 92                    |
| 107  | Holluschickie Bay, JRI            | NE Peninsula                     | 1               | 91                    |
| 108  | Heroína Island                    | NE Peninsula                     | 1               | 90                    |
| 109  | Pitt Pt (Victory Glacier)         | NW Peninsula                     | 1               | 88                    |
| 110  | Pitt Islands                      | SW Peninsula                     | 1               | 87                    |
| 111  | Fildes Peninsula (nonsp)          | S. Shetland Islands              | 1               | 85                    |
| 112  | Barcroft Islands                  | SW Peninsula                     | 1               | 83                    |
| 113  | Point Martin, S Orkney Island     | S. Orkney Island/Elephant Island | 1               | 80                    |
| 114  | Rum Cove, James Ross Island       | NE Peninsula                     | 1               | 80                    |
| 115  | Camp Point, Graham Island         | SW Peninsula                     | 1               | 78                    |
| 116  | Martel Inlet, KGI                 | S. Shetland Islands              | 1               | 78                    |
| 117  | Port Charcot, Booth Island        | SW Peninsula                     | 1               | 74                    |
| 118  | Kinnes Cove, Joinville Island     | NW Peninsula                     | 1               | 71                    |
| 119  | Cape Melville, KGI                | S. Shetland Islands              | 1               | 58                    |
| 120  | Takai Peninsula                   | NW Peninsula                     | 1               | 52                    |
| 121  | Sprightly Islands Vic.            | NW Peninsula                     | 1               | 48                    |
| 122  | Useful Island                     | NW Peninsula                     | 1               | 47                    |
| 123  | Cape Tuxen, Graham Land           | SW Peninsula                     | 2               | 46                    |
| 124  | Gabriel de Dastilla St.           | S. Shetland Islands              | 1               | 42                    |
| 125  | Signy Base, S Orkney Is           | S. Orkney Island/Elephant Island | 1               | 42                    |
| 126  | Gaston Island, Reclus Pen         | NW Peninsula                     | 1               | 40                    |
| 127  | Pt. Thomas, KGI — SSSI            | S. Shetland Islands              | 1               | 38                    |
| 128  | "Small Island", Christiana Island | NW Peninsula                     | 1               | 38                    |
| 129  | Ezcurra Inlet, KGI                | S. Shetland Islands              | 1               | 36                    |
| 130  | Macaroni Pt, Deception Island     | S. Shetland Islands              | 1               | 36                    |
| 131  | Intercurrence Island              | NW Peninsula                     | 1               | 34                    |
| 132  | d'Urville Monument                | NE Peninsula                     | 1               | 34                    |
| 133  | Spigot Peak, Graham Land          | NW Peninsula                     | 1               | 33                    |
| 134  | Suarez Glacier, Prdse Bay         | NW Peninsula                     | 1               | 32                    |

| <b>Table 3.4. Sites with 0 to 99 Visitors</b> |                               |                     |                 |                       |
|---|-------------------------------|---------------------|-----------------|-----------------------|
| <b>Rank</b>                                   | <b>Location</b>               | <b>Region</b>       | <b>Landings</b> | <b>Visitors (PAX)</b> |
| 135   | Comb Ridge, James Ross Island | NE Peninsula        | 1               | 31                    |
| 136   | Challenger Island, Grham Land | NW Peninsula        | 1               | 27                    |
| 137   | Murray Island, Graham Land    | NW Peninsula        | 1               | 27                    |
| 138   | Heim Glacier, Graham Land     | SW Peninsula        | 1               | 19                    |
| 139   | Mt. Mill, Graham Land         | SW Peninsula        | 1               | 16                    |
| 140   | Small peak (nonspec)          | NW Peninsula        | 1               | 15                    |
| 141   | Mt. Scott, Lemaire Chn        | SW Peninsula        | 1               | 14                    |
| 142   | Blaicklock Island, Grham Land | SW Peninsula        | 1               | 9                     |
| 143   | Fumarole Bay, Decptn Island   | S. Shetland Islands | 1               | 8                     |
| Totals for 1989-1997                          |                               |                     | 43              | 2,187*                |

\*The total visitors (PAX) represents the total number of passengers landed at the listed locations, not the total number of passengers to visit the Peninsula area during the listed 8-year period; passengers on a given cruise vessel may have landed at more than one site on this list.

*Appendix 4: Characteristics of the Eleven  
Most Visited Tourist Sites in the Peninsula  
Area for the 8-Year Period 1989-1997*

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**Appendix 4**  
**Characteristics of the Eleven Most Visited Tourist Sites in the Peninsula Area**  
**for the 8-Year Period 1989-1997**

| <b><u>Site No.</u></b> | <b><u>Site Name and Location</u></b>   | <b><u>Page</u></b> |
|------------------------|--|--------------------|
| 1                      | Whaler's Bay, Deception Island, South Shetland Islands                                 | Appendix 4-2       |
| 2                      | Half Moon Island, South Shetland Islands, 62/36'S, 59/55'W                             | Appendix 4-3       |
| 3                      | Port Lockroy, Wiencke Island, Northwest Peninsula, 64/49'S, 63/30'W                    | Appendix 4-4       |
| 4                      | Cuerville Island, Northwest Peninsula, 64/41'S, 62/38'W                                | Appendix 4-5       |
| 5                      | Pendulum Cove, Deception Island, South Shetland Islands, 62/36'S, 59/55'W              | Appendix 4-6       |
| 6                      | Hannah Point, Livingston Island, South Shetland Islands, 62/36'S, 59/55'W              | Appendix 4-6       |
| 7                      | Petermann Island, Southwest Peninsula, 62/36'S, 59/55'W                                | Appendix 4-7       |
| 8                      | Almirante Brown Station, vicinity Paradise Bay, Northwest Peninsula, 62/36'S, 59/55'W  | Appendix 4-8       |
| 9                      | Waterboat Point, Paradise Bay, Northwest Peninsula, 62/36'S, 59/55'W                   | Appendix 4-9       |
| 10                     | Paulet Island, Northeast Peninsula, 62/36'S, 59/55'W                                   | Appendix 4-10      |
| 11                     | Arctowski Station, vicinity King Geo. Island, South Shetland Islands, 62/36'S, 59/55'W | Appendix 4-11      |

**Appendix 4**  
**Characteristics of the Eleven Most Visited Tourist Sites**  
**in the Peninsula Area for the 8-Year Period 1989-1997**

**1) Whaler's Bay, Deception Island, South Shetland Islands**

PHYSICAL DESCRIPTION: Small bay first encountered after passing through Neptune's Bellows into Port Foster. The Bay's name is based on its heavy use by whalers at the turn of the 20th century. Deception Island is ring-shaped, 8 nautical miles in diameter, enclosing Port Foster harbor. Whaler's Bay, inside the Deception Volcano's caldera, is a landlocked basin 5 nautical miles long from NW to SE and 3.5 nautical miles wide. Deception is the largest of three recent volcanic centers in the South Shetlands, Penguin and Bridgeman Islands being the other two. The rim has an average elevation of 300 meters, with highest points at Mt. Pond (542 meters) to the east and Mt. Kirkwood (467 meters) to the south; it is composed of lava and cinders, but above 100 meters it is dominated by glaciers and ash-covered ice that reaches the sea at many places along the coast and on the east side of Port Foster. The water in Port Foster is warmer than the surrounding sea because of numerous active fumaroles. A long black sand beach stretches along the eastern shore north of Baily Head. Recent (and suspected) eruptions have occurred in 1800, 1812, 1829?, 1842, 1871, 1909?, 1912, 1927?, 1956, 1967, 1969, 1970 and 1972.

Whaler's Bay has a SW-facing beach just inside and to the north of the caldera indentation known as Neptune's Bellows. A broad cinder beach extends over 100 m from the water's edge to the steeply-rising inner wall of the caldera. Behind the abandoned whale-processing plant, the glacier meets the apron of cinders. To the SE, the caldera rim is partially breached at Neptune's Window, and the bedrock of the rim is exposed along a steep, 2-km long section of cliff extending from east of Neptune's Window to Neptune's Bellows.

Pyroclastic debris ranging in size from coarse ash to small lapilli covers the entire broad area of the beach and back shore to the inner wall of the caldera. These cinders are mostly black, and cover many of the old barrels, whale bones, and other debris from the whaling and research groups that occupied the area until recently. Several melt-water streams from the snow and glacier above form channels cutting through the beach. The beach is flat and has a very shallow slope both onshore and offshore. Steam may rise from hot springs along the shoreline, and gas rising from the springs has a strong, sulfurous odor.

STATION(S): None

FAUNA & FLORA:

Penguins & flying birds: Kelp gulls nest on some of the abandoned onshore buildings. Pintado petrels and Wilson's storm-petrels nest on the cliffs and scree between Neptune's Window and Neptune's Bellow. Antarctic terns are regularly seen, and suspected of breeding inland, behind the abandoned British station. No site-specific penguin breeding populations are listed in Woehler (1993, 1996).

Seals: Weddell, crabeater and Antarctic fur seals regularly haul-out on the beach.

Moss beds/lichens/plants: There are extensive *Usnea*, spp.<sup>1</sup> patches between Neptune's Window and Neptune's Bellow. Crustose lichens *Xanthoria*, spp. and *Caloplaca*, spp. also noted on cliff sides. *Deschampsia* noted behind the abandoned British station.

UNUSUAL FEATURES: Neptune's Window, the deformation in the caldera to the south.

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<sup>1</sup> The designation "spp." indicates the presence of animals, lichens, or moss in a particular genus, but not of a specific species within that genus.



SENSITIVITY FACTORS: Extensive *Usnea*, spp. patches between Neptune's Window and Neptune's Bellows are easily accessed. The boundary to the Kroner Lake SSSI (SSSI 21, Part E) is ill-defined and easily encroached.

HISTORICAL ARTEFACTS: HSM 31 is a memorial plaque marking the position of a cemetery where approximately 40 Norwegian whalers were buried in the first half of the 20th century; the cemetery was swept away by the February 1969 volcanic eruption. There is also a claim with memorial plaque, HSM 58, to honor captain Adolphus Amandus Andresen who established the first whaling operation at Deception Island in 1906.

SSSI/SSA: Kroner Lake SSSI at the southern end of the long shoreline.

LANDING CHARACTERISTICS: The onshore boilers are remnants from previous shore-based whaling activities. The Kroner Lake SSSI is at the southern end of the long shoreline. The remains of the abandoned British Antarctic Survey base are located between Kroner Lake and the boilers. Petrel nests are scattered rather widely over a vast area between the shoreline and a feature in the caldera wall known as Neptune's Window. Whalers Bay is located "inside" the caldera of Deception Island, and is the first landing site reached after passing inside Deception through the narrow passage known as Neptune's Bellows. Little wildlife is present, though Antarctic terns frequent the *Deschampsia*-laden hillsides behind the ruined station, and assortment of skuas often collects in the melt pools just off the landing beach, and fur seals often straggle in to roam the long, warm, black sand beach, typically collecting at the far end toward Neptune's Window. The water is volcanically heated, often leaving roasted, boiled krill along the shoreline.

## **2) Half Moon Island, South Shetland Islands, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: A 1.25 mile-long, crescent-shaped island lying in the entrance to Moon Bay on the east side of Livingston Island. The island was known by sealers as early as 1821.

STATION(S): Argentine Camara Station located on the island's SW side

### FAUNA & FLORA:

Penguins & flying birds: Confirmed nesting species include: chinstrap penguins, blue-eyed shags, Wilson's storm-petrels, kelp gulls, snowy sheathbills, Antarctic terns and Antarctic brown skuas. Recent (1995) surveys indicate a minimum breeding population of 3,342 pairs of chinstrap penguins, an increase from 2,500 pairs counted in 1987 (Woehler, 1996).

Seals: Southern elephant, Weddell and Antarctic fur seals regularly haul-out on the beaches.

Moss beds/lichens/plants: Crustose lichens, spp. noted. (Much snow cover, more survey of floral communities needed.)

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: Heavy snow cover often restricts visitor space and narrows distance between visitors and breeding chinstrap penguins. Kelp gull and Antarctic tern nests easily disturbed; scree slopes have nesting Wilson's storm-petrels.

HISTORICAL ARTEFACTS: None noted.

SSSI/SSA: None

LANDING CHARACTERISTICS: Half Moon is the site of the Argentine Camara Station, and at one point was the locus for a joint tourism impact study run by U.K., Argentine and Chilean interests. Station personnel and biologists from the Argentine Antarctic Institute continue to monitor the island's penguin and flying bird

populations. From the regular landing beach on the NE shore, marked by a rotting old dory, it is necessary to climb toward a navigation tower on the ridge above, in order to reach the pathway leading to the major chinstrap colonies on the eastern extremity of the island. There may be heavy snow cover which makes hiking difficult. On the pathway to the eastern spit, Wilson's storm-petrels, Antarctic terns, sheathbills and kelp gulls may be encountered.

### 3) Port Lockroy, Wiencke Island, Northwest Peninsula, 64/ 49'S, 63/ 30'W

PHYSICAL DESCRIPTION: A harbor, 0.5 mile long and wide, entered between Flag Point and Lecuyer Point on the west side of Wiencke Island, in the Palmer Archipelago, it was discovered by Charcot's French Antarctic expedition (1903-05) and named for Edouard Lockroy, the French politician who assisted Charcot in obtaining government backing for his expedition. Most visitor landings have taken place at Jougla Point, which slopes gently upward to a flat area about 10 m above sea level, and then further to a minor summit about 100 m above sea level. Inland, there are steep and rugged mountain slopes. Snow cover may be considerable through mid-December, when extensive areas of outcrop on the ridges and summit of this area become snow-free. Many of the outcrops are occupied by the nests of gentoo penguins and are partially covered with guano, which creates a layer of organic soil. At Jougla Point, the water comes directly over bare, rocky outcrops of diorite and quartz diorite composition. Just above, on what may be a raised beach, there are numerous gentoo penguin nests among the rounded cobbles, boulders and pebbles. In mid- to late summer, this area is awash in guano and mud. Several large, tidewater glaciers flow into Alice Creek to the east of, and behind, Jougla Point. This small bay is often covered with fast ice. Port Lockroy harbor is substantially protected, and provides an excellent lee from the often windblown Neumayer Channel and Gerlache Strait.

STATION(S): None

#### FAUNA & FLORA:

Penguins & flying birds: Gentoo penguins, kelp gulls, blue-eyed shags and skuas, spp. are confirmed breeders.

Seals: Weddell occasionally haul-out along Alice Creek shoreline.

Moss beds/lichens/plants: *Xanthoria*, spp. and other crustose lichens, spp. noted on exposed rocks near Red Rocks gentoo colony; scattered *Prasiola crispa* also noted. Photo documentation of: *Xanthoria candelaria*, *Mastodia tessellata*, *Xanthoria elegans* and/or *Caloplaca lucens*, and *Buellia*, spp.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: Restricted visitor space among the gentoo penguins in the vicinity of the Jougla Point landing rocks; the situation is compounded later in the summer when snow melt and guano runoff make walking/hiking more difficult. Easily disturbed blue-eyed shag nests on Jougla Point.

HISTORICAL ARTEFACTS: The Operation Tabarin hut on Goudier Island, HSM 61, has been restored and will be manned, beginning in the 1996-97 summer to accommodate inquiring visitors.

SSSI/SSA: None noted.

LANDING CHARACTERISTICS: From the usual landing site at Jougla Point, small discrete groups of gentoos and shags are easily reached. The shags are primarily found on the seaward edges of Jougla Point. This location is across a narrow inlet from the recently restored British Antarctic Survey hut on Goudier Island. In the vicinity of Jougla Point, the breeding groups of gentoos and shags are at times tightly packed; in late summer, the site becomes a quagmire of guano, mud and snow melt. Proceeding upward from the landing rocks at the tip of the point, numerous groups of gentoos are encountered. Seals often haul-out around the inner bay at Alice Creek. Along these shores are many whalebones. The Red Rock colony of

gentoos serves as a prospective control colony, and is only reached via a steep climb. Numerous kelp gulls breed on ledges below Red Rock. Breeding skuas may be found toward Lecuyer Point, SE of Jougla Point.

#### 4) **Cuvertville Island, Northwest Peninsula, 64/ 41'S, 62/ 38'W**

PHYSICAL DESCRIPTION: A rocky island with extensive moss cover at higher elevations, lying in the Errera Channel between Arctowski Peninsula and the north part of Ronge Island, off the west coast of Graham Land. It was discovered by Gerlache's Belgian Antarctic expedition (1897-99), and named by Charcot for a vice-admiral in the French Navy. Nearly vertical cliffs surround the island except on the northeast coast, where a gently sloping apron of bedrock extends 200 meters from the shore to the base of the cliffs. Much of the apron on the northeastern side of the island may remain snow-covered through much of December. Large, bare rock areas of this platform provide nesting sites for gentoo penguins. The surface occupied by the penguins, although largely on bedrock or raised beach deposits, is covered with guano, mud, and other organic debris. The water level rises to a narrow beach (often with overhanging snow/ice), which comprises a wide range of rounded boulders and cobbles of several types. Outcrops occupied by the penguins are highly cryoturbated (i.e., broken and churned by freezing and thawing), creating many small, flat, angular blocks. The whole lower section at the base of the cliffs has rounded outcrop surfaces that are glacially polished and grooved. A well-defined raised beach, south of the usual landing area and forming the nesting site for many gentoos, is located 8-10 meters above present sea level. This raised area is defined by a roughly flat terrace (hummocky from glaciated outcrops) with lots of small, partially rounded pebbles in hollows and on flat places, and suggests uplift of the land, lowering of sea level, or both during deglaciation. In all likelihood, a more careful examination would reveal several different levels of raised beaches that penguins have occupied during various stages of deglaciation.

STATION(S): None

#### FAUNA & FLORA:

Penguins & flying birds: Gentoo penguins, southern giant petrels, kelp gulls, Antarctic terns, snowy sheathbills, and skuas, spp. are confirmed breeders. Blue-eyed shags nest on the northeastern coast of the island, and Wilson's storm-petrels nest in the higher scree. Snow and pintado petrels also may nest in the highest part of the island.

Seals: Weddell and Antarctic fur seals were hauled-out during the Antarctic Site Inventory visits.

Moss beds/lichens/plants: *Xanthoria*, spp. and *Caloplaca*, spp. noted on exposed rocks, *Usnea*, spp. at higher elevations, and numerous patches of moss, spp. noted on cliff face that dominates the landing site. *Deschampsia antarctica* also noted. Photo documentation of: *Buellia*, spp.; *Polytrichum alpestre*; *Brachythecium austro-salebrosum*; *Bryum pseudotriquetrum*; *Prasiola crispa*; *Deschampsia antarctica*; and (possibly) *Acarospora marcrocyclos*.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: Moss beds, once the snow cover is melted, may be trampled.

HISTORICAL ARTEFACTS: None noted.

SSSI/SSA: None noted.

LANDING CHARACTERISTICS: The cobble landing beach fronts a steep cliff, which is rich in flora concentrations and has quite a few high-nesting gentoos. There may be considerable snow cover early in the austral spring. The site contains many extensive moss patches, which may become obvious only after the snow begins to melt. The FAR NORTHWEST point is the location of an extensive skua club late in the summer season. The skuas nesting upslope at this end of the island vigorously defend their nests, and visitors are advised to keep clear.

**5) Pendulum Cove, Deception Island, South Shetland Islands, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: The cove is located on the northeast side of Porter Foster, Deception Island, and its name relates to pendulum and magnetic observations made by a British expedition in 1829. The flat, black sand beach slopes gently offshore and forms a distinct beach ridge. From the beach, the ground slopes gently up to the Chilean research station that was destroyed during the 1967 eruption. The ground behind the ruins of the old station rises abruptly to the inner caldera wall, which at this point, is mostly covered with glacial ice from the east rim ice cap. A substantial hill is covered with ash and cinders that are deeply gullied. Section D of SSSI 21 is located here, and is intended to protect rare bryophytes (mosses), but its boundary is not clearly marked and is merely described as beginning at the high tide line. The beach is entirely composed of loose cinders, with no soil, and is used by visiting ships to conduct brief, Antarctic swims. There may be yellow algae and boiled krill floating on the surface, and the steam rising from the beach is laced with sulfurous odor. The beach is deeply gullied by melt-water streams, and erosion appears to be progressing at a rapid rate.

STATION(S): Chilean research station destroyed during the 1967 eruption

FAUNA & FLORA:

Penguins & flying birds: No species nest at this inhospitable site. Antarctic terns may visit, however, to pluck boiled krill and other invertebrates from the shore edge.

Seals: None

Moss beds/lichens/plants: None observed. Access to the SSSI, where rare bryophytes are located, is prohibited.

UNUSUAL FEATURES: Remains of the Chilean station destroyed during recent eruptions.

SENSITIVITY FACTORS: The boundary to SSSI 21, Part D, is not well defined.

HISTORICAL ARTEFACTS: None noted.

SSSI/SSA: SSSI 21, Part D

LANDING CHARACTERISTICS: Expedition companies often bring visitors to this site to swim where cold bay water mixes with volcanically heated water at the shoreline.

**6) Hannah Point, Livingston Island, South Shetland Islands, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: This point forms the eastern side of the entrance to Walker Bay on the south coast of Livingston Island. It is named after the sealing vessel *Hannah* of Liverpool, which visited the South Shetland Islands and wrecked on this site in 1820. The regular landing site is a small, steep-faced, pocket beach about 50 meters wide. The beach rises to the ridge of a narrow isthmus between very steep, pointed peaks. West of this beach, the land surface slopes upward along a more-or-less planar surface to a knife-edged ridge on the north edge of this peninsula, from which nearly vertical sea cliffs plunge to the sea 30-50 meters below. A narrow beach stretches along the base of these cliffs. The shingle beach at the landing site and the north beach below the southern giant petrel ridge are composed of dark, rounded, fine-grained basaltic cobbles and pebbles. The ground to the west is basaltic, and covered extensively with *Prasiola crispa*, which yields a green background to the extensive gentoo penguin colony found between the landing beach and inner Walker Bay. There are several round-bottomed gullies, deep in sandy and muddy material, along these upward slopes. The slopes appear to be eroding. Above the landing beach, to the northwest and at the edge of SUICIDE WALLOW, is an obvious jasper spur. The upper slopes are littered with limpet shells, presumably dropped by the resident, nesting kelp gulls.

STATION(S): None

FAUNA & FLORA:

Penguins & flying birds: Confirmed nesting species include: chinstrap, gentoo and macaroni penguins, blue-eyed shags, snowy sheathbill, kelp gull, pintado petrel, skuas, spp., and southern giant petrel. Antarctic terns nest elsewhere in Walker Bay. Wilson's storm-petrels have been observed on the higher slopes and presumably breed.

Seals: The site presents a few, regularly occupied southern elephant seal wallows, and its beaches occasionally have hauled-out Weddell and Antarctic fur seals.

Moss beds/lichens/plants: *Prasiola* is extensive. *Xanthoria*, spp. and other crustose lichens adorn many rocks and outcrops, and there are patches of *Colobanthus* and *Deschampsia*.

UNUSUAL FEATURES: Easily observed, nesting macaroni penguins, which are rare in the Antarctic Peninsula, but relatively common at Elephant Island and extraordinarily abundant at South Georgia.

SENSITIVITY FACTORS: High species diversity. Macaroni penguins are easily accessed. Restricted visitor space (much wildlife is accessed by hiking uphill above the landing beach toward the north beach cliff, then proceeding east toward SHAG POINT); elephant seals sometimes frequent the SUICIDE WALLOW above the north beach and care must be taken to avoid disturbing these animals (which have no easy route to the water). Close proximity to southern giant petrel nests on the northern ridge, which are easily accessed. Easily disturbed kelp gull and blue-eyed shag nests; storm-petrels nest in the scree.

HISTORICAL ARTEFACTS: None noted.

SSSI/SSA: None

LANDING CHARACTERISTICS: Hannah Point is located in Walker Bay, on the southwest side of Livingston Island. It is a site that represents a microcosm of Antarctic Peninsula fauna, with three species of penguins, kelp gulls, blue-eyed shags, southern giant petrels, and snowy sheathbills generally in attendance and nesting in close proximity to the regular landing beach. Small colonies of chinstrap penguins, and the occasionally occupied SUICIDE WALLOW with southern elephant seals are a short uphill walk from the landing beach. Extreme care must be taken not to disturb the seals in SUICIDE WALLOW, which may easily panic and are very close to a cliff edge. The petrels are easily accessed by visitors and care needs to be taken to avoid disturbances. Both southern elephant seals and Antarctic fur seals may be hauled-out on shore. While there are some gentoo penguins in the vicinity of the regular landing beach, the bulk of the gentoos occupy a large colony to the west toward inner Walker Bay.

**7) Petermann Island, Southwest Peninsula, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: A one-mile long island lying one mile southwest of Hovgaard Island in the Wilhelm Archipelago, south of Lemaire Channel. The island is named for the German geographer, August Petermann, and was first discovered by a German expedition in 1973-74. It was at a cove on the southwest side of the island where the French explorer, Jean-Baptiste Charcot, and his vessel, Pourquoi Pas?, overwintered in 1909. Charcot named this cove Port Circumcision, for the holy day on which it was discovered. Petermann is a snow-covered, domed island that rises moderately steeply to a rocky summit, 150-200 meters above sea level. It has a rocky coastline indented by many small bays. There are abundant and nearly continuous rocky outcrops along the shore, near the abandoned Argentine research hut at Port Circumcision, on several ridges, and on the summit. Rookeries of Adelie penguins, gentoo penguins, and blue-eyed shags are on nearly soil-free bedrock, but a substantial layer of guano and other organic materials is accumulating. Early season snow cover, through mid-December, may be extensive. The water level is directly against bedrock along the coast, without any significant beach deposits. Some of the penguin colony areas with substantial numbers of pebbles may represent older raised beaches. There are many basaltic

dikes along the shoreline. Above the Point Circumcision hut, and on the small summit with the Charcot monument/claim, the rock is more granitic in composition. Rock surfaces show glacial polish and some glacial grooving. There are many protected bays and inlets in the vicinity, and visiting yachts are often encountered.

STATION(S): Abandoned Argentine research hut at Point Circumcision

FAUNA & FLORA:

Penguins & flying birds: Adelie penguins, blue-eyed shags, and south polar skuas are confirmed breeders. Apparently hybrid south polar Antarctic brown skuas have been observed, but hybrid, nesting pairs have not been noted.

Seals: None noted during Antarctic Site Inventory survey visits.

Moss beds/lichens/plants: Snow algae is extensive. As the snow cover erodes, patches of *Prasiola crispa*, crustose lichens *Xanthoria*, spp. and *Caloplaca*, spp., and cushion moss, spp. may be found. *Deschampsia* noted in vicinity of the gentoo RIDGE colony. Photo documentation of snow algae, *Caloplaca*, spp., and *Matadia tessellata*.

UNUSUAL FEATURES: The southernmost breeding colony of gentoo penguins.

SENSITIVITY FACTORS: Blue-eyed shag colonies at NEARSIDE and FAR SIDE must be visited carefully, from rock perches to the south of the colonies; the views are excellent, but extensive early season snow cover and late-season guano- and mud-pools necessitate care in reaching these viewing perches.

HISTORICAL ARTEFACTS: On Megalestris Hill there is a claim with a plaque erected in 1909 by the second French Antarctic Expedition led by Capt. Jean-Baptiste Charcot. The British Antarctic Survey restored the plaque in 1958. The plaque is officially designated HSM 27. There is an abandoned Argentine hut at Point Circumcision and memorial crosses on surrounding hills for British Antarctic Survey personnel who have perished on or near this site.

SSSI/SSA: None

LANDING CHARACTERISTICS: Assuming an expedition itinerary through the Lemaire Channel, Petermann offers an excellent visitor landing just to the south. In addition to the southernmost breeding gentoos, the site is historically important because of Charcot's overwintering in 1909. Visitors will have excellent views of gentoo penguins, Adelie penguins, and blue-eyed shags, and the snow algae adds a beautiful red and green gloss to the snow cover; the snow cover may be extensive and last well into the summer. The most used Petermann Island landing site is at Port Circumcision, which is well protected (this is precisely where *Pourquis-pas* wintered) and where there is an unmanned, but stocked, Argentine refuge hut. The hut is off-limits to visitors. The NEARSIDE and FAR SIDE shag colonies are separated by a melt stream which may or may not be flowing.

**8) Almirante Brown Station, vicinity Paradise Bay, Northwest Peninsula, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: Almirante Brown is the small Argentine station located in Paradise Bay. The old research station is located on a point of land with steep sea cliffs at least 100 meters high on one side (adjacent to Paradise Bay), and the sheer face of a tide-water glacier on the other side, to the east. Several of the principal buildings are 10-30 meters above a small concrete pier, and damage from an extensive fire, more than a decade ago, is still evident. A small refuge east of the old base is where summering biologists now reside. There are a few gentoo penguin nests on the bedrock below the ruins of the main, derelict station building. The rock around the station, along the coast, and near the buildings is massive porphyritic andesite, which is extensively mineralized with green epidote along cracks and in inclusions. Nunataks rise through the surrounding glaciers. The bay is well protected and deep. Glaciers on the south end of the bay

calve regularly.

STATION(S): Almirante Brown Station, old Argentine research station

FAUNA & FLORA:

Penguins & flying birds: A few pairs of gentoo penguins nest underneath remnants of the burnt-out station, with snowy sheathbills often parading about, looking for spills of regurgitated food. The sheathbills also are seen commonly on the shag cliffs south of the station, and are presumed to be breeding. Blue-eyed shags, Antarctic terns, skuas, spp., and kelp gulls nest on the cliffs overlooking Paradise Bay, to the south of the station. The two large shag colonies south of the station are easily censused from a zodiac.

Seals: The station does not afford a good haul-out beach, but crabeater, Weddell, and occasionally leopard seals often are found resting on ice floes in the bay, or on ice ledges along the shoreline.

Moss beds/lichens/plants: Moss becomes exposed on the slopes and cliffs above the station as the summer progresses, as well as on the cliffs within and above the shag colonies south of the station. Crustose lichens *Xanthoria*, spp. and *Caloplaca*, spp. have been noted on the shag cliffs.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: None noted.

HISTORICAL ARTEFACTS: The burnt remains of the old station have not been fully removed, but much trash and garbage has been removed in recent years.

SSSI/SSA: None noted.

LANDING CHARACTERISTICS: This is a favored location for zodiac tours into Paradise Bay, which is regularly full of ice and a prime locus for resting crabeater, Weddell, and occasionally leopard seals. On the nearby cliffs overlooking the bay to the south of the station, two blue-eyed shag colonies can be easily viewed by zodiac; late in the summer, juvenile shags often follow and swim with the zodiacs. The only possible shore landing is at the station itself. The base is located on the Antarctic mainland and gives tourists an opportunity to set foot on the continent itself. The 30-50 meter slope behind the station is snow-covered for most of the spring and summer, and affords visitors a chance to hike upward for spectacular views of Paradise Bay, and then, to do some downhill snow sliding.

**9) Waterboat Point, Paradise Bay, Northwest Peninsula, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: This is the low, westernmost termination of the Peninsula between Paradise harbor and Andvord Bay on the west coast of Graham Land. It is the site of the Chilean Station, Gonzalez Videla. Waterboat Point is separated from the mainland by high water. The Belgian Antarctic Expedition of 1898 first surveyed the coast in this vicinity. This particular point was surveyed and named by T.W. Bagshawe and M.C. Lester who lived here in a waterboat from 1921-22, while conducting studies of the on-site penguins. The area where they worked is roped off and noted by historical markers. The station area is about 10-15 meters above sea level. The exposed face of a crevassed glacier lies just beyond the tombola – the causeway that connects the station area to the mainland at low tide. The area around the edges of Paradise Bay is ruggedly mountainous and mainly covered with glaciers and snow, leaving a few nunataks and cliffs exposed. There are coast-line exposures of bedrock at the edge of the snow cover. There is now well-developed beach visible along the present shoreline where bare bedrock is exposed at sea level below the snow and ice.

STATION(S): Chilean Station Gonzales Videla

FAUNA & FLORA:

Penguins & flying birds: Gentoo penguins, chinstrap penguins, and snowy sheathbills are confirmed breeders. Kelp gulls, skuas, spp., and blue-eyed shags also noted, but do not appear to nest immediately on site.

Seals: No seals observed during Antarctic Site Inventory site visits.

Moss beds/lichens/plants: Snow algae common on glacier front.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: Restricted visitor space (the station is crowded with gentoos; on the mainland side, slippery, often guano- or mud-strewn rocks make for difficult footing).

HISTORICAL ARTEFACTS: On site is HSM 56, the hut in which the pioneering penguin biologists Bagshawe and Lester overwintered in 1921-22. The remains include the base of their waterboat, the roots of door posts, and an outline of the hut and extension; this two-man expedition was the smallest expedition to ever overwinter in Antarctica. Also nearby is HSM 30, a shelter erected in 1950 to honor Gabriel Gonzalez Videla, the first Head of State to visit Antarctica.

SSSI/SSA: None

LANDING CHARACTERISTICS: This is the site of the Chilean Station, Gonzalez Videla, which the Chileans have refurbished. Garbage and oil drums have been removed. Buildings have been repainted and open doors closed to prevent indoor nesting by gentoo penguins and blue-eyed shags. Gentoos swarm over the station grounds, which is located on a spit of land that extends from the mainland, but which is disconnected from the mainland at high tide. Visitors may access the station by utilizing the small, wooden loading dock on the north side of the station. The mainland landing area requires visitors to negotiate slippery, onshore rocks. The station area contains markers denoting the Bagshawe-Lester overwintering expedition, which worked here and produced the Peninsula's first rigorous censuses of breeding penguins. If there is low tide, it is possible to walk across the rocky tidal flats from the station to the continent side of the bay.

#### **10) Paulet Island, Northeast Peninsula, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: A circular island, about 1.0 mile in diameter, lying 3 miles southeast of Dundee Island, off the northeast end of the Antarctic Peninsula. Paulet is the site of an enormous Adelie penguin colony. The island was discovered by Ross's British expedition (1839-43), and named by Ross for a captain in the Royal Navy. Paulet consists of a distinct volcanic cone, 1,158 feet high. The landing beach on the north side of the island contains rounded, mainly spherical boulders and pebbles of basalt and scoria. Well to the east of the landing beach is a memorial cross marking the grave of one of the members of the Nordenskjold expedition who died here, and the remains of the hut in which these explorers overwintered may be found above the landing beach. Beyond and above the hut is a substantial ovoid-shaped lake, several hundred feet long and about half that width, which appears to be in the crater of the old volcano. The ridge above the landing (upon which the remains of the hut are located) is made up entirely of rounded boulders, pebbles, and even bomb-shaped fragments. This ridge slopes up gently to a steeper hillside leading around the lake. There are many Adelies around the lake and on the elevated ridge between the lake and a basaltic stack northeast of the landing beach. This stack contains sheathbill and shag nests, and sits opposite a large shag colony that covers a steep ridge on an interior hillside. Beyond this rock stack is a flat terrace that forms an apron around the north and northeast side of the island. Enormous numbers of Adelies nest on this apron and on the ridges above. The ground surface consists of cinders and pebbles in a muddy, guano-rich soil. The steep ridge that houses the large shag colony is underlain by solid basalt. Angular slabs of thin cryoturbated (broken and churned by freezing and thawing) basalt are common, and were used by the Nordenskjold expedition members to build their emergency hut.

STATION(S): None



FAUNA & FLORA:

Penguins & flying birds: Adelie penguins, blue-eyed shags, and snowy sheathbills are confirmed breeders. Both snow and Wilson's storm-petrels commonly course the higher scree and are strongly suspected to be breeding. There is a noticeable paucity of skuas, spp.; none were found nesting and very few were observed harassing penguins. Kelp gulls also observed but it is unclear whether they actually nest on site.

Seals: Weddell seals have hauled-out on the site's landing beach, and leopard seals often may be found hunting offshore.

Moss beds/lichens/plants: *Xanthoria*, spp. may be found on exposed slopes.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: Restricted visitor space along landing beach, especially after creche period when chicks begin reaching the beach. Scree slopes should be avoided because of nesting snow petrels and Wilson's storm-petrels.

HISTORICAL ARTEFACTS: On site is HSM 41, the stone hut built in February 1903 by C.A. Larsen, Norwegian captain of the wrecked vessel, *Antarctic*, of the Swedish Antarctic Expedition led by Otto Nordenskjold, and the grave of a member of that expedition.

SSSI/SSA: None

LANDING CHARACTERISTICS: This small island in the western Weddell Sea is normally the home to at least 60,000 breeding pairs of Adelie penguins. It is also the site of an historical hut and burial marker from the ill-fated Nordenskjold expedition. The landing site is on the north central side of the island, and access is often impeded by ice. Anchoring is generally impossible because of the fast flowing ice and currents. Leopard seals often lurk offshore of the landing site. In normal circumstances, Paulet presents a very major challenge; the Adelies are tightly grouped and often difficult to access, especially when the beach is caked with ice, or later in the breeding season when penguin chicks break creche and move to the beach. In the 1994-95 austral summer, Paulet experienced a site-wide Adelie breeding crash, with many dead chicks strewn about and relatively small numbers of undersized chicks gasping for food. Normally, in mid-summer, this site is awash in chicks, guano and mud. In the 1994-95 season, blue-eyed shags also failed. The causes for the abject breeding failures are unclear, although suspicions suggest krill stock fluctuations in the penguins' and shags' normal foraging areas or, because of "high ice" winter, the penguins and shags found Paulet difficult to reach and were much delayed in starting their breeding cycle.

**11) Arctowski Station, vicinity King Geo. Island, South Shetland Islands, 62/36'S, 59/55'W**

PHYSICAL DESCRIPTION: The station is named for Henryk Arctowski, the Polish geologist, oceanographer and meteorologist of the Belgian Antarctic expedition (1897-99). The research station lies on a flat, shingle peninsula flanked to the south by a bay-mouth bar enclosing a small lagoon. The beach is largely cobble and the bay-mouth bar is mainly rounded cobbles, but there is a black sand beach at lower water levels. From the head of the peninsula, marked by a towering rock of brown-weathering, basalt material, visitors may traverse this cobble beach, which is known as half Moon Beach, for almost 0.5 mile, to an elephant seal wallow at the boundary of SSSI 8. The beach is littered with whale bones. The ground around the station area is spongy and muddy, made up of rounded sand and pebbly materials. Directly behind the station is a large morainal ridge. This moraine has fragments of fossil woody-plant material, which appears to be *Nothofagus*, the genus of beech trees from Tierra del Fuego.

STATION(S): Poland's Arctowski Station

FAUNA & FLORA:

Penguins & flying birds: Confirmed breeders in the immediate station vicinity (but not within the confines of SSSI 8) include Antarctic brown skuas (and hybrid skua pairs), Wilson's and black-bellied storm petrels. Adelie, gentoo and chinstrap penguins, and kelp gulls nest within the SSSI. Blue-eyed shags nest at various locations in Admiralty Bay.

Seals: Weddell and southern elephant seals frequently haul-out on Half Moon Beach, and the elephant seal wallow at the end of Half Moon Beach builds in numbers as the summer progresses. In many seasons, Antarctic fur seals will haul-out on the moss and *Deschampsia* between the beach and the station.

Moss beds/lichens/plants: *Deschampsia* and cushion moss beds are found between Half Moon Beach and the station. There are many crustose lichens visible along the shore and especially in the environs of the SSSI. There are also extensive *Usnea*, spp. patches within the SSSI.

UNUSUAL FEATURES: None noted.

SENSITIVITY FACTORS: The boundary of SSSI 8 is at the end of the visitor walk on Half Moon Beach, is not specifically marked, and is easily encroached. Grass and moss near the landing beach should not be trampled.

HISTORICAL ARTEFACTS: In the moss-strewn hills above and to the south of the station is HSM 51, the grave of Wladzimirz Puchalski. He was an artist and producer of documentary film, and died in January 1979 while working at the station. The grave is marked by a tall iron cross. SSSI/SSA: SSSI 8, Point Thomas Site.

LANDING CHARACTERISTICS: Arctowski Station is the Polish research base located in Admiralty Bay, South Shetland Islands. The short, easily walked beach in "front" of the station is called Half Moon Beach, and extends for 0.5 mile to the northern boundary of the Point Thomas Site of Special Scientific Interest, SSSI 8; as a matter of geography, Point Thomas is located northwest of Arctowski Station and outside of the SSSI, at the opening to Ezcurra Inlet. The high cliffs extending toward Ezcurra Inlet contain many nesting skuas and storm-petrels and would be easily disturbed by visitor encroachment. Half Moon Beach is frequently visited by expedition vessel passengers (usually in conjunction with Station visits), and ends at an elephant seal wallow that abuts the SSSI boundary. Late each season, fur seals often are found on the *Deschampsia* and moss inland from the beach. Skuas also breed here, and the wet areas are totally off-limits to visitors. There are no colonies of penguins or seabirds along this stretch of Half Moon Beach. Skuas occasionally nest on the grassy plain inward of the landing site. As the summer progresses, a snow melt lake develops on this plain, which becomes a skua bathing spot. There is very little room for tourists between the SSSI boundary and the Station.

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Source: Naveen, Ron. *Compendium of Antarctic Peninsula Visitor Sites, A Report to the Governments of the United States and the United Kingdom*. Oceanites, Inc., Chevy Chase, MD. November 1997.

*Appendix 5: Antarctic Specially Protected  
Areas and Historic Monuments*

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**Appendix 5**  
**Antarctic Specially Protected Area and Historic Monuments**

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## **Appendix 5**

### **Antarctic Specially Protected Areas and Historic Monuments**

New classification system for area protection and management:<sup>1</sup> When Annex V of the Protocol on Environmental Protection to the Antarctic Treaty enters into force, Specially Protected Areas, Sites of Special Scientific Interest, and some historic sites will be combined into a single category of protected area, Antarctic Specially Protected Areas (ASPAs). An additional category, Antarctic Specially Managed Areas (ASMAs), will also be created for areas where activities pose risks of mutual interference or cumulative environmental impacts and sites of recognized historic value that do not require strictly controlled access. Entry into an ASPA will require a permit, while entry into ASMAs will not.

Specially Protected Areas:<sup>2</sup> Some areas of Antarctica have features that require special care. Specially Protected Areas were created to preserve particularly important ecological systems. A permit is required to enter these areas. Historically, only Sites of Special Scientific Interest were required to have management plans. Many Specially Protected Areas now have existing management plans or management plans under development. Once in place, adherence to management plans is required. Specially Protected Areas were designated under Article VIII of the Agreed Measures for the Conservation of Antarctic Fauna and Flora. Since the Agreed Measures were written, sites have been added or changed.

Sites of Special Scientific Interest:<sup>3</sup> Sites of Special Scientific Interest were developed to protect scientific investigations in the Antarctic. Like Specially Protected Areas, Sites of Special Scientific Interest require special provisions and management plans to prevent the disturbance of investigations. Nearly all these sites require permits for entry and/or activity.

Historic Monuments:<sup>4</sup> Just as the ecosystems of Antarctica are important, so also is Antarctica's exploration and development. It was decided at the first Antarctic Treaty consultative meeting to protect artifacts and areas that commemorate Antarctica's exploration. At the 5th consultative meeting it was agreed that lists of historic monuments and sites would be created. Since that meeting, lists have been consolidated into one list that has been updated periodically. The monument areas have special provisions to ensure their protection.

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<sup>1</sup> National Science Foundation "Antarctic Conservation Act of 1978 (Public Law 95-541) with Regulations, Descriptions and Maps of Special Areas, Permit Application Form, Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964), Protocol on Environmental Protection (1991)." October 1995.

<sup>2</sup> National Science Foundation, October 1995.

<sup>3</sup> National Science Foundation, October 1995.

<sup>4</sup> National Science Foundation, October 1995.

## Antarctic Specially Protected Areas<sup>5</sup>

In 1998, U.S. legislation implementing the Environmental Protocol combined areas previously designated as Specially Protected Areas and Sites of Special Scientific Interest into a single category of Antarctic Specially Protected Areas (ASPAs). These are defined as an area designated by the Antarctic Treaty Parties to protect outstanding environmental, scientific, historic, aesthetic, or wilderness values or to protect ongoing or planned scientific research, and are designated in the following list.

|          |   |
|----------|---|
| ASPA 101 | Taylor Rookery, MacRobertson Land                                 |
| ASPA 102 | Rookery Islands, Holme Bay  |
| ASPA 103 | Ardrey Island and Odber Island, Budd Coast                        |
| ASPA 104 | Sabrina Island, Balleny Islands                                   |
| ASPA 105 | Beaufort Island, Ross Sea   |
| ASPA 106 | Cape Hallett, Victoria Land                                       |
| ASPA 107 | Dion Islands, Marguerite Bay, Antarctic Peninsula                 |
| ASPA 108 | Green Island, Berthelot Islands, Antarctic Peninsula              |
| ASPA 109 | Moe Island, South Orkney Islands                                  |
| ASPA 110 | Lynch Island, South Orkney Islands                                |
| ASPA 111 | Southern Powell Island and adjacent islands, South Orkney Islands |
| ASPA 112 | Coppermine Peninsula, Robert Island                               |
| ASPA 113 | Litchfield Island, Arthur Harbor, Palmer Archipelago              |
| ASPA 114 | North Coronation Island, South Orkney Islands                     |
| ASPA 115 | Lagotellerie Island, Marguerite Bay                               |
| ASPA 116 | New College Valley, Caughley Beach, Cape Bird, Ross Island        |
| ASPA 117 | Avian Island, Northwest Marguerite Bay                            |
| ASPA 118 | Cryptogam Ridge, Mount Melbourne, Victoria Land                   |
| ASPA 119 | Forlidas Pond and Davis Valley Ponds                              |
| ASPA 120 | Pointe-Geologie Archipelago                                       |
| ASPA 121 | Cape Royds, Ross Island   |
| ASPA 122 | Arrival Heights, Hut Point Peninsula, Ross Island                 |
| ASPA 123 | Barwick Valley, Victoria Land                                     |
| ASPA 124 | Cape Crozier, Ross Island   |
| ASPA 125 | Fildes Peninsula, King George Island, South Shetland Islands      |
| ASPA 126 | Byers Peninsula, Livingston Island, South Shetland Islands        |
| ASPA 127 | Haswell Island  |
| ASPA 128 | Western Shore of Admiralty Bay, King George Island                |
| ASPA 129 | Rothera Point, Adelaide Island                                    |
| ASPA 130 | Tramway Ridge, Mt. Erebus, Ross Island                            |
| ASPA 131 | Canada Glacier, Lake Fryxell, Taylor Valley, Victoria Land        |
| ASPA 132 | Potter Peninsula, King Georgia Island, South Shetland Island      |
| ASPA 133 | Harmony Point   |
| ASPA 134 | Cierva Point and nearby islands, Danco Coast, Antarctic Peninsula |
| ASPA 135 | Bailey Peninsula, Budd Coast, Wilkes Land                         |

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<sup>5</sup> Revised regulations by the National Science Foundation to implement the Protocol's revised nomenclature of protected areas. In: 45 CFR Part 670.

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|----------|--|
| ASPA 136 | Clark Peninsula, Budd Coast, Wilkes Land                               |
| ASPA 137 | Northwest White Island, McMurdo Sound                                  |
| ASPA 138 | Linnaeus Terrace, Asquard Range, Victoria Land                         |
| ASPA 139 | Biscoe Point, Anvers Island, Palmer Archipelago                        |
| ASPA 140 | Shores of Port Foster, Deception Island, South Shetland Islands        |
| ASPA 141 | Yukidori Valley, Langhovde, Lutzow-Holm Bay                            |
| ASPA 142 | Svarthamaren Mountain, Muhlig-Hofmann Mountains, Queen Maud Land       |
| ASPA 143 | Marine Plain, Mule Peninsula, Vestfold Hills, Princess Elizabeth Land  |
| ASPA 144 | Chile Bay (Discovery Bay), Greenwich Island, South Shetland Islands    |
| ASPA 145 | Port Foster, Deception Island, South Shetland Islands                  |
| ASPA 146 | South Bay, Doumer Island, Palmer Archipelago                           |
| ASPA 147 | Ablation Point-Ganymede Heights, Alexander Island                      |
| ASPA 148 | Mount Flora, Hope Bay, Antarctic Peninsula                             |
| ASPA 149 | Cape Shirreff, Livingston Island, South Shetland Islands               |
| ASPA 150 | Ardley Island, Maxwell Bay, King George Island, South Shetland Islands |
| ASPA 151 | Lions Rump, King George Island, South Shetlands Islands                |
| ASPA 152 | Western Bransfield Strait, off Low Island, South Shetland Islands      |
| ASPA 153 | East Dallmann Bay, off Brabant Island                                  |
| ASPA 154 | Cape Evans Historic Site   |
| ASPA 155 | Lewis Bay Tomb   |

## Historic Monuments in Antarctica<sup>6</sup>

*The need to protect historic monuments and sites became apparent as the number of expeditions to the Antarctic increased. At the Seventh Antarctic Treaty Consultative Meeting it was agreed that a list of historic monuments and sites be created. So far 60 sites have been identified. All of them are monuments — human artifacts rather than sites or areas — and, many of them are in close proximity to scientific stations. Provision for protection of these sites is contained in Annex V, Article 8, on the grounds that the Antarctic Specially Protected Area permit system is the best means of ensuring protection of historic monuments where direct oversight is not possible.*

### List of Historic Monuments Identified and Described by the Proposing Government or Governments

(1) *Flag mast* erected in December 1965 at the South Geographical Pole by the First Argentine Overland Polar Expedition.

(2) *Rock cairn and plaques* at Syowa station (69°00' S. 39°35' E.) in memory of Shin Fukushima, a member of the 4th Japanese Antarctic Research Expedition, who died in October 1960 while performing official duties. The cairn was erected on January 11, 1961 by his colleagues. Some of his ashes repose in the cairn.

(3) *Rock cairn and plaque* on Proclamation Island, Enderby Land, erected in January 1930 by Sir Douglas Mawson. The cairn and plaque (65°51' S. 53°41' E.) commemorate the landing on Proclamation Island of Sir Douglas Mawson with a party from the British, Australian, and New Zealand Antarctic Research Expedition of 1929-31.

(4) *Station building* to which a bust of V.I. Lenin is fixed, together with a plaque in memory of the conquest of the Pole of Inaccessibility by Soviet Antarctic explorers in 1958 (83°06' S. 54°58' E.).

(5) *Rock cairn and plaque* at Cape Bruce, Mac. Robertson Land, erected in February 1931 by Sir Douglas Mawson. The cairn and plaque (67°25' S. 60°47' E.) commemorate the landing on Cape Bruce of Sir Douglas Mawson with a party from the British, Australian, and New Zealand Antarctic Research Expedition of 1929-31.

(6) *Rock cairn* at Walkabout Rocks, Vestfold Hills, "Princess Elizabeth Land," erected in 1939 by Sir Hubert Wilkins. The cairn (68°22' S. 78°33' E.) houses a canister containing a record of his visit.

(7) *Stone with inscribed plaque*, erected at Mirny Observatory (66°33' S. 93°01' E.), Mabus Point, in memory of driver-mechanic Ivan Khmara, who perished on fast ice in the performance of official duties in 1956.

(8) *Metal monument-sledge* at Mirny Observatory (66°33' S. 93°01' E.), Mabus Point, with plaque in memory of driver-mechanic Anatoly Shcheglov, who perished in the performance of official duties.

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<sup>6</sup> Excerpted from: *Antarctic Conservation Act of 1978 (Public Law 95-541) with Regulations, Descriptions and Maps of Special Areas, Permit Application Form, Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964), and Protocol on Environmental Protection (1991)*. National Science Foundation. Arlington, VA. October 1995.



(9) *Cemetery* on Buromskiy Island (66°32' S. 93°01' E.), near Mirny Observatory, in which are buried Soviet, Czechoslovak, and German Democratic Republic citizens, members of Soviet Antarctic Expeditions, who perished in the performance of official duties on August 3, 1960.

(10) *Building (magnetic observatory)* at Dobrowolsky station (66°16' S. 100°45' E.), Bunger Hills, with plaque in memory of the opening of Oasis station in 1956.

(11) *Heavy tractor* at Vostok station (78°28' S. 106°48' E.) with plaque in memory of the opening of the station in 1957.

(12) *Cross and plaque* at Cape Denison (67°00' S. 142°42' E.), George V Land, erected in 1913 by Sir Douglas Mawson on a hill situated 300 meters west by south, from the main hut of the Australasian Antarctic Expedition of 1911-14. The cross and plaque commemorate Lieutenant B.E.S. Ninnis and Dr. X. Mertz, members of the expedition, who died in 1913 while engaged in the work of the expedition.

(13) *Hut* at Cape Denison (67°00' S. 142°42' E.), George V Land, built in January 1912 by Sir Douglas Mawson for the Australasian Antarctic Expedition of 1911-14. This was the main base of the expedition.

(14) *Remains of rock shelter* at Inexpressible Island (74°54' S. 163°43' E.), Terra Nova Bay, constructed in March 1912 by Victor Campbell's Northern Party, British Antarctic Expedition, 1910-13. The party spent the winter of 1912 in this shelter and a nearby ice cave.

(15) *Hut* at Cape Royds (77°38' S. 166°07' E.), Ross Island, built in February 1908 by Ernest Shackleton. The hut was restored in January 1961 by Antarctic Division of New Zealand Department of Scientific and Industrial Research.

(16) *Hut* at Cape Evans (77°38' S. 166°24' E.), Ross Island, built in January 1911 by Captain Robert Falcon Scott. The hut was restored in January 1961 by Antarctic Division of New Zealand Department of Scientific and Industrial Research.

(17) *Cross* on Wind Vane Hill (77°38' S. 166°24' E.), Cape Evans, Ross Island, erected by the Ross Sea Party of Ernest Shackleton's Trans-Antarctic Expedition, 1914-16, in memory of three members of the party who died in the vicinity in 1916.

(18) *Hut* at Hut Point. (77°51' S. 166°37' E.), Ross Island, built in February 1902 by Captain Robert Falcon Scott. The hut was partially restored in January 1964 by the New Zealand Antarctic Society, with assistance from the U.S. Government.

(19) *Cross* at Hut Point (77°51' S. 166°37' E.), Ross Island, erected in February 1904 by the British Antarctic Expedition, 1901-04, in memory of T. Vince, a member of that expedition who died in the vicinity.

(20) *Cross* on Observation Hill (77°51' S. 166°40' E.), Ross Island, erected in January 1913 by the British Antarctic Expedition, 1910-13, in memory of Captain Robert Falcon Scott's party, which perished on the return journey from the South Pole, March 1912.

(21) *Stone hut* at Cape Crozier (77°32' S. 169°18' E.), Ross Island, constructed in July 1911 by Edward Wilson's party (British Antarctic Expedition, 1910-13) during the winter journey to collect emperor penguin eggs.

(22) *Hut* at Cape Adare (71°17' S. 170°15' E.) built in February 1899 during *Southern Cross* expedition led by C.E. Borchgrevink. There are three huts at Cape Adare: two date from Borchgrevink's expedition and one from Scott's Northern Party, 1910-11. Only the southernmost Borchgrevink hut survives in a reasonable state of repair.

(23) *Grave* at Cape Adare (71°17' S. 170°15' E.) of Norwegian biologist Nicolai Hanson, a member of C.E. Borchgrevink's *Southern Cross* expedition, 1899-1900. This is the first known grave in the Antarctic.

(24) *Rock cairn*, known as "Amundsen's Cairn," on Mount Betty (85°11' S. 163°45' W.), Queen Maud Range. This was erected by Roald Amundsen on January 6, 1912 on his way back to Framheim from the South Pole.

(25) *Hut and plaque* on Peter I Oy, built by the Norwegian Captain Nils Larsen in February 1929 at Framnaesodden (68°47' S. 90°42' W.). The plaque is inscribed "Norvegia-ekspedisjonen 2/2 1929."

(26) *Abandoned installations of Argentine station* General San Martin on Barry Island (68°08' S. 67°08' W.), Debenham Islands, Marguerite Bay, with cross, flag mast, and monolith built in 1951.

(27) *Cairn with plaque* on Megalestris Hill (65°10' S. 64°10' W.), Petermann Island, erected in 1909 by the second French expedition led by J.B. Charcot. It was restored by the British Antarctic Survey in 1958.

(28) *Rock cairn* at Port Charcot (65°03' S. 64°01' W.), Booth Island, with wooden pillar and plaque inscribed with the names of the first French expedition led by J.B. Charcot, who wintered here in 1903 aboard *Le Francais*.

(29) *Lighthouse* named "Primero de Mayo" erected on Lambda Island (64°18' S. 62°59' W.), Melchior Islands, by Argentina in 1942. This was the first Argentine lighthouse in the Antarctic.

(30) *Shelter* at Paradise Harbor (64°49' S. 62°51' W.) erected in 1950 near the Chilean Base Gabriel González Videla to honor Gabriel González Videla, the first Head of State to visit the Antarctic.

(31) *Memorial plaque* marking the position of a cemetery on Deception Island (62°59' S. 60°34' W.), where some 40 Norwegian whalers were buried in the first half of the twentieth century. The cemetery was swept away by a volcanic eruption in February 1969.

(32) *Concrete monolith* erected in 1947 near Arturo Prat Base on Greenwich Island (62°29' S. 59°40' W.). This monolith served as the point of reference for Chilean Antarctic hydrographic work.

(33) *Shelter and cross with plaque* near Arturo Prat Base, Greenwich Island (62°30' S. 59°41' W.). The shelter was named in memory of Lieutenant-Commander González Pacheco, who died tragically while in charge of the station in 1960.

(34) *Bust* of the Chilean naval hero Arturo Prat erected in 1947 at the base of the same name on Greenwich Island (62°30' S. 59°41' W.).

(35) *Wooden cross and statue* of the Virgin of Carmen erected in 1947 near Arturo Prat Base on Greenwich Island (62°30' S. 59°41' W.). There is also nearby a metal plaque of the Lions International Club.

(36) *Metal plaque* at Potter Cove (62°13' S. 58°42' W.), King George Island, erected by Eduard Dallmann to commemorate the visit of his German expedition on March 1, 1874.

(37) *Statue of Bernardo O'Higgins*, erected in 1948 in front of the station of the same name (63°19' S. 57°54' W.) to honor the first ruler of Chile to envision the importance of Antarctica.

(38) *Hut* on Snow Hill Island (64°24' S. 57°00' W.) built in February 1902 by the main party of the Swedish South Polar Expedition, led by Otto Nordenskjöld.

(39) *Stone hut* at Hope Bay (63°24' S. 56°59' W) built in January 1903 by a party of the Swedish South Polar Expedition.

(40) *Bust of General San Martin, grotto with a statue of the Virgin of Lujan, and a flag mast* at "Base Esperanza" (63°24' S. 56°59' W.), Hope Bay, erected by Argentina in 1955; together with a graveyard with stele in memory of members of Argentine expeditions who died in the area.

(41) *Stone hut* on Paulet Island (63°35' S. 55°47' W.) built in February 1903 by C.A. Larsen, Norwegian captain of the wrecked vessel *Antarctic* of the Swedish South Polar Expedition led by Otto Nordenskjöld, together with the grave of a member of that expedition.

(42) *Area at Scotia Bay*, Laurie Island (60°46' S. 44°40' W.), South Orkney Islands, in which are found a stone hut built in 1903 by the Scottish Expedition led by W.S. Bruce; the Argentine Meteorological and Magnetic Observatory, built in 1905; and a graveyard with seven tombs dating from 1903.

(43) *Cross* erected in 1955, at a distance of 1300 meters northeast of the Argentine Base General Belgrano at "Piedrabuena Bay," Filchner Ice Shelf (77°49' S. 38°02' W.).

(44) *Plaque* erected at the temporary Indian station Dakshin Gangotri, Princess Astrid Coast (70°45' S. 11°38' E.), Queen Maud Land, listing the names of the members of the First Indian Antarctic Expedition, which landed nearby on January 9, 1982.

(45) *Plaque* on Brabant Island, on Metchnikoff Point (64°02' S. 62°34' W.), mounted at a height of 70 meters on the crest of the moraine separating this point from the glacier and bearing the following inscription: "This monument was built by Francois de Gerlache and other members of the joint services expedition 1983-85 to commemorate the first landing on Brabant Island by the Belgian Antarctic Expedition 1897-99:

Adrien de Gerlache (Belgium) leader  
Roald Amundsen (Norway)  
Henryk Arctowski (Poland)  
Frederick Cook (United States) and  
Emile Danco (Belgium)

camped nearby from 30 January to 6 February 1898."

(46) *All the buildings and installations of Port Martin base* (66°49' S. 141°24' E.), Terre Adélie, constructed in 1950 by the 3rd French expedition and partly destroyed by fire the night of January 23-24, 1952.

(47) *Wooden building* called Base Marret on the Ile des Petrels off Terre Adélie (66°40' S. 140°01' E.) where seven men under the command of Mario Marret wintered in 1952 following the fire at Port Martin base.

(48) *Cross* erected on the northeast headland of the Ile des Petrels (66°40' S. 140°01' E.), Terre Adélie, in memory of Andre Prudhomme, head meteorologist in the 3rd International Geophysical Year expedition, who disappeared during a storm on January 7, 1959.

(49) *Concrete pillar* erected by the First Polish Antarctic Expedition at Dobrowolski station on the Bunger Hills (66°16.3' S. 100°45' E., h = 35.4 meters) to measure acceleration due to gravity  $g = 982,349.4$  milligals, plus or minus 0.4 milligals in relation to Warsaw, according to the Potsdam system, in January 1959.

(50) *Plaque* bearing the Polish eagle, the national emblem of Poland, the dates 1975 and 1976, and this text in Polish, English, and Russian: "In memory of the landing of members of the first Polish Antarctic marine research expedition on the vessels *Professor Siedlecki* and *Tazar* in February 1976." The plaque is on a shore cliff on Fildes Peninsula, King George Island, Maxwell Bay, southwest of the Chilean and Russian stations.

(51) *Grave* of Wladzimirz Puchalski, surmounted by an iron cross, on a hill to the south of Arctowski station on King George Island. W. Puchalski was an artist, a producer of documentary nature films, who died on January 19, 1979 whilst working at the station.

(52) *Monolith* erected to commemorate the establishment on February 20, 1985, by the People's Republic of China of the Great Wall station (62°13' S. 58°58' W.) on Fildes Peninsula, King George Island, in the South Shetland Islands. Engraved on the monolith is this inscription in Chinese: "Great Wall Station, First Chinese Antarctic Research Expedition, 20 February 1985."

(53) *Monolith and commemorative plaques* celebrating the rescue of survivors of the British ship *Endurance* by the Chilean Navy cutter *Yelcho* displaying the following words:

"Here, on 30 August 1916, the Chilean Navy cutter *Yelcho*, commanded by Pilot Luis Pardo Villalon, rescued the 22 men from the Shackleton Expedition who survived the wreck of the *Endurance* living for four and one half months in this Island."

The monolith and the plaques have been placed on Elephant Island (61°03' S. 54°50' W.) and their replicas on the Chilean bases Arturo Prat (62°30' S. 59°49' W.) and Lieutenant Rodolfo Marsh (62°12' S. 62°12' W.). Bronze busts of the pilot Luis Pardo Villalon were placed on the three above-mentioned monoliths during the XXIVth Chilean Antarctic Scientific Expedition in 1987-1988.

(54) *Richard E. Byrd Historic Monument*, McMurdo station (77°51' S. 166°40' E.). A bronze bust on black marble, the monument stands 1.55 meters high by 0.625 meter square, on a wood platform, and bears inscriptions describing the polar achievements of Richard Evelyn Byrd. The monument was erected at McMurdo station in 1965.

(55) *East Base*, Stonington Island (68°11' S. 67°00' W.); buildings and artifacts and their immediate environs. These structures were erected and used during two U.S. wintering expeditions: the Antarctic Service Expedition (1939-1941) and the Ronne Antarctic Research Expedition (1947-1948). The historic area is 1000 meters in the north-south direction (from the beach to Northeast Glacier adjacent to Back Bay) and 500 meters in the east-west direction.

(56) *Waterboat Point*, Danco Coast, Antarctic Peninsula (64°49' S. 62°52' W.); the remains and immediate environs of the Waterboat Point hut, situated close to the unoccupied Chilean station, Presidente Gabriel González Videla. The Waterboat Point hut, of which only the base of the boat, roots of door posts, and an outline of the hut and extension still exist, was occupied by the United Kingdom two-man expedition of Bagshawe and Lester in 1921-1922. This was, and indeed remains, the smallest expedition to ever overwinter in Antarctica.

(57) *Commemorative plaque* at Yankee Harbor, McFarlane Strait, Greenwich Island, South Shetland Islands, near the Chilean refuge located at latitude 62°32' S. longitude 59°45' W., to the memory of Captain Robert McFarlane, who in 1820 explored the Antarctic Peninsula Area in the brigantine *Dragón*.

(58) *Cairn* with memorial plaque erected at Whalers Bay, Deception Island, South Shetland Islands, in the vicinity of the whalers' cemetery (historic monument number 31, 62°59' S. 60°34' W.), to honor captain Adolfus Amandus Andresen, antarctic pioneer who was first to establish a whaling operation at Deception Island in 1906.

(59) *Cairn* on Half Moon Beach, Cape Shirreff, Livingston Island, South Shetland Islands, commemorating the officers, soldiers, and seamen on board the *San Telmo*, which sank in September 1819; possibly the first people to live and die in the wastes of the Antarctic.

(60) *Wooden plaque and rock cairn*, southern coast of Seymour Island (64°16' S. 56°39' 10" W.). On November 10, 1903, the rescue crew of the Argentine corvette *Uruguay* placed the plaque where they met members of the Swedish expedition led by Dr. Otto Nordenskjöld. The plaque reads: "10.XI.1903 'Uruguay' (Argentine Navy) in its journey to give assistance to the Swedish Antarctic Expedition." In January 1990 Argentina erected the rock cairn in memory of the event.

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This list was developed at Antarctic Treaty Consultative Meetings VII, XII, XIII, XIV, XV, XVI, and XVII.

***Appendix 6: U.S. Antarctic Program:  
Research Stations, Summer Field Camps  
and Other Temporary Facilities, Support  
Ships and Aircraft, and Research Activities  
of U.S. Federal Government Agencies***

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**Appendix 6**  
**U.S. Antarctic Program:**  
**Research Stations, Summer Field Camps and Other Temporary Facilities,**  
**Support Ships and Aircraft, and Research Activities of U.S. Federal**  
**Government Agencies**

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**Appendix 6**  
**U.S. Antarctic Program:**  
**Research Stations, Summer Field Camps and Other Temporary Facilities,**  
**Support Ships and Aircraft, and Research Activities of U.S. Federal**  
**Government Agencies**

| <b>Table 6.1. Research Stations</b>  |   |
|--|---|
| Location   | Description   |
| McMurdo Station<br><br>77°51'S 166°40'E<br><br>Hut Point Peninsula<br>on Ross Island | <u>ESTABLISHED</u> : 1955   |
|  | <u>FACILITIES</u> : Harbor, landing strips on sea ice and shelf ice, and a helicopter pad; 85 or so buildings range in size from a small radio shack to large, three-story structures   |
|  | <u>RESEARCH</u> : Marine and terrestrial biology, biomedicine, geology and geophysics, glaciology and glacial geology, meteorology, aeronomy, and upper atmospheric physics   |
|  | <u>STATION POPULATION</u> : Largest Antarctic station with a peak summer population capacity of 1,258 and a winter population of approximately 200  |
|  | <u>NOTABLE FUNCTION(S)</u> : Logistics hub of the USAP; air transportation to New Zealand is frequent between October and February, but the winter population is isolated from late February to late August   |
|  | <u>NOTABLE FEATURES</u> : Hut Point Peninsula on Ross Island is the most southerly solid ground accessible by ship and is located just 20 miles south of Mt. Erebus, an active volcano that steams continually and erupts frequently though not violently                                   |
| Amundsen-Scott<br>Station<br><br>90°S<br><br>South Pole                              | <u>ESTABLISHED</u> : Continuous occupation by Americans since 1956  |
|  | <u>FACILITIES</u> : Central geodesic dome with attachments to the fuel supply, power house, a medical facility, and other functions; detached buildings house research instruments, and a summer camp serves as an emergency camp during the winter should the principal facilities be lost |
|  | <u>RESEARCH</u> : Glaciology, geophysics, meteorology, upper atmosphere physics, astronomy, astrophysics, and biomedical studies  |
|  | <u>STATION POPULATION</u> : Peak summer capacity of 173; the 1996 winter population was only 27. The Station's winter personnel are isolated between mid-February and late October.   |
|  | <u>NOTABLE FUNCTION(S)</u> :  |
|  | <u>NOTABLE FEATURES</u> : Station is located on interior's nearly featureless ice sheet at the geographic South Pole  |



|  |   |
|--|---|
| Palmer Station<br><br>64/46'S 64/03'W<br><br>Anvers Island immediately west of the Antarctic Peninsula | <u>ESTABLISHED</u> : 1965   |
|  | <u>FACILITIES</u> : Two major buildings (including sea water aquaria), three small buildings, two large fuel tanks, a helicopter pad, and a dock  |
|  | <u>RESEARCH</u> : Biological studies of birds, seals and other components of the marine ecosystem, meteorology, upper atmosphere physics, glaciology, and geology; designated as a long-term ecological research site             |
|  | <u>STATION POPULATION</u> : Peak summer population capacity is 43; the 1996 winter population was 20  |
|  | <u>NOTABLE FUNCTION(S)</u> : An ice-strengthened ship can transit, generally across the Drake Passage from South America, any month of the year, thus the Station is not isolated in the winter as are McMurdo and the South Pole |
|  | <u>NOTABLE FEATURES</u> : Located on Anvers Island immediately west of the Antarctic Peninsula, this is the only U.S. station north of the Antarctic Circle; Station sets on a protected harbor                                   |

Source: USAP External Panel (1997), NSF Facts About the U.S. Antarctic Program (1994)

| <b>Table 6.2. Summer Field Camps and Other Temporary Facilities</b> |   |
|---|---|
| Type of Facility  | Description   |
| Field Camps   | <u>ESTABLISHED</u> : Approximately 30 established each austral summer to support specific projects  |
|   | <u>PURPOSE</u> : Geology, geophysics, glacial geology, glaciology, and terrestrial biology have been pursued at these camps which often have significant international involvement  |
|   | <u>CONSTRUCTION</u> : Typically consist of Jamesways (quickly erected structures made of canvas and wood)   |
|   | <u>TRANSPORTATION/SUPPLY</u> : Helicopters or Twin Otter airplanes provide transportation and support along with motor toboggans  |
|   | <u>PERSONNEL HOUSED</u> : Support a population of 40-60 during the November-January period  |
| Huts  | <u>ESTABLISHED</u> : Erected for summer research projects expected to continue over several seasons at the same location  |
|   | <u>PURPOSE</u> : Used in recent years in Taylor Valley (an ice-free, dry valley in southern Victoria Land) for study of lake ecosystems, at Cape Crozier on Ross Island for population and behavioral studies of penguin rookeries, and near the summit of Mt. Erebus for volcanology |
|   | <u>CONSTRUCTION</u> : Last for several years providing space, stable work areas, and comfort not achievable with tents or Jamesways   |
|   | <u>TRANSPORTATION/SUPPLY</u> : Helicopter or tracked vehicle from McMurdo Station   |

|       |  |
|-------|--|
|       | <u>PERSONNEL HOUSED</u> : Small parties requiring temporary shelter over several seasons at the same location  |
| Tents | <u>ESTABLISHED</u> : Temporary single- or double-walled shelter tents  |
|       | <u>PURPOSE</u> : Temporary shelter that is stable in high winds and can be erected quickly; extended backpacking trips generally are not practical in Antarctica due to the weight of the equipment and the fuel required to melt ice for water, to cook, and to combat the cold |
|       | <u>CONSTRUCTION</u> : Temporary shelter tents; cold-weather sleeping bags used on ground cushions with cooking on portable stoves  |
|       | <u>TRANSPORTATION/SUPPLY</u> : Usually placed or moved by helicopter or motor toboggan   |
|       | <u>PERSONNEL HOUSED</u> : Small parties requiring temporary shelter  |

Source: USAP External Panel (1997), NSF Facts About the U.S. Antarctic Program (1994)

| <b>Table 6.3. Support Ships and Aircraft</b> |   |
|--|---|
| Operator                                     | Craft and Function  |
| NSF  | <u>SHIP</u> : <i>R/V Laurence M. Gould</i> ; ABS - A1 ice breaker   |
|  | <u>FUNCTION</u> : Performs research and research support often in collaboration with Palmer Station. Research includes biological, oceanographic, geological, and geophysical studies; crew of 14 and up to 28 scientists |
|  | <u>SHIP</u> : <i>R/V Nathaniel B. Palmer</i> ; ABS-A2 ice breaker   |
|  | <u>FUNCTION</u> : Performs research and research support in the Southern Ocean. Research includes biological, oceanographic, geological and geophysical studies. Crew of 22 and up to 39 scientists                       |
| U.S. Coast Guard <sup>1</sup>                | <u>SHIP</u> : Polar-class icebreaker  |
|  | <u>FUNCTION</u> : Operates annually in the Antarctic to provide logistical support and break channels through McMurdo sound   |
| Military Sealift Command                     | <u>SHIP</u> : Ice-strengthened tanker   |
|  | <u>FUNCTION</u> : Delivers approximately six million gallons of fuel to McMurdo Station   |
| Military Sealift Command                     | <u>SHIP</u> : Ice-strengthened container ship   |
|  | <u>FUNCTION</u> : Delivers most of the cargo used at McMurdo and inland stations and takes waste to the U.S. for recycling or disposal.   |
| Air National Guard                           | <u>AIRCRAFT</u> : Seven LC-130 Hercules four-engine turboprop transports with ski-equipped landing gear for snow and ice  |

<sup>1</sup> The U.S. Coast Guard fueling and container ships are operated under contract to the Military Sealift Command.

|                     |   |
|---------------------|---|
|                     | <b>FUNCTION:</b> Provide transportation within Antarctica and air service between McMurdo and New Zealand   |
| Commercial Operator | <b>AIRCRAFT:</b> Four commercial helicopters; ski-fitted deHavilland Twin Otter turboprop airplanes. (The payload and range of a Twin Otter are substantially less than those of the LC-130 but greater than those of the helicopters.) |
|                     | <b>FUNCTION:</b> Support operations at McMurdo Station  |

Source: USAP External Panel (1997), NSF Facts About the U.S. Antarctic Program (1994)

| <b>Table 6.4. Research Activities of U.S. Federal Government Agencies</b>  |  |
|--|--|
| The scientific research of other federal agencies is coordinated by the National Science Foundation as part of the U.S. Antarctic Program. Research by federal agencies may include the following: |  |
| National Aeronautics and Space Administration (NASA):  | suborbital studies of cosmic radiation and the Sun, study and archiving of meteorites, microbial studies with extraterrestrial applications, sea ice and ice sheet studies, stratospheric measurements related to ozone, a synthetic-aperture radar ground station, technology development (e.g., a food growth and waste recycling system for South Pole Station), and human factors including isolation and confinement and other analog studies |
| National Oceanic and Atmospheric Administration (NOAA):  | climate monitoring, ozone studies, remote sensing (e.g., sea surface temperature, atmospheric temperature, cloud imagery), sea ice and iceberg analyses, and marine living resources research  |
| U.S. Geological Survey (USGS):   | mapping, geology, geophysics, glaciology, and long-term ecological monitoring  |
| Department of Energy (DOE) and the Smithsonian Center for Astrophysics:  | astrophysics   |

Source: USAP External Panel (1997)

*Appendix 7: International Association of  
Antarctica Tour Operators (IAATO):  
Member Objectives, Membership Categories  
and Criteria, Membership as of May 2001,  
and Bylaws*

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**Appendix 7**  
**International Association of Antarctica Tour Operators (IAATO):**  
**Member Objectives, Membership Categories and Criteria, Membership**  
**as of May 2001, and Bylaws**

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## **Appendix 7**

### **International Association of Antarctica Tour Operators (IAATO): Member Objectives, Membership Categories and Criteria, Membership as of May 2001, and Bylaws**

#### Member Objectives<sup>1</sup>

- To represent Antarctic tour operators and others organizing and conducting travel to the Antarctic, to the Antarctic Treaty Parties, the International conservation community and the public at large.
- To advocate, promote and practice safe and environmentally responsible travel to the Antarctic.
- To circulate, promote and follow the *Guidance for Visitors to the Antarctic* and *Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic*, as adopted by the Antarctic Treaty System (Recommendation XVIII-1).
- To operate within the parameters of the Antarctic Treaty System, including the Antarctic Treaty and the Protocol on Environmental Protection to the Antarctic Treaty, along with MARPOL, SOLAS and similar international and national laws and agreements.
- To foster continued cooperation among its members; to monitor IAATO programs, including the pattern and frequency of visits to specific sites within the Antarctic; and to coordinate itineraries so that no more than 100 people are ashore at any one time in any one place.
- To provide a forum for the international, private-sector travel industry to share their expertise and opinions; and to uphold the highest standards.
- To enhance public awareness and concern for the conservation of the Antarctic environment and its associated ecosystems and to better inform the media, governments and environmental organizations about private-sector travel to these regions.
- To create a corps of ambassadors for the continued protection of Antarctica by offering the opportunity to experience the continent first hand.
- To support science in Antarctica through cooperation with national Antarctic programs, including logistical support and research; and to foster cooperation between private-sector travel and the international scientific community in Antarctica.
- To ensure that the best qualified staff and field personnel are employed by IAATO members through continued training and education; and to encourage and develop international acceptance of evaluation, certification and accreditation programs for Antarctic personnel.

#### Membership Categories and Criteria<sup>2</sup>

*Full Members:* Experienced organizers that operate travel programs to the Antarctic and who: a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; c) have been formally accepted by two-thirds of the standing members after review and fulfill any other requirements for membership.

*Provisional Members:* Organizers that operate travel programs to the Antarctic that are requesting membership in IAATO. Provisional Members must: a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; c) be formally accepted by two-thirds of the standing members after review and fulfill any other requirements for membership; and d) agree to carry an IAATO-approved Observer aboard on a voyage during the season and to forward the full observer report to the Secretariat. Provisional Members must have

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<sup>1</sup>IAATO Bylaws 2001

<sup>2</sup>IAATO Bylaws 2001

an Observer designated by an appropriate National Antarctic Program during their first season of Antarctic operations. If none is available, IAATO will designate a qualified observer with reasonable compensation provided by the operator. A full observer report must be forwarded to the Secretariat following the conclusion of the voyage.

*Probationary Members:* Current or past Full Members who have not fully complied with IAATO by-laws or who otherwise are not in good standing as decided by a two-thirds vote of the full members. Probationary members must a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; and c) agree to carry an IAATO-approved observer aboard for a voyage during the season and to forward the full Observer report to the Secretariat. Probationary Members must have an Observer designated by an appropriate National Antarctic Program during their first season of Antarctic operations. If none is available, IAATO will designate a qualified observer with reasonable compensation provided by the operator. A full observer report is to be forwarded to the Secretariat following the conclusion of the voyage.

*Associate Members:* Other organizations and individuals interested in or promoting travel to the Antarctic that which to support IAATO objectives and whose application has been formally accepted by two-thirds of the standing members.

## Membership as of May 2001

| Member  | Country         |
|---|-----------------|
| <u>Full Members</u>                                       |                 |
| Abercrombie & Kent/Explorer Shipping Corporation          | United States   |
| Adventure Associates                                      | Australia       |
| Aurora Expeditions  | Australia       |
| Hapag-Lloyd Kreuzfahrten                                  | Germany         |
| Heritage Expeditions                                      | New Zealand     |
| Lindblad Expeditions                                      | United States   |
| Mountain Travel•Sobek                                     | United States   |
| Clipper Cruise Line/New World Ship Management Company LLC | United States   |
| Pelagic Expeditions                                       | United Kingdom  |
| Peregrine Adventures                                      | Australia       |
| Quark Expeditions   | United States   |
| Society Expeditions                                       | United States   |
| Wildwings/ Wildoceans                                     | United Kingdom  |
| Zegrahm Expeditions                                       | United States   |
| <u>Provisional (New) Members</u>                          |                 |
| Cheesemans' Ecology Safaris                               | United States   |
| Golden Fleece Expeditions                                 | UK/Falkland Is. |
| Ocean Frontiers Pty Ltd.                                  | Australia       |
| Oceanwide Expeditions                                     | Netherlands     |
| Plantours & Partners GmbH                                 | Germany         |
| Victor Emanuel Nature Tours                               | United States   |
| <u>Probational Members</u>                                |                 |
| Marine Expeditions <sup>3</sup>                           | Canada          |

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<sup>3</sup> Marine Expeditions filed for bankruptcy in 2001; its future status as an Antarctic tour operator is unknown.



| <u>Associate Members</u>          |                            |
|-----------------------------------|----------------------------|
| Agencia Maritima Internacional SA | Argentina                  |
| Antarctica Expeditions            | Argentina                  |
| Asteria Antarctica                | Belgium                    |
| Beluga Adventures                 | Netherlands                |
| Cruise Tasmania                   | Australia                  |
| Expeditions, Inc.                 | United States <sup>4</sup> |
| Galapagos Travel                  | United States              |
| LaTour Chile                      | Chile                      |
| LifeLong Learning                 | United States              |
| Natural Habitat Adventures        | United States              |
| Radisson Seven Seas Cruise        | United States              |
| Sintec Tur                        | Argentina                  |
| Students on Ice                   | Canada                     |
| Tauck World Discovery             | United States              |

From: IAATO Membership Directory, May 2001.

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<sup>4</sup>U.S.-based Expeditions, Inc., became a Provisional (New) Member in 1999, but moved to the Associate Member category when the company did not operate in Antarctica during the 1999-2000 season as planned. Their intent is to eventually operate cruises to the Peninsula area (Biggs, 16 June 2000).

## Bylaws

### Article I: Foundation, Name, Registration, Headquarters

*Section A.* The Association was founded in 1991 by seven Antarctic tour operators: Adventure Network International, Mountain Travel•Sobek, Paquet/Ocean Cruise Lines, Salen Lindblad Cruising, Society Expeditions, Travel Dynamics and Zegrahm Expeditions.

*Section B.* The name of the Association is "International Association of Antarctica Tour Operators." Henceforth, the abbreviated name "IAATO" will be used.

*Section C.* IAATO is registered in Olympia, Washington, USA.

*Section D.* IAATO currently has its headquarters in Basalt, Colorado, United States. At present, IAATO does not have any affiliated chapters, foreign or domestic. Chapters may be established in the future.

### Article II: Objectives

*Section A.* To represent Antarctic tour operators and others organizing and conducting travel to the Antarctic to the Antarctic Treaty Parties, the international conservation community and the public at large.

*Section B.* To advocate, promote and practice safe and environmentally responsible travel to the Antarctic.

*Section C.* To circulate, promote and follow the *Guidance for Visitors to the Antarctic* and *Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic*, as adopted by the Antarctic Treaty System (Recommendation XVIII-1).

*Section D.* To operate within the parameters of the Antarctic Treaty System, including the Antarctic Treaty and the Protocol on Environmental Protection to the Antarctic Treaty, along with IMO Conventions and similar international and national laws and agreements.

*Section E.* To foster continued cooperation among its members; to monitor IAATO programs, including the pattern and frequency of visits to specific sites within the Antarctic; and to coordinate itineraries so that no more than 100 passengers are ashore at any one time in any one place.

*Section F.* To provide a forum for the international, private-sector travel industry to share their expertise and opinions; and to uphold the highest standards.

*Section G.* To enhance public awareness and concern for the conservation of the Antarctic environment and its associated ecosystems and to better inform the media, governments and environmental organizations about private-sector travel to these regions.

*Section H.* To create a corps of ambassadors for the continued protection of Antarctica by offering the opportunity to experience the continent first hand.

*Section I.* To support science in Antarctica through cooperation with national Antarctic programs, including logistical support and research; and to foster cooperation between private-sector travel and the international scientific community in the Antarctic.

*Section J.* To ensure that the best qualified staff and field personnel are employed by IAATO members through continued training and education; and to encourage and develop international acceptance of evaluation, certification and accreditation programs for Antarctic personnel.

## Article III: Membership

*Section A.* Membership is divided into four categories:

1. *Full Members* are experienced organizers that operate travel programs to the Antarctic and who: a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; c) have been formally accepted by two-thirds of the standing members after review and fulfill any other requirements for membership.
2. *Provisional Members* are organizers that operate travel programs to the Antarctic that are requesting membership in IAATO. Provisional Members must: a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; c) be formally accepted by two-thirds of the standing members after review and fulfill any other requirements for membership; and d) agree to carry an IAATO-approved Observer aboard on a voyage during the season and to forward the full observer report to the Secretariat. Provisional Members must have an Observer designated by an appropriate National Antarctic Program during their first season of Antarctic operations. If none is available, IAATO will designate a qualified observer with reasonable compensation provided by the operator. A full observer report must be forwarded to the Secretariat following the conclusion of the voyage.
3. *Probationary Members* are current or past Full Members who have not fully complied with IAATO by-laws or who otherwise are not in good standing as decided by a two-thirds vote of the full members. Probationary Members must a) pledge to abide by IAATO Bylaws; b) agree not to carry more than 400 passengers per trip and to not have more than 100 passengers ashore at any one site at the same time; and c) agree to carry an IAATO-approved Observer aboard for a voyage during the season and to forward the full observer report to the Secretariat. Probationary Members must have an Observer designated by an appropriate National Antarctic Program during their first season of Antarctic operations. If none is available, IAATO will designate a qualified observer with reasonable compensation provided by the operator. A full observer report is to be forwarded to the Secretariat following the conclusion of the voyage.
4. *Associate Members* are other organizations and individuals interested in or promoting travel to the Antarctic that wish to support IAATO objectives and whose application has been formally accepted by two-thirds of the standing members.

*Section B.* To be considered as Full Members, companies must have demonstrated the willingness and ability to adhere to and actively support IAATO objectives. Criteria for membership includes: the use of appropriate vessels and/or aircraft; hiring a sufficient number of qualified and experienced staff; and other obligations of *Guidance for Visitors to the Antarctic* and *Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic*, as adopted by the Antarctic Treaty System (Recommendation XVIII-1). Also, consideration will be given to the professional standing of prospective members in the travel industry and prior experience conducting responsible tourism.

*Section C.* After a thorough review by the membership committee, Provisional and Probationary Members are eligible to apply as Full Members.

*Section D.* Membership is non-transferable. In the event a member company is acquired by another entity, the company would have to reapply for membership.

*Section E.* Members who drop their affiliation with IAATO and later wish to rejoin, must pay the initiation fee in order to be reinstated.

*Section F.* Members are subject to annual membership dues and fees as agreed from year-to-year by two-thirds of Full Members in good standing.

*Section G.* Members in good standing are those who continue to act in compliance with the Bylaws and are current with IAATO dues.

*Section H.* Members who do not comply with the Bylaws and/or do not pay applicable dues in a timely fashion will be subject to reprimand, change in status or expulsion after review by the membership or appointed committee.

*Section I.* Associate Members are subject to the payment of annual dues as proposed by the standing committee on membership and agreed by two-thirds of Full Members in good standing.

*Section J.* Membership will be reviewed at the annual IAATO meeting, including the status of Provisional and Probationary Members.

*Section K.* Members are required to make sure that a charterer, wholesaler, sponsoring organization or other third party conforms to IAATO objectives and Bylaws, particularly that these companies distribute appropriate materials and properly inform their passengers of proper conduct ashore. Furthermore, Members are responsible for ensuring payment of any per passenger fees to IAATO for these departures.

*Section L.* Use of the IAATO logo in brochures, advertisements or other promotional materials is reserved for Full and Associate Members in good standing.

#### **Article IV: Organizational Structure**

*Section A.* The Executive Secretary is a paid position. Terms of office, responsibilities, time requirements and remuneration will be defined according to proposed activities and budget and agreed upon by two-thirds of the Full Members.

*Section B.* The Executive Secretary's responsibilities may include but are not limited to:

- Act as a resource for the membership and clearinghouse for information.
- Act as a liaison with the media, scientific and conservation communities.
- Compile and distribute IAATO information to interested parties, through an IAATO website, newsletters, occasional press releases and other publications.
- Act as treasurer, developing a yearly budget and submitting to IAATO members a status report of IAATO activities and finances.
- Make and carry out recommendations in regard to IAATO activities and finances.
- Act as IAATO representative where required.
- Develop the agenda and coordinate meetings.
- Work closely with the Executive Committee and Representative.
- Maintain an accurate record of activities, including time and expenses related to authorized activities to be submitted to the Executive Committee or other designated individual or individuals for authorization for payment.

*Section C.* Responsibilities of a designated IAATO representative may include but are not limited to:

- Represent IAATO at Antarctic Treaty Consultative Meetings and other important meetings related to the Antarctic Treaty System.
- Promote IAATO objectives in dialogue with delegates and others at such meetings, and to initiate and draft appropriate working papers and written reports distributed at meetings.
- Provide an aggressive and supportive stance in written and oral presentations at meetings.
- Participate in hearings and other venues where Antarctic tourism and protection is discussed as designated.
- Prepare documents related to the above, including submissions for publication in appropriate journals, reports and books.
- Communicate and coordinate activities to the Executive Committee and membership via the Executive Secretary.
- Maintain an accurate record of activities, including time and expenses related to authorized activities to be submitted to the Executive Secretary for payment.

*Section D.* Individuals with relevant qualifications and who are willing and able to provide guidance and advice to IAATO may be invited to sit on an advisory board and named as Associate Members without compensation as approved by two-thirds of the Full Members.

## **Article V: Elections and Voting**

*Section A.* Elections will be held at the annual meeting.

*Section B.* Full Members in good standing are eligible to vote and eligible for committee positions and other offices.

*Section C.* Each qualifying Full Member will have one vote.

*Section D.* Full Members in good standing who are unable to attend the annual meeting may nominate candidates and cast written votes on resolutions and nominations, provided that ballots are returned to the Executive Secretary prior to the meeting.

*Section E.* Full Members who are not in attendance forfeit their voting privileges on impromptu issues that arise during the meeting. The Executive Secretary will make a best effort to solicit resolutions, changes in Bylaws and other important matters before the meeting.

*Section F.* Any issue voted on will pass with two-thirds vote in favor of the issue.

*Section G.* A review of membership and any changes in membership will be voted on at the annual meeting.

## **Article VI: Standing Committees**

*Section A.* A three-member Executive Committee will be elected at the annual meeting to assist the Secretariat. The committee shall make decisions on behalf of the full membership where appropriate and subject to ratification.

*Section B.* Further standing committees, as required and including a membership committee and finance committee, shall be elected by a two-thirds majority of full members in good standing, generally at the annual meeting.

## **Article VII: Meetings**

*Section A.* A general meeting will be held at least once a year.

*Section B.* The Secretary will coordinate the time and venue of the meeting and advise full Members at least 60 days prior to the meeting.

*Section C.* Attendance at the general meeting is reserved for Full Members (including Provisional and Probationary). Requests to attend by associate, prospective members and non-members may be accepted by a two-thirds vote of the Full Members.

*Section D.* The Executive Secretary, or alternate, will take minutes during the meeting and distribute them within one month after the meeting to the membership.

## **Article VIII: Finances**

*Section A.* The Executive Secretary will solicit, collect and administer all dues and fees.

*Section B.* The Executive Secretary will manage finances, make payments within budget constraints and make recommendations regarding annual budget, to be approved during the annual meeting.

*Section C.* Dues and fees are non-transferable and non-refundable. Overpayments will be credited to the member's account.

*Section D.* A detailed budget will be proposed by a standing committee 60 days prior to the annual

meeting, to be approved during the meeting by a two-thirds vote of Full Members.

#### **Article IX: Amendments to IAATO Bylaws**

*Section A.* These Bylaws may be amended by a resolution passed by two-thirds of the full members in good standing.

#### **IAATO Membership Registration**

- A. Contact information.
- B. IAATO Member since.
- C. Number of years operating in the Antarctic.
- D. Name of ships used in previous seasons.
- E. Incidents in previous years that have resulted in significant damage to the vessel or environment.
- F. Advance notice of planned expeditions supplied to what appropriate authority?
- G. Name, registry and specifications of each vessel you plan to use, including the number of crew and carrying capacity of each ship/aircraft.
- H. Contact information for each vessel (call sign, INMARSAT).
- I. Number of voyages planned per vessel and planned itineraries.
- J. Do you plan any non ship-based tours and/or plan extended time off the vessel in the Antarctic Treaty Area? If yes, please describe.
- K. Total number of passengers you expect to carry.
- L. Statement of the status of compliance with environmental assessment requirements, including contingency and waste management plans.
- M. Methods of educating passengers staff and crew of Recommendation XVIII-1 and other obligations.
- N. What are your staff positions and who is on your expedition staff? List name and Antarctic experience where possible.
- O. Signed statement that you have read the IAATO Bylaws and Membership Criteria as well as Recommendation XVIII-1 and agree to follow same.
- P. Payment of annual dues and 65% of the per passenger fee based on the estimated passenger load. Please, wire transfers or checks in U.S. dollars drawn on a U.S. bank.

*Appendix 8: Guidance for Those Organising  
and Conducting Tourism and Nongovern-  
mental Activities in the Antarctic and  
Guidance for Visitors to the Antarctic*

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**Appendix 8**  
**Guidance for Those Organising and Conducting Tourism and Nongovernmental  
Activities in the Antarctic and Guidance for Visitors to the Antarctic**

| <u>Section</u>  | <u>Page</u>  |
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| Guidance for Those Organising and Conducting Tourism and<br>Nongovernmental Activities in the Antarctic | Appendix 8-2 |
| Guidance for Visitors to the Antarctic  | Appendix 8-5 |



## **Appendix 8<sup>1</sup>**

### **Guidance for Those Organising and Conducting Tourism and Nongovernmental Activities in the Antarctic**

*Recommendation XVIII-1, Adopted at the Antarctic Treaty Meeting, Kyoto, 1994*

Antarctica is the largest wilderness area on earth, unaffected by large scale human activities. Accordingly, this unique and pristine environment has been afforded special protection. Furthermore, it is physically remote, inhospitable, unpredictable and potentially dangerous. All activities in the Antarctic Treaty Area, therefore, should be planned and conducted with both environmental protection and safety in mind.

Activities in the Antarctic are subject to the Antarctic Treaty of 1959 and associated legal instruments, referred to collectively as the Antarctic Treaty system. These include the Convention for the Conservation of Antarctic Seals (CCAS 1972), the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR 1980) and the Recommendations and other measures adopted by the Antarctic Treaty Consultative Parties under the Antarctic Treaty.

In 1991, the Consultative Parties to the Antarctic Treaty adopted the Protocol on Environmental Protection to the Antarctic Treaty. This Protocol sets out environmental principles, procedures and obligations for the comprehensive protection of the Antarctic environment, and its dependent and associated ecosystems. The Consultative Parties have agreed that, pending its entry into force, as far as possible and in accordance with their legal systems, that the provisions of the Protocol should be applied as appropriate.

The Environmental Protocol designates Antarctica as a natural reserve devoted to peace and science, and applies to both governmental and non-governmental activities in the Antarctic Treaty Area. The Protocol seeks to ensure that human activities, including tourism, do not have adverse impacts on the Antarctic environment, nor on its scientific and aesthetic values.

The Protocol states, as a matter of principle, that all activities are to be planned and conducted on the basis of information sufficient to evaluate their possible impact on the Antarctic environment and its associated ecosystems, and on the value of Antarctica for the conduct of scientific research. Organisers should be aware that the Environmental Protocol requires that "activities shall be modified, suspended or cancelled if they result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems."

Those responsible for organising and conducting tourism and non-governmental activities must comply fully with national laws and regulations which implement the Antarctic Treaty system, as well as other national laws and regulations implementing international agreements on environmental protection, pollution and safety that relate to the Antarctic Treaty Area. They should also abide by the requirements imposed on organisers and operators under the Protocol on Environmental Protection and its Annexes, in so far as they have not yet been implemented in national law.<sup>2</sup>

#### **Key Obligations on Organisers and Operators**

- 1) Provide prior notification of, and reports on, their activities to the competent authorities of the appropriate Party or Parties.
- 2) Conduct an assessment of the potential environmental impacts of their planned activities.

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<sup>1</sup> Excerpted from pamphlet prepared by the International Association of Antarctic Tour Operators, Office of the Secretariat, P.O. Box 2178, Basalt, CO 81621

<sup>2</sup> The Protocol entered into force in 1998.

- 3) Provide for effective response to environmental emergencies, especially with regard to marine pollution.
- 4) Ensure self-sufficiency and safe operations.
- 5) Respect scientific research and the Antarctic environment, including restrictions regarding protected areas, and the protection of flora and fauna.
- 6) Prevent the disposal and discharge of prohibited waste.

### **Procedures To Be Followed By Organisers And Operators**

#### **A) *When planning to go to the Antarctic* — Organizers and operators should:**

- 1) Notify the competent national authorities of the appropriate Party or Parties of details of their planned activities with sufficient time to enable the Party(ies) to comply with their information exchange obligations under Article VII(5) of the Antarctic Treaty. The information to be provided is listed in Attachment A.
- 2) Conduct an environmental assessment in accordance with such procedures as may have been established in national law to give effect to Annex I of the Protocol, including, if appropriate, how potential impacts will be monitored.
- 3) Obtain timely permission from the national authorities responsible for any stations they propose to visit.
- 4) Provide information to assist in the preparation of: contingency response plans in accordance with Article 15 of the Protocol; waste management plans in accordance with Annex III of the Protocol; and marine pollution contingency plans in accordance with Annex IV of the Protocol.
- 5) Ensure that expedition leaders and passengers are aware of the location and special regimes which apply to Specially Protected Areas and Sites of Special Scientific Interest (and on entry into force of the Protocol, Antarctic Specially Protected Areas and Antarctic Specially Managed Areas) and of Historic Sites and Monuments and, in particular, relevant management plans.
- 6) Obtain a permit, where required by national law, from the competent national authority of the appropriate Party or Parties, should they have a reason to enter such areas, or a monitoring site (CEMP Site) designated under CCAMLR.
- 7) Ensure that activities are fully self-sufficient and do not require assistance from Parties unless arrangements for it have been agreed in advance.
- 8) Ensure that they employ experienced and trained personnel, including a sufficient number of guides.
- 9) Arrange to use equipment, vehicles, vessels, and aircraft appropriate to Antarctic operations.
- 10) Be fully conversant with applicable communications, navigation, air traffic control and emergency procedures.
- 11) Obtain the best available maps and hydrographic charts, recognising that many areas are not fully or accurately surveyed.
- 12) Consider the question of insurance (subject to requirements of national law).
- 13) Design and conduct information and education programmes to ensure that all personnel and visitors are aware of relevant provisions of the Antarctic Treaty system.
- 14) Provide visitors with a copy of the *Guidance for Visitors to the Antarctic*.

#### **B) *When in the Antarctic Treaty Area* — Organisers and operators should:**

- 1) Comply with all requirements of the Antarctic Treaty system, and relevant national laws, and ensure that visitors are aware of requirements that are relevant to them.
- 2) Reconfirm arrangements to visit stations 24-72 hours before their arrival and ensure that visitors are aware of any conditions or restrictions established by the station.
- 3) Ensure that visitors are supervised by a sufficient number of guides who have adequate experience and training in Antarctic conditions and knowledge of the Antarctic Treaty system requirements.

- 4) Monitor environmental impacts of their activities, if appropriate, and advise the competent national authorities of the appropriate Party or Parties of any adverse or cumulative impacts resulting from an activity, but which were not foreseen by their environmental impact assessment.
- 5) Operate ships, yachts, small boats, aircraft, hovercraft, and all other means of transport safely and according to appropriate procedures, including those set out in the Antarctic Flight Information Manual (AFIM).
- 6) Dispose of waste materials in accordance with Annex III and IV of the Protocol. These annexes prohibit, among other things, the discharge of plastics, oil and noxious substances into the Antarctic Treaty Area; regulate the discharge of sewage and food waste; and require the removal of most wastes from the area.
- 7) Co-operate fully with observers designated by Consultative Parties to conduct inspections of stations, ships, aircraft and equipment under Article VII of the Antarctic Treaty, and those to be designated under Article 14 of the Environmental Protocol.
- 8) Co-operate in monitoring programmes undertaken in accordance with Article 3(2)(d) of the Protocol.
- 9) Maintain a careful and complete record of their activities conducted.

#### C) *On Completion of the Activities*

Within three months of the end of the activity, organisers and operators should report on the conduct of it to the appropriate national authority in accordance with national laws and procedures. Reports should include the name, details and state of registration of each vessel or aircraft used and the name of their captain or commander; actual itinerary; the number of visitors engaged in the activity; places, dates and purposes of landings and the number of visitors landed on each occasion; any meteorological observations made, including those made as part of the World Meteorological Organization (WMO) Voluntary Observing Ships Scheme; any significant changes in activities and their impacts from those predicted before the visit was conducted; and action taken in case of emergency.

#### D) *Antarctic Treaty System Documents and Information*

Most Antarctic Treaty Parties can provide, through their national contact points, copies of relevant provisions of the Antarctic Treaty system and information about national laws and procedures, including:

- The Antarctic Treaty (1959)
- Convention on the Conservation of Antarctic Marine Living Resources (1980)
- Protocol on Environmental Protection to the Antarctic Treaty (1991)
- Recommendations and other measures adopted under the Antarctic Treaty
- Final Reports of Consultative Meetings
- Handbook of the Antarctic Treaty System (1994)
- Handbook of the Antarctic Treaty System (in Spanish, 1991)

### **ATTACHMENT A**

#### **Information to be Provided in Advance Notice**

*Organisers should provide the following information to the appropriate national authorities in the format requested.*

1. Name, nationality, and contact details of the organiser;
2. Where relevant, registered name and national registration and type of any vessel or aircraft to be used (including name of the captain or commander, call-sign, radio frequency, INMARSAT number);
3. Intended itinerary including the date of departure and places to be visited in the Antarctic Treaty Area;
4. Activities to be undertaken and purpose;
5. Number and qualifications of crew and accompanying guides and expedition staff;
6. Estimated number of visitors to be carried;
7. Carrying capacity of vessel;
8. Intended use of vessel;

9. Intended use and type of aircraft;
10. Number and type of other vessels, including small boats, to be used in the Antarctic Treaty Area;
11. Information about insurance coverage;
12. Details of equipment to be used, including for safety purposes, and arrangements for self-sufficiency;
13. And other matters required by national laws.

### **Guidance for Visitors to the Antarctic** <sup>3</sup>

*Recommendation XVIII-1, Adopted at the Antarctic Treaty Meeting, Kyoto, 1994*

Activities in the Antarctic are governed by the Antarctic Treaty of 1959 and associated agreements, referred to collectively as the Antarctic Treaty System. The Treaty established Antarctica as a zone of peace and science.

In 1991, the Antarctic Treaty Consultative Parties adopted the Protocol on Environmental Protection to the Antarctic Treaty, which designates the Antarctic as a natural reserve. The Protocol sets out environmental principles, procedures and obligations for the comprehensive protection of the Antarctic environment, and its dependent and associated ecosystems. The Consultative Parties have agreed that, pending its entry into force, as far as possible and in accordance with their legal system, the provisions of the Protocol should be applied as appropriate.

The Environmental Protocol applies to tourism and nongovernmental activities, as well as governmental activities in the Antarctic Treaty Area. It is intended to ensure that these activities do not have adverse impacts on the Antarctic environment, or on its scientific and aesthetic values.

This *Guidance for Visitors to the Antarctic* is intended to ensure that all visitors are aware of, and are therefore able to comply with, the Treaty and the Protocol. Visitors are, of course, bound by national laws and regulations applicable to activities in the Antarctic.

#### **Protect Antarctic Wildlife**

Taking or harmful interference with Antarctic wildlife is prohibited except in accordance with a permit issued by a national authority.

- Do not use aircraft, vessels, small boats, or other means of transport in ways that disturb wildlife, either at sea or on land.
- Do not feed, touch, or handle birds or seals, or approach or photograph them in ways that cause them to alter their behavior. Special care is needed when animals are breeding or molting.
- Do not damage plants, for example by walking, driving, or landing on extensive moss beds or lichen-covered scree slopes.
- Do not use guns or explosives. Keep noise to the minimum to avoid frightening wildlife.
- Do not bring non-native plants or animals into the Antarctic such as live poultry, pet dogs and cats or house plants.

#### **Respect Protected Areas**

A variety of areas in the Antarctic have been afforded special protection because of their particular ecological, scientific, historic or other values. Entry into certain areas may be prohibited except in

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<sup>3</sup> Excerpted from pamphlet prepared by the International Association of Antarctic Tour Operators, Office of the Secretariat, P.O. Box 2178, Basalt, CO, 81621

accordance with a permit issued by an appropriate national authority. Activities in and near designated Historic Sites and Monuments and certain other areas may be subject to special restrictions.

- Know the locations of areas that have been afforded special protection and any restrictions regarding entry and activities that can be carried out in and near them.
- Observe applicable restrictions.
- Do not damage, remove, or destroy Historical Monuments or any artifacts associated with them.

### **Respect Scientific Research**

Do not interfere with scientific research, facilities or equipment.

- Obtain permission before visiting Antarctic science and support facilities; reconfirm arrangements 24-72 hours before arrival; and comply with the rules regarding such visits.
- Do not interfere with, or remove, scientific equipment or marker posts, and do not disturb experimental study sites, field camps or supplies.

### **Be Safe**

Be prepared for severe and changeable weather and ensure that your equipment and clothing meet Antarctic standards. Remember that the Antarctic environment is inhospitable, unpredictable, and potentially dangerous.

- Know your capabilities, the dangers posed by the Antarctic environment, and act accordingly. Plan activities with safety in mind at all times.
- Keep a safe distance from all wildlife, both on land and at sea.
- Take note of, and act on, the advice and instructions from your leaders; do not stray from your group.
- Do not walk onto glaciers or large snow fields without the proper equipment and experience; there is a real danger of falling into hidden crevasses.
- Do not expect a rescue service. Self-sufficiency is increased and risks reduced by sound planning, quality equipment, and trained personnel.
- Do not enter emergency refuges (except in emergencies). If you use equipment or food from a refuge, inform the nearest research station or national authority once the emergency is over.
- Respect any smoking restrictions, particularly around buildings, and take great care to safeguard against the danger of fire. This is a real hazard in the dry environment of Antarctica.

### **Keep Antarctica Pristine**

Antarctica remains relatively pristine, the largest wilderness area on Earth. It has not yet been subjected to large scale human perturbations. Please keep it that way.

- Do not dispose of litter or garbage on land. Open burning is prohibited.
- Do not disturb or pollute lakes or streams. Any materials discarded at sea must be disposed of properly.
- Do not paint or engrave names or graffiti on rocks or buildings.
- Do not collect or take away biological or geological specimens or man-made artifacts as a souvenir, including rocks, bones, eggs, fossils, and parts or contents of buildings.
- Do not deface or vandalize buildings, whether occupied, abandoned, or unoccupied, or emergency refuges.

*Appendix 9: U.S.-Based IAATO Member  
Operators: Opportunistic Process for  
Selecting Landing Sites*

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## Appendix 9

### U.S.-Based IAATO Member Operators: Opportunistic Process for Selecting Landing Sites<sup>1</sup>

#### *Two-Phase Process*

Phase 1: Initial itineraries planned and circulated to other tour operators prior to commencement of the expedition.

Phase 2: In field adjustments to the initial itinerary on a daily basis as a result of conditions and opportunities encountered en route.

#### *Phase 1: Planning*

Purpose: To achieve an expedition that gives passengers an overview of the area being visited.

Selection Criteria: Number of days in the Antarctic region, marketing emphasis, vessel speed, number of passengers

Requisite Sites or Features:

- visits to renowned sites, e.g., Deception Island, Paradise Bay and Lemaire Channel
- 'Key' components of natural history, e.g., specific bird and mammal species, geologic features
- A landing on the Antarctic continent
- Sites of historic interest, both exploration and sealing and whaling
- A visit to a scientific station

Key Principles: Decision of which site to visit and at what stage of the expedition depends on several factors including: (1) Start with landings which are simple - sheltered sites, ample space near landing point for passengers to adjust to the environment and operation procedures without disrupting wildlife, safe and easy to move around. (2) Manage expectations to ensure each day is 'better' than the day before - often areas with high species diversity, spectacular scenery or unusual occurrences are perceived as 'more exciting;' require better understanding of code of conduct because of increased awareness of biota and potential for disturbance, safety reasons, proximity to protected areas.

Final Decisions: Based on local knowledge of areas involved with consideration of site's attractions and how they fit in with what has been experienced and what will be experienced.

Operator Coordination: Overall route plan, including planned landings, circulated to other vessels operating in the area to avoid multiple vessels trying to land at same site at same time; based on assumption that conditions will not prohibit landing passengers.

#### *Phase 2: Adjustments in Itineraries*

Purpose: Adjustments necessitated by weather, ice conditions, other ships' schedules, and opportunities that become apparent during the voyage.

Criteria: (1) Attraction of the site; (2) shore operation including passenger controls and safety; and (3) marine operation including ship and zodiac considerations, and water and landing conditions.

Final Decisions: Conditions permit and ability of expedition leader to control the use of the site to ensure the landing is safe, protected areas are not encroached, and the visit causes minimal disturbance to the local environment.

Operator Coordination: If adjustments made 24 hours or more in advance, notification is usually sent to other vessels to avoid conflict with multiple vessels at same site at same time.

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<sup>1</sup>IAATO IEE, Appendix XI, 1997

*Appendix 10: Quark Expeditions' Use of  
Helicopters Aboard the Kapitan Khlebnikov*

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## Appendix 10 Quark Expeditions' Use of Helicopters Aboard the *Kapitan Khlebnikov*<sup>1</sup>

### *Helicopter Use:*

Flightseeing: Generally occurs in the vicinity of the vessel for purposes of photographing the ship breaking ice, over ice shelves or up mountain valleys.

Duration: 15 minutes to 1 hour per group, total flight time 2-4 hours.

Flightseeing and Landing: Helicopters may pass over a scenic area for a few minutes prior to landing at a specific site.

Landings: Passengers shuttled from the ship to the appointed landing site and returned to the vessel following a specific amount of time ashore with no more than 100 passengers ashore at any one time. Landings are generally on ice or snow, and at stations, Emperor Rookeries, Dry Valleys, Larsemann Hills, and wherever else necessary if zodiacs cannot be deployed.

Duration: 1 to 6 hours.

Individual Charters: Passengers may be offered the opportunity to charter the helicopters for additional flightseeing weather, time and fuel conditions permitting.

### *Station Visits:*

All station visits are coordinated with the station commander or appointed person with station staff advising where the helicopter should land.

### *Flight Operations:*

All helicopter operations conducted according to Standard Operating Procedures, including measures to avoid potential impacts, and in accordance with Recommendation XVIII-1 to assure any impacts are no more than minor or transitory at any of the landing sites. Helicopters do not fly below 500 meters and maintain a minimum distance of 1 Km from an Emperor Rookery. Scheduling set to minimize unnecessary trips to and from the landing site, and to minimize impacts from noise, wind, soils and dust.

### *Passengers:*

Passengers are briefed on specific landing procedures prior to and once on shore including compliance with Recommendation XVIII-1.

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<sup>1</sup>Quark IEE 1997

*Appendix 11: Adventure Network  
International Environmental Policy and  
Operational Guidelines for Antarctica*

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## **Appendix 11**

### **Adventure Network International Environmental Policy and Operational Guidelines for Antarctica<sup>1</sup>**

#### Environmental Policy

While ANI's programs are planned to provide maximum safety for all participants, they are also planned for minimal impact on the environment.

ANI has adopted the following environmental policy for its operations concentrating on Patriot Hills. Where possible the following environmental policy applies to Mt. Vinson base camp, satellite camps and for expeditions in progress.

- (1) All human waste (i.e., solid and liquid sewage) is removed from Antarctica;
- (2) All putrescible organic waste (i.e., domestic solid kitchen waste) is removed from Antarctica;
- (3) Sullage (i.e., grey water from the kitchen, laundry and shower) is disposed of in Antarctica;
- (4) All solid waste (i.e., cans, bottles, aluminum, plastic) is removed from Antarctica;
- (5) All hazardous domestic waste (i.e., batteries, aerosol cans, paints and solvents) is removed from Antarctica;
- (6) Other hazardous waste (i.e., fuel and gas bottles) is removed from Antarctica;
- (7) No incineration takes place; and
- (8) There is zero loss of fuel drums (i.e., all fuel drums are inventoried to avoid loss and either reused or removed from Antarctica).

#### Guidelines - ANI and their contractors undertake to:

- Know and understand the relevant provisions of the Protocol on Environmental Protection to the Antarctic Treaty and Annexes, and shall whenever practicable fully comply with those provisions, whether or not their own country has issued legislation to require compliance. They will also ensure that all staff and clients are properly briefed on those provisions that might affect them.
- Operate flights and programs such that maximum safety for all participants and with minimum impact on the Antarctic environment is assured.
- Establish a set of policies and emergency procedures that will be applicable to all foreseeable accidents and unplanned events that might occur with the operations.
- Provide pilots, guides and support personnel who have had adequate training and experience, in the context of Antarctica, to cope with anticipated conditions, potential problems and reasonably foreseeable emergencies.
- Arrange back-up aircraft to be available for all air and land-based activity.
- Verify that all participants are in adequate physical condition to cope with the anticipated physiological, topographic and climatic rigors that will be encountered.
- Maintain regular radio contact between their operational aircraft or field parties and their base of field operations, and between field base and the outside world. This will include maintaining a listening radio watch while any of their aircraft are in the air.
- Provide all aircraft with appropriate survival equipment and emergency supplies to support the crew and all passengers for at least two weeks.
- Establish and maintain at adequate levels caches of fuel to enable the emergency evacuation by air of injured or sick personnel to the nearest medical facility.
- Establish and maintain at adequate levels caches of camping equipment, food, cooking fuel and medical supplies to enable all personnel, staff and clients, to survive in the field for at least 30 days without re-supply from outside.
- Maintain close working collaboration with the appropriate aeronautical authorities, civil and

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<sup>1</sup>ANI (1998)

military for air traffic control, Search and Rescue, meteorological reports, etc., and contact with other air operators.

- Maintain a policy of having all aircraft under their control available at all times to respond, if required, to an emergency in Antarctica.
- Operate aircraft such that populations of birds and seals are not subject to stress, such as landing or taking off, low flying, air drops, etc., within 1500 meters (1 mile) of breeding colonies.
- Take all reasonable precautions that fuel, etc., stored in caches does not leak or is spilled during re-fueling operations. Fuel caches located in areas of snow accumulation and/or glacier movement will be marked with adequate beacons to enable recovery at a later date.
- Remove from Antarctica for sanitary disposal back in civilization all refuse (including human waste) generated at their operational bases. Wherever feasible and consistent with associated environmental impact, collect and remove refuse generated by their field parties, including fuel drums, etc.

*Appendix 12: Total Number of Antarctic  
Visitors by Season and Percentage Change  
from Preceding Season*

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**Appendix 12**  
**Total Number of Antarctic Visitors by Season and Percent Change**  
**from Preceding Season**

| <b>Season</b>    | <b>Total number of Antarctic visitors</b> | <b>% change in numbers of visitors from preceding season</b> |
|------------------|---|--|
| 89-90            | 2,460                                     | - 24.7% decrease from 3,146 visitors in the 1988-89 season   |
| 90-91            | 4,698                                     | 0.2%   |
| 91-92            | 7,103                                     | 51.2%  |
| 92-93            | 6,166                                     | 13.2%  |
| 93-94            | 7,957                                     | 29.0%  |
| 94-95            | 8,090                                     | 1.7%   |
| 95-96            | 9,212                                     | 13.9%  |
| 96-97            | 7,322                                     | 20.5%  |
| 97-98            | 9,473                                     | 29.4%  |
| 98-99            | 10,013                                    | 5.7%   |
| Overall, 1989-99 | 2,460 to 10,013                           | 407.0%   |

From: Naveen 1999

*Appendix 13: Comparison of Landings in  
the Peninsula and Ross Sea Areas*

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**Appendix 13**  
**Comparison of Landings**  
**in the Peninsula and Ross Sea Areas**

| <b>Season</b> | <b>Landings in Peninsula Area</b> | <b>Landings in Ross Sea Area</b> | <b>Total Landings</b> | <b>% of Landings in Peninsula Area</b> |
|---------------|-----------------------------------|----------------------------------|-----------------------|--|
| 89-90         | 164                               | NA <sup>1</sup>                  | NA                    | NA                                     |
| 90-91         | 161                               | NA                               | NA                    | NA                                     |
| 91-92         | 327                               | NA                               | NA                    | NA                                     |
| 92-93         | 348                               | 44                               | 392                   | 88.8%                                  |
| 93-94         | 488                               | 6                                | 494                   | 98.8%                                  |
| 94-95         | 704                               | 12                               | 716                   | 98.3%                                  |
| 95-96         | 784                               | 10                               | 794                   | 98.7%                                  |
| 96-97         | 775                               | 39                               | 814                   | 95.2%                                  |
| 97-98         | 714                               | 36                               | 750                   | 95.2%                                  |
| 98-99         | 858                               | 26                               | 884                   | 97.1%                                  |

From: Naveen 1999

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<sup>1</sup>Information not available.



*Appendix 14: Antarctic Tourism for the  
Three Austral Seasons, 1997 through 2000*

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**Appendix 14**  
**Antarctic Tourism for the**  
**Three Austral Seasons, 1997 through 2000**

| Summary of Antarctic Tourism, 1997 through 2000 |                      |                      |                           |
|---|----------------------|----------------------|---------------------------|
|   | 1997-1998<br>Exp/pax | 1998-1999<br>Exp/pax | 1999-2000<br>Exp/pax(Est) |
| Land-based tourism (ANI)                        | NA/131               | NA/79                | NA/200                    |
| <u>Peninsula Area:</u>                          |                      |                      |                           |
| U.S.- IAATO Operators                           | 32/2,454             | 49/3,779             | 59/4,606                  |
| U.S.- Orient Lines                              | 4/2,012              | 4/2,177              | 5/2,325                   |
| Foreign - IAATO/non-IAATO                       | 48/4,364             | 44/3,572             | 68/6,650                  |
| Yachts  | 14/95                | 14/90                | 22/192                    |
| SUB-TOTALS:                                     | 98/8,925             | 111/9,618            | 154/13,773                |
| <u>Ross Sea Area:</u>                           |                      |                      |                           |
| U.S. Operators                                  | 3/275                | 2/152                | 2/200                     |
| Foreign - IAATO/non-IAATO                       | 5/273                | 3/164                | 2/92                      |
| SUB-TOTALS:                                     | 8/548                | 5/316                | 4/292                     |
| <u>TOTALS:</u>                                  |                      |                      |                           |
| All Operators (Land/Ship)                       | —/9,604              | —/10,013             | —/14,285 <sup>1</sup>     |
| Ship-Based Operators                            | 106/9,473            | 116/9,934            | 158/14,065                |

Sources: IAATO IEE 1998, IAATO IEE 1999 and IAATO Online 2000.

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<sup>1</sup>This number excludes: (1) the estimated 1,000 passengers aboard the *Rotterdam* since the vessel only cruised through Antarctic waters with no small boat cruising or passenger landings (In: "Initial Environmental Evaluation, ms Rotterdam – 2000 World Cruise," Holland America Line, Westours, Inc., March 22, 1999); (2) the land-based programs operated by Adventure Network International; and (3) the *Lyubov Orlova* (Marine Expeditions, Canada) which was scheduled for one voyage to the Peninsula and Ross Sea areas but this voyage was canceled (Landau 2001).

| Percentages of Tourists and Numbers of Expeditions, 1997 through 2000 |           |      |           |      |           |      |          |      |  |
|---|-----------|------|-----------|------|-----------|------|----------|------|--|
|   | 1997-1998 |      | 1998-1999 |      | 1999-2000 |      | Averages |      |  |
| <u>LAND-BASED TOURISM</u>   |           |      |           |      |           |      |          |      |  |
| % of Total  | 1.4%      |      | 0.8%      |      | 1.4%      |      | 1.2%     |      |  |
| <u>SHIP-BASED TOURISM</u>   | RS        | PA   | RS        | PA   | RS        | PA   | RS       | PA   |  |
| <u>Total Ship-Based:</u>  |           |      |           |      |           |      |          |      |  |
| No. Expeditions   | 8%        | 92%  | 4%        | 96%  | 3%        | 97%  | 5%       | 95%  |  |
| No. Passengers  | 6%        | 94%  | 3%        | 97%  | 2%        | 98%  | 4%       | 96%  |  |
| <u>SHIP-BASED, PENINSULA ONLY</u>                                     | %Exp      | %Pax | %Exp      | %Pax | %Exp      | %Pax | %Exp     | %Pax |  |
| Yachts/Total Ship-Based   | 14%       | 1%   | 13%       | 1%   | 14%       | 1%   | 14%      | 1%   |  |
| All U.S.Ops/Total Sh.-Based   | 37%       | 50%  | 48%       | 62%  | 42%       | 50%  | 42%      | 54%  |  |
| Orient Lines/All U.S. Ops   | 12%       | 82%  | 8%        | 58%  | 8%        | 50%  | 9%       | 63%  |  |

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Abbreviations Used in Tables:

Exp - Expeditions  
 Pax - Passengers  
 Est - Estimates  
 NA - Number of expeditions "Not Available"  
 RS - Ross Sea  
 PA - Peninsula Area  
 Ops - Operators

***Appendix 15: Total Number of Peninsula  
Area Landings and Visitors by Season and  
Percent Change from Preceding Season***

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**Appendix 15**  
**Total Number of Peninsula Area Landings and Visitors**  
**by Season and Percent Change from Preceding Season**

| <b>Season</b>       | <b>Number of Landings</b> | <b>% Change</b> | <b>Number of Visitors</b> | <b>% Change</b> |
|---------------------|---------------------------|-----------------|---------------------------|-----------------|
| 89-90               | 164                       | NA              | 17,759                    | NA              |
| 90-91               | 161                       | - 1.8%          | 19,001                    | + 7.0%          |
| 91-92               | 327                       | + 103.1%        | 38,828                    | + 104.4%        |
| 92-93               | 348                       | + 6.4%          | 27,789                    | - 28.4%         |
| 93-94               | 488                       | + 40.2%         | 50,035                    | + 80.1%         |
| 94-95               | 704                       | + 44.3%         | 52,610                    | + 5.2%          |
| 95-96               | 784                       | + 11.4%         | 61,345                    | + 16.6%         |
| 96-97               | 775                       | - 1.1%          | 54,286                    | - 11.5%         |
| 97-98               | 714                       | - 7.9%          | 66,387                    | + 22.3%         |
| 98-99               | 858                       | + 20.2%         | 74,772                    | + 12.6%         |
| Overall,<br>1989-99 | 164 to 858                | + 523.2%        | 17,759 to 74,772          | + 421.0%        |

From: Naveen 1999

*Appendix 16: Zodiacs in the Peninsula Area: 35 Peninsula Area Sites Visited by Zodiac Landings in the Base Season (1989-90), and Subsequent Number of Landings by Season, and Number of Annual Zodiac Landings in the Peninsula Area*

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**Appendix 16**  
**Zodiacs in the Peninsula Area:**  
**35 Peninsula Area Sites Visited by Zodiac Landings**  
**in the Base Season (1989-90) and Subsequent Number of Landings**  
**by Season, and Number of Annual Zodiac Landings in the Peninsula Area**

| <b><u>Table</u></b> | <b><u>Title</u></b>  | <b><u>Page</u></b> |
|---------------------|--|--------------------|
| Table 16.1.         | 35 Peninsula Area Sites Visited by Zodiac Landings in the Base Season and Subsequent Numbers of Landings by Season | Appendix 16-2      |
| Table 16.2.         | Number of Annual Zodiac Landings in the Peninsula Area   | Appendix 16-5      |

**Appendix 16**  
**35 Peninsula Area Sites Visited by Zodiac Landings**  
**in the Base Season (1989-90) and**  
**Subsequent Numbers of Landings by Season**

| <b>Table 16.1. 35 Peninsula Area Sites Visited by Zodiac Landings in the Base Season and Subsequent Numbers of Landings by Season</b> |               |              |              |              |              |              |              |              |              |              |              |
|---|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Landing Sites (*Sites with 100+ Landings &amp; 9,000+ Passengers)</b>  | <b>Region</b> | <b>89-90</b> | <b>90-91</b> | <b>91-92</b> | <b>92-93</b> | <b>93-94</b> | <b>94-95</b> | <b>95-96</b> | <b>96-97</b> | <b>97-98</b> | <b>98-99</b> |
| Adelaide Island   | SW            | 2            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 1            | 0            |
| <i>Aitcho Islands*</i>  | SH            | 2            | 0            | 3            | 7            | 3            | 10           | 23           | 37           | 31           | 31           |
| <i>Akademic Vernadskiy (ex-Faraday) Station*</i>  | SW            | 2            | 5            | 4            | 3            | 2            | 4            | 5            | 6            | 19           | 22           |
| <i>Almirante Brown Station*</i>   | NW            | 10           | 16           | 26           | 19           | 31           | 43           | 25           | 38           | 34           | 17           |
| <i>Arctowski Station</i>  | SH            | 8            | 6            | 14           | 10           | 30           | 31           | 21           | 22           | 11           | 13           |
| Ardley Island   | SH            | 4            | 2            | 0            | 1            | 1            | 2            | 0            | 1            | 0            | 1            |
| <i>Baily Head (incl. Rancho Point)*</i>   | SH            | 5            | 6            | 14           | 10           | 9            | 32           | 19           | 14           | 20           | 20           |
| <i>Cuverville Island*</i>   | NW            | 8            | 8            | 21           | 25           | 27           | 47           | 59           | 56           | 53           | 55           |
| Detaille Island   | SW            | 1            | 2            | 0            | 3            | 0            | 2            | 0            | 1            | 4            | 3            |
| False Bay, Livingston Island  | SH            | 1            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| <i>Ferraz Station*</i>  | SH            | 3            | 1            | 6            | 2            | 12           | 10           | 4            | 3            | 5            | 4            |
| <i>Frei Station/Marsh Base*</i>   | SH            | 6            | 4            | 8            | 2            | 1            | 9            | 6            | 5            | 0            | 0            |
| <i>Half Moon Island*</i>  | SH            | 10           | 9            | 25           | 14           | 17           | 38           | 49           | 35           | 33           | 33           |
| <i>Hannah Point*</i>  | SH            | 3            | 2            | 17           | 23           | 29           | 46           | 37           | 46           | 39           | 48           |
| <i>Hope Bay (Esperanza Station)*</i>  | NE            | 1            | 3            | 9            | 3            | 17           | 11           | 17           | 7            | 10           | 9            |
| <i>Jubany Station*</i>  | SH            | 1            | 1            | 3            | 4            | 6            | 3            | 0            | 0            | 3            | 6            |



| <b>Landing Sites (*Sites with 100+ Landings &amp; 9,000+ Passengers)</b> | <b>Region</b> | <b>89-90</b> | <b>90-91</b> | <b>91-92</b> | <b>92-93</b> | <b>93-94</b> | <b>94-95</b> | <b>95-96</b> | <b>96-97</b> | <b>97-98</b> | <b>98-99</b> |
|--|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <i>Lion's Rump*</i>  | SH            | 6            | 7            | 4            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| Melchoir Islands (nonspecific)   | NW            | 1            | 0            | 3            | 1            | 2            | 1            | 0            | 3            | 1            | 3            |
| Mikklesen Harbor   | NW            | 1            | 0            | 1            | 7            | 0            | 3            | 2            | 1            | 5            | 3            |
| <i>Palmer Station, Anvers Island*</i>                                    | NW            | 11           | 9            | 11           | 9            | 10           | 9            | 8            | 11           | 14           | 12           |
| <i>Paulet Island*</i>  | NE            | 7            | 4            | 14           | 16           | 18           | 30           | 31           | 31           | 8            | 37           |
| <i>Pendulum Cove, Deception Island*</i>                                  | SH            | 7            | 10           | 19           | 23           | 33           | 41           | 42           | 44           | 31           | 50           |
| <i>Penguin Island*</i>   | SH            | 3            | 0            | 1            | 7            | 13           | 24           | 23           | 12           | 15           | 20           |
| <i>Petermann Island*</i>   | SW            | 6            | 11           | 14           | 14           | 30           | 42           | 47           | 34           | 42           | 38           |
| <i>Point Lookout, Elephant Island*</i>                                   | EI            | 5            | 2            | 5            | 4            | 6            | 9            | 4            | 8            | 7            | 9            |
| Point Wild, Elephant Island  | EI            | 2            | 2            | 2            | 1            | 1            | 3            | 1            | 0            | 2            | 1            |
| <i>Port Lockroy (inc. Jougla Point)*</i>                                 | NW            | 7            | 7            | 19           | 22           | 30           | 27           | 42           | 58           | 63           | 75           |
| Rothera Station, Adelaide Island   | SW            | 1            | 0            | 0            | 0            | 0            | 2            | 1            | 0            | 0            | 0            |
| <i>Shingle Cove, Coronation Island*</i>                                  | SO            | 4            | 1            | 2            | 0            | 5            | 4            | 2            | 4            | 0            | 5            |
| Signy Island (nonspecific)   | SO            | 1            | 0            | 0            | 2            | 0            | 1            | 0            | 0            | 0            | 0            |
| Snow Hill Island   | NE            | 2            | 0            | 1            | 0            | 0            | 4            | 2            | 1            | 0            | 5            |
| Stonington Island  | SW            | 1            | 0            | 0            | 0            | 0            | 2            | 0            | 0            | 0            | 0            |
| <i>Telefon Bay*</i>  | SH            | 6            | 4            | 6            | 1            | 12           | 5            | 7            | 4            | 7            | 13           |
| <i>Waterboat Point (Gonzales Videla Station)*</i>                        | NW            | 9            | 10           | 15           | 19           | 17           | 20           | 14           | 12           | 12           | 20           |
| <i>Whalers Bay*</i>  | SH            | 17           | 13           | 23           | 22           | 37           | 66           | 67           | 51           | 60           | 69           |

From: Naveen, 1999

**Abbreviations Used in Table for Region:**

SO - South Orkneys

Includes Laurie, Coronation, and Signy Islands

EI - Elephant Island

Includes nearby islands

SH - South Shetland Islands

Including Deception, Low, and Smith Islands

NE - Northeast Antarctic Peninsula

From Cape Dubouzet (63°16'S,64°00'W) and Joinville Island (63°15'S,55°45'W) to James Ross Island (64°10'S,57°45'W)

NW - Northwest Antarctic Peninsula

From Cape Dubouzet (63°16'S,64°00'W) to northern end of the Lemaire Channel (65°04'S,63°57'W)

SW - Southwest Antarctic Peninsula

From the northern end of the Lemaire Channel to the northern part of Marguerite Bay (68°18'S,67°11'W)

| <b>Table 16.2. Number of Annual Zodiac Landings in the Peninsula Area</b> |                         |                |
|---|-------------------------|----------------|
| Season  | Peninsula Area Landings | Percent Change |
| 89-90   | 164                     | NA             |
| 90-91   | 161                     | - 1.8%         |
| 91-92   | 327                     | + 103.1%       |
| 92-93   | 348                     | + 6.4%         |
| 93-94   | 488                     | + 40.2%        |
| 94-95   | 704                     | + 44.3%        |
| 95-96   | 784                     | + 11.4%        |
| 06-97   | 775                     | - 1.1%         |
| 97-98   | 714                     | - 7.9%         |
| 98-99   | 858                     | + 20.2%        |
| Overall,<br>1989-99   | 164 to 858              | + 523.17%      |

From: Naveen 1999

*Appendix 17: Activities in the Peninsula  
Area Other Than Zodiac Landings*

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**Appendix 17**  
**Activities in the Peninsula Area**  
**Other Than Zodiac Landings**

**HELICOPTER LANDS**

SW Stonington Island  
SW Wiggins Glacier

**HELICOPTER OVERFLIGHTS**

SH Paradise Bay (nonspecific)  
NW Errera Channel  
SW Southwind Pass

**SNORKELING and SCUBA**

SH Baily Head, Deception Island  
SH Jubany Station  
NW Hydruga Rocks  
NW Lion Island  
NW Port Lockroy, Wiencke Island  
NW Cuverville Island  
NW Danco Island

**ICE WALKING**

NW Charlotte Bay

**CAMPING**

NW Damoy Point  
NW Neko Harbor  
NW Port Lockroy  
NW Portal Point  
SW Hovgaard Island  
SW Pleneau Island  
SW Pleneau Island

**ZODIAC TOURS, NO VISITOR LANDINGS**

SH Admiralty Bay, King George Island  
NE "Andersen" Island (probably Andersson Island)  
NE Antarctic Sound  
NE Fridtjof Sound (Tabarin Peninsula)  
NE Madder Cliffs, Jinville Island  
NW Andvord Bay (west coast Graham Land)  
NW Bismarck Strait  
NW Bone Bay, Trinity Peninsula  
NW Cape Kjellman, Charcot Bay, Trinity Peninsula  
NW Dallman Bay (between Brabant & Anvers Islands)  
NW Enterprise Islands  
NW Errera Channel  
NW Gerlache Strait  
NW Huemel Island (Megaptera Island)  
NW Intercurrence Island, Christiana Islands  
NW Laypeyrere Bay, Gourdon Peninsula

|    |  |
|----|--|
| NW | Lindblad Cove  |
| NW | Murray Harbor, Murray Island                           |
| NW | Palaver Point, Two Hummock Island                      |
| NW | Schollert Channel (between Anvers and Brabant Islands) |
| NW | Wauwemans Islands                                      |
| SW | Berthelot Islands                                      |
| SW | Cape Evenson (west coast Graham Land)                  |
| SW | Flandres Bay   |
| SW | Grandidier Channel                                     |
| SW | Gunnel Channel, Hanusse Bay                            |
| SW | Lemaire Channel  |
| SW | Pleneau Bay  |

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From: Naveen, 1999

**Abbreviations Used for Region:**

|                                    |  |
|------------------------------------|--|
| SO - South Orkneys                 | Includes Laurie, Coronation, and Signy Islands   |
| EI - Elephant Island               | Includes nearby islands  |
| SH - South Shetland Islands        | Including Deception, Low, and Smith Islands  |
| NE - Northeast Antarctic Peninsula | From Cape Dubouzet (63/16'S,64/00'W) and Joinville Island (63/15'S,55/45'W) to James Ross Island (64/10'S,57/45'W) |
| NW - Northwest Antarctic Peninsula | From Cape Dubouzet (63/16'S,64/00'W) to northern end of the Lemaire Channel (65/04'S,63/57'W)                      |
| SW - Southwest Antarctic Peninsula | From the northern end of the Lemaire Channel to the northern part of Marguerite Bay (68/18'S,67/11'W)              |

*Appendix 18: Forecast for Ship-Borne  
Antarctic Tourism*

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## Appendix 18 — Forecast for Ship-Borne Antarctic Tourism

| Year  | No. Passengers Landed <sup>1</sup> |                    | % Increase<br>(Or Decrease) | % Forecast/<br>Actual   | 'Actual' is 85% of Forecast <sup>2</sup> | 'Actual' is Forecast Escalated<br>by 8.5%/Year <sup>3</sup> |
|---|------------------------------------|--------------------|-----------------------------|-------------------------|--|---|
|   | Forecast                           | Actual             |                             |                         |  |   |
| 1992-93   |                                    | 6,704              |                             |                         |  |   |
| 1993-94   |                                    | 7,957              | 19%                         |                         |  |   |
| 1994-95   |                                    | 8,098              | 2%                          |                         |  |   |
| 1995-96   |                                    | 9,212              | 14%                         |                         |  |   |
| 1996-97   |                                    | 7,322              | - 21%                       |                         |  |   |
| 1997-98   | 10,590                             | 9,473              | 29%                         | 89%                     |  |   |
| 1998-99   | 12,300                             | 9,857 <sup>4</sup> | 4%                          | 80%                     |  |   |
|   |                                    |                    | (Average: 8%)               | (Aver: 84% for 2 years) |  |   |
| 1999-2000   | 14,050                             | 14,762             | 50%                         | 105%                    |  |   |
|   |                                    |                    |                             | (Aver: 91% for 3 years) |  |   |
| 2000-01   | 14,175                             |                    | -4%                         |                         | 12,050                                   | 14,175  |
| 2001-02   | 14,500                             |                    | 2%                          |                         | 12,325                                   | 15,380  |
| 2002-03   | 15,500                             |                    | 7%                          |                         | 13,175                                   | 16,690  |
| 2003-04   | 15,500                             |                    | 0                           |                         | 13,175                                   | 18,110  |
| 2004-05   | 16,000                             |                    | 3%                          |                         | 13,600                                   | 19,650  |
|   |                                    |                    | (Average: 9%)               |                         |  |   |
| <b>Projected 5-Year Increase</b><br>2000-01 to 2004-05: |                                    |                    | 11%                         |                         |  |   |

<sup>1</sup> Source: "Initial Environmental Evaluation, Ship Based Tourism by Nine U.S. Organizers, Antarctic Peninsula, South Shetland Island and South Orkney Islands, November 2000-March 2001." International Association of Antarctica Tour Operators. August 8, 2000.

<sup>2</sup> If IAATO's passenger projections are reasonable and if 'actual' tourist numbers are 85% of the forecast, then the low forecast projection would be 13,600 passengers landing by the 2004-05 season.

<sup>3</sup> If IAATO's forecasted 14,175 for the 2000-01 season is reasonable and if the rate of passengers landing increases 8 to 9% per year, then the high forecast projection would be 19,650 passengers landing by the 2004-05 season.

<sup>4</sup> Over 10,000 total ship and land-based tourists were reported for the 1998-1999 season.



***Appendix 19: 40 CFR Part 8, Environmental  
Impact Assessment of Nongovernmental  
Activities in Antarctica, Final Rule***

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# Federal Register

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Wednesday  
April 30, 1997

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Part III

## Environmental Protection Agency

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40 CFR Part 8

Environmental Impact Assessment of  
Nongovernmental Activities in Antarctica;  
Final Rule

**ENVIRONMENTAL PROTECTION  
AGENCY****40 CFR Part 8**

[FRL-5818-8]

**Environmental Impact Assessment of  
Nongovernmental Activities in  
Antarctica**AGENCY: Environmental Protection  
Agency (EPA).

ACTION: Interim final rule.

**SUMMARY:** Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act), amends the Antarctic Conservation Act of 1978, 16 U.S.C. 2401 *et seq.*, to implement the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The Act directs the Environmental Protection Agency (EPA) to promulgate regulations that provide for assessment of the environmental impacts of nongovernmental activities in Antarctica and for coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol. This interim final rule establishes requirements for assessments and coordination. This interim final rule applies only to nongovernmental activities that may occur through the 1998-99 austral summer, and will be replaced by a final rule.

DATES: Effective date: April 30, 1997.

FOR FURTHER INFORMATION CONTACT: Mr. Joseph Montgomery or Ms. Katherine Biggs, Office of Federal Activities (2252A), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460; telephone: (202) 564-7157 or (202) 564-7144, respectively.

SUPPLEMENTARY INFORMATION: This preamble is organized according to the following outline:

- I. Introduction
  - A. Statutory Background
  - B. Background of the Rulemaking
- II. Description of Program and Interim Final Regulations
  - A. The Antarctic Treaty and Protocol
  - B. The Purpose of These Interim Final Regulations
  - C. Summary of the Protocol
  - D. Activities Covered by These Interim Final Regulations
    - 1. Persons Required to Carry Out an ELA
    - 2. Differences Between Governmental and Nongovernmental Activities
    - 3. Appropriate Level of Environmental Documentation
    - 4. Criteria for a CEE While this Interim Final Rule is in Effect

- 5. Measures to Assess and Verify Environmental Impacts
- E. Incorporation of Information, Consolidation of Environmental Documentation, and Waiver or Modification of Deadlines
- F. Submission of Environmental Documents
- G. Prohibited Acts, Enforcement and Penalties
- III. Coordination of Review of Information Received from Other Parties to the Treaty
- IV. Executive Order Clearance
- V. Regulatory Flexibility Act
- VI. Unfunded Mandates Reform Act
- VII. Paperwork Reduction Act
- VIII. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- IX. Submission to Congress and the General Accounting Office

**I. Introduction****A. Statutory Background**

On October 2, 1996, the President signed into law the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act). The purpose of the Act is to implement the provisions of the Protocol on Environmental Protection (the Protocol) to the Antarctic Treaty of 1959 (the Treaty). The Act provides that: "The [Environmental Protection Agency] shall, within 2 years after the date of \* \* \* enactment \* \* \* promulgate regulations to provide for \* \* \* the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty \* \* \* and \* \* \* coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol." Regulations must be "consistent with Annex I to the Protocol."

**B. Background of the Rulemaking**

These interim final regulations are necessary so that the United States (the U.S.) will have the ability to implement its obligations under the Protocol, as soon as the Protocol enters into force. The Protocol enters into force on the thirtieth day following the date of deposit of instruments of ratification, acceptance, approval or accession by all States which were Antarctic Treaty Consultative Parties at the date on which the Protocol was adopted. Only two such States (the Russian Federation and Japan) have yet to deposit their instruments of ratification. The United States deposited its instrument on April 17, 1997, with the knowledge that these interim final regulations would be issued contemporaneously.

It is important for the Protocol to enter into force as soon as possible, because it provides important environmental protections for Antarctica. The next meeting of the Antarctic Treaty Consultative Parties will occur in Christchurch, New Zealand, in May of 1997. A major international effort is underway to promote entry into force of this important instrument on or close to the date of this meeting. In order to promote that objective, and to prompt the remaining other States to take the necessary steps, the United States views depositing its instrument of ratification thirty days before the May meeting as a foreign policy priority. Since these interim final regulations are necessary to ensure that the United States is able to comply with its obligations under the Protocol, the implementing regulations must be in place contemporaneous with the U.S. deposit of its instrument of ratification.

Although the Act gives the Environmental Protection Agency (EPA) two years to promulgate regulations, the United States sought immediate ratification of the Protocol which, in turn, required EPA to have regulations in effect contemporaneous with ratification since the regulations provide nongovernmental operators with the specific requirements they must meet in order to comply with the Protocol. Accordingly, immediate promulgation of this interim final rule is necessary so that the United States could ratify the Protocol and implement its obligations under the Protocol as soon as the Protocol enters into force.

Because of the importance of facilitating the Protocol's prompt entry into force, EPA believes it has good cause under 5 U.S.C. 553(b)(B) to find that implementation of notice and comment procedures for the interim final rule would be contrary to the public interest and unnecessary. For these reasons, these interim final regulations are being issued without notice and an opportunity to comment. In addition, for the same reasons, under 5 U.S.C. 553(d)(3), these interim final regulations take effect on April 30, 1997.

A comment period would be contrary to the public interest because, as stated above, the resulting delay would have prevented U.S. ratification of the Protocol and thus could have delayed its entry into force. Implementing interim final regulations is the most significant step the United States can take to facilitate the ratification of the Protocol. It is important that the Protocol enter into force as soon as possible to meet the important foreign policy objectives described above. The

prompt entry of the Protocol into force will also secure as quickly as possible the significant environmental protections afforded by its provisions and annexes. Without the Protocol, there are no obligations for any countries, or their nationals, to undertake environmental impact assessments of proposed activities in Antarctica. Thus, it is in the U.S. and global public interest for EPA to issue interim final regulations thereby securing immediate U.S. ratification and promoting rapid entry into force of the Protocol.

Further, public comment on the requirements for environmental documentation, including procedures and content, in these interim final regulations would also be unnecessary because these interim final regulations incorporate the environmental documentation requirements of the Protocol, which was signed by the U.S. in 1991 and received the advice and consent of the Senate in 1996. Specifically, language from the Protocol has been incorporated into these interim final regulations regarding the content of initial environmental evaluation (IEE) and comprehensive environmental evaluation (CEE) documentation as required by the Protocol, and the timing requirements of these interim final regulations have been set out to meet those established by Annex I to the Protocol.

Finally, these interim final regulations are limited in time and effect. They apply only to nongovernmental activities to be conducted in Antarctica through the 1998–99 austral summer, the next two Antarctic seasons, and are intended to provide for a transition period over those two seasons. They are not intended to set a precedent for final regulations which the EPA will develop prior to the statutory deadline of October 2, 1998.

EPA plans extensive opportunities for public comment in the development of the final regulations mentioned above. The regulations will be proposed and promulgated in accordance with the provisions of the Administrative Procedure Act (5 U.S.C. 553) which requires notice to the public, description of the substance of the proposed rule and an opportunity for public comment. Further, EPA will prepare an Environmental Impact Statement (EIS) which will consider the environmental impacts of the proposed rule and alternatives, and which will address the environmental and regulatory issues raised by interested agencies, organizations, groups and individuals. The public may participate in the initial scoping process for the EIS,

which will include a scoping meeting to be scheduled in June 1997. Thus the public will have an opportunity to comment on the proposed regulation as well as the draft EIS (DEIS), including participation in a public meeting on both the DEIS and the proposed regulation to be scheduled in early 1998.

## II. Description of Program and Interim Final Regulations

### A. The Antarctic Treaty and Protocol

The Antarctic Treaty of 1959 entered into force in 1961 and guarantees freedom of scientific research in Antarctica, reserves Antarctica exclusively for peaceful purposes, establishes regular meetings of the Parties to the Treaty (Parties) to develop measures to implement the Treaty and to deal with issues which may arise, and freezes territorial claims. Currently 26 countries participate in decision-making under the Treaty as Consultative Parties. Seventeen other countries are Parties, but may not block decisions taken by consensus of the Consultative Parties.

As human activities in Antarctica intensified, concern grew regarding the effects of such activities on the Antarctic environment and the potential consequences of the development of mineral resources. In 1990, the U.S. Congress responded by passing the Antarctic Protection Act, which prohibited persons subject to U.S. jurisdiction from engaging in Antarctic mineral resource activities and called for the negotiation of an environmental protection agreement.

Over the years, the Antarctic Treaty Parties have adopted a variety of measures to protect the Antarctic environment. In 1991, the Parties adopted the Protocol on Environmental Protection which builds upon the Treaty by extending and strengthening Antarctic environmental protection. The Protocol designates Antarctica as a natural reserve dedicated to peace and science, and bans non-scientific mineral activities. The Protocol requires prior assessment of the possible environmental impacts of all activities to be carried out in Antarctica. It establishes the Committee for Environmental Protection (the Committee) to provide expert scientific and technical advice to the Parties on measures necessary to effectively implement the Protocol. The Protocol requires that draft CEEs for activities likely to have more than a minor or transitory impact on Antarctica and its dependent and associated ecosystems be provided to the Parties and to the Committee. Because legislation was

needed in order for the United States to be able to implement its obligations under the Protocol, the Antarctic Science, Tourism, and Conservation Act of 1996 was enacted by Congress. The Act directs EPA to issue regulations implementing the requirements for environmental impact assessments of nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under the Treaty.

### B. The Purpose of These Interim Final Regulations

The purpose of these interim final regulations is to provide for the evaluation of the potential environmental impact for the 1997–98 and 1998–99 Antarctic seasons of those nongovernmental activities in Antarctica, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty and which are proposed to take place at any time through the 1998–99 austral summer. The Treaty requires notice of, *inter alia*, “all expeditions to Antarctica organized in or proceeding from” the United States. In addition, these interim final regulations provide for coordination of reviews of draft CEEs received from other Parties, in accordance with the Protocol, for activities to be carried out in Antarctica during these two seasons. The Act states that these regulations are to be consistent with Annex I to the Protocol.

Among other things, these interim final regulations specify the procedures that must be followed by any person or persons organizing a nongovernmental expedition to or within Antarctica (‘operator’ or ‘operators’) in evaluating the potential environmental impacts of their activities. These interim final regulations include the required considerations and elements relevant to environmental documentation of the evaluation, as well as procedures for submission of environmental documentation to allow the EPA to review whether the evaluation meets the obligations set forth herein and the requirements of Annex I of the Protocol.

Operators currently provide information to the National Science Foundation prior to each Antarctic season and this information is transmitted to the Department of State to meet U.S. obligations for notification pursuant to Article VII of the Treaty which requires advance notice of expeditions to and within Antarctica. This information is also part of the basic information requirements for preparation of environmental documentation, as addressed in § 8.4(a) of these interim final regulations. While

operators are required to include this information in environmental documentation, they may also continue to provide this information directly to the National Science Foundation.

#### C. Summary of the Protocol

This interim final rule implements Annex I to the Protocol, which describes procedures to be used in conducting environmental impact assessments of effects of activities in Antarctica. Article 8 of the Protocol provides that Parties to the Protocol ensure that the assessment procedures of Annex I are applied in planning processes leading to decisions about any activities, including nongovernmental activities, including tourism, to be undertaken in the Antarctic Treaty area for which advance notice is required under paragraph 5 of Article VII of the Treaty.

The procedures set forth in Annex I require that all proposed activities by operators be assessed, through one or more stages of assessment. If an activity will have an impact that is less than minor or transitory, only a preliminary environmental assessment must be submitted in accordance with these interim final regulations before the activity proceeds. For an activity that will have no more than a minor or transitory impact, an initial environmental evaluation (IEE) must be submitted in accordance with these interim final regulations before the activity proceeds. Finally, if it is determined (through an IEE or otherwise) that an activity is likely to have more than a minor or transitory impact, a comprehensive environmental evaluation (CEE) must be submitted in accordance with these interim final regulations before the activity proceeds.

An IEE describes an activity's purpose, location, duration and intensity, and considers alternatives and assesses impacts, including cumulative impacts, in light of existing and known proposed activities. A CEE is a detailed analysis that comprehensively evaluates the activity, its impacts, alternatives, mitigation and the like. A draft CEE must be provided to the Parties and the Committee at least 120 days before the next consultative meeting where the draft CEE may be addressed. No final decision shall be taken to proceed with any activity for which a CEE is prepared unless there has been an opportunity for consideration of the draft CEE at an Antarctic Treaty Consultative Meeting (ATCM) on the advice of the Committee (unless the decision to proceed with the activity has already been delayed more than 15 months since the date of circulation of the draft CEE). A final CEE must be circulated at least 60 days

before commencement of the proposed activity. Any decision by the operator on whether a proposed activity should proceed in either its original or modified form must be based upon the final CEE as well as other relevant considerations, and procedures must be put in place for monitoring the impact of any activity that proceeds following completion of a CEE.

Evaluations need to address Annex I to the Protocol. The information contained in an evaluation should allow the operator to make decisions based on a sound understanding of factors relevant to the likely impact of the proposed activity. An evaluation should, as appropriate, contain sufficient information to allow assessments of, and informed judgements about, the likely impacts of proposed activities on the Antarctic environment and on the value of the Antarctic environment for the conduct of scientific research. Depending on the specific circumstances surrounding the proposed activities, various factors may be relevant for consideration in the environmental impact assessment process such as the scope, duration and intensity of the activity proposed in Antarctica, cumulative impacts, impacts on other activities in the Antarctic Treaty area, and capacity to assess and verify adverse environmental impacts. Operators may also find it appropriate to consider the availability of technology and procedures for environmentally safe operations and whether there exists the capacity to respond promptly and effectively to accidents with environmental effects.

#### D. Activities Covered by These Interim Final Regulations

##### 1. Persons Required to Carry Out an EIA

The requirements of these interim final regulations apply to operators of nongovernmental expeditions organized in or proceeding from the territory of the United States to Antarctica. The term "expedition" is taken from paragraph 5 of Article VII of the Treaty and encompasses all actions or activities undertaken by a nongovernmental expedition while it is in Antarctica. These interim final regulations do not apply to individual U.S. citizens or groups of citizens planning to travel to Antarctica on an expedition for which they are not acting as an operator.

For a commercial tour, typical functions of an operator would include, for example, acting as the primary person or group of persons responsible for acquiring use of vessels or aircraft, hiring expedition staff, planning itineraries, and other organizational

responsibilities. Non-commercial expeditions covered by these interim final regulations include trips by yachts, skiing or mountaineering expeditions, privately funded research expeditions, and other nongovernmental or nongovernment-sponsored activities.

These interim final regulations do not apply to U.S. citizens who participate in tours organized in and proceeding from countries other than the United States. As provided in the Protocol, the requirements do not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the Conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. 1371 *et seq.*

##### 2. Differences Between Governmental and Nongovernmental Activities

These interim final regulations do not apply to governmental activities. c.f. 45 CFR 641.10 through 641.22 (National Science Foundation regulations for assessing impacts of governmental activities in Antarctica). However, EPA believes that, to the extent practicable, similar procedures should generally be used for assessing both governmental and nongovernmental activities. Consistent with this, these interim final regulations generally establish procedures for assessing the impacts of nongovernmental activities in Antarctica similar to those used for governmental activities under the National Science Foundation regulations.

However, EPA also recognizes that it will not always be appropriate to apply identical standards and procedures for governmental and nongovernmental activities. Specifically, numerous mechanisms and processes exist to ensure public scrutiny and accountability of governmental activities. In some instances, no comparable mechanisms or processes exist for nongovernmental activities. Thus, these interim final regulations provide for direct federal review of each nongovernmental environmental impact assessment by giving EPA authority to review, in consultation with other interested federal agencies, nongovernmental environmental impact assessments for compliance with the requirements of Annex I to the Protocol and these interim final regulations.

To promote consistency regarding environmental documentation, EPA intends to consult with the National Science Foundation and other U.S. government agencies with appropriate

expertise in the course of reviewing the assessments of proposed nongovernmental activities in the Antarctic. Further, following the final response from the operator to EPA's initial comments, EPA will obtain the concurrence of the National Science Foundation in making any determination that the environmental documentation submitted by an operator fails to meet the requirements under Article 8 and Annex I to the Protocol and the provisions of these interim final regulations.

### 3. Appropriate Level of Environmental Documentation

(a) *Preliminary Environmental Review Memorandum (PERM)*. These interim final regulations provide that an operator who asserts that an expedition will have less than a minor or transitory impact must provide a Preliminary Environmental Review Memorandum (PERM) to the EPA no later than 180 days before the proposed departure of the expedition to Antarctica. The timing requirement has been established to provide sufficient time for the operator to prepare an IEE if one is needed. The EPA, in consultation with other interested federal agencies, will review the PERM to determine if it is sufficient to demonstrate that the activity will have less than a minor or transitory impact or whether additional environmental documentation, i.e., an IEE or CEE, is required to meet the obligations of Annex I. The EPA will provide its comments to the operator within fifteen (15) days of receipt of the PERM, and the operator will have seventy-five (75) days to prepare a revised PERM or an IEE, if necessary. Following the final response from the operator, EPA may make a finding that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of these interim final regulations. This finding will be made with the concurrence of the National Science Foundation. If EPA does not provide such notice within thirty (30) days, the operator will be deemed to have met the requirements of these interim final regulations.

If EPA recommends an IEE and one is prepared and submitted within the seventy-five (75) day response period, the schedule for review will follow the time frames set out for an IEE in these interim final regulations. (See: Section II.D.3(b), below.) Should EPA recommend a CEE, timing requirements applicable to CEEs may necessitate a delay in plans to initiate a proposed activity. Operators are encouraged to

consult with EPA on options in this regard.

(b) *Initial Environmental Evaluation (IEE)*. Article 2 of Annex I to the Protocol requires that unless it has been determined that an activity will have less than a minor or transitory impact, or unless a CEE is being prepared in accordance with Article 3 of Annex I, an IEE must be prepared. Among the items to be included in an IEE to document that an activity will have no more than a minor or transitory impact are the cumulative impacts of the proposed activity in light of existing and known proposed activities. Expeditions, by their nature, involve the transport of persons to Antarctica which will result in physical impacts, which may include, but not be limited to: air emissions, discharges to the ocean, noise from engines, landings for sight-seeing, and activities by visitors near wildlife. Accordingly, it is EPA's view that, at minimum, an IEE is the appropriate level of environmental documentation for proposed activities where multiples of the activity over time are likely and may create a cumulative impact, unless an existing IEE or CEE supports a finding that the type of activity proposed results in a less than minor or transitory cumulative impact. However, as noted below, it is also EPA's view that the types of nongovernmental activities that are currently being carried out will typically be unlikely to have impacts that are more than minor or transitory assuming that activities will be carried out in accordance with the guidelines set forth in the ATCM Recommendation XVIII-1, Tourism and nongovernmental activities, the relevant provisions of other U.S. statutes, and Annexes II-V to the Protocol. In the event that a determination is made that a CEE is needed to meet the requirements of Annex I to the Protocol and the provisions of these interim final regulations, timing requirements applicable to CEEs may necessitate a delay in plans to initiate a proposed activity, and operators are encouraged to consult with EPA on options. The EPA will consider the question of the appropriate level of review in more detail in developing the final rule, utilizing the experience gained during the implementation of this interim final rule and public comments provided in the final rule-making process.

Any operator who wishes to make an expedition to Antarctica during the time period covered by these interim final regulations is required to provide an IEE to EPA no less than ninety (90) days prior to the proposed departure of the expedition to Antarctica unless: (1) A

decision has been made to prepare a CEE, or (2) the operator has submitted a PERM and there has not been a finding within the time limits of these interim final regulations that the PERM fails to meet the requirements under Annex I to the Protocol and the provisions of these interim final regulations.

The EPA will provide its comments to the operator within thirty (30) days of receipt of the IEE, and the operator will have forty-five (45) days to prepare a revised IEE, if necessary. Following the final response from the operator, EPA may make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of these interim final regulations. This finding will be made with the concurrence of the National Science Foundation. If such a notice is required, EPA will provide it within fifteen (15) days of receiving the final IEE from the operator or, if the operator does not provide a final IEE, within sixty (60) days following EPA's comments on the original IEE. If EPA does not provide notice within these time limits, the operator will be deemed to have met the requirements of these interim final regulations, provided that procedures, which may include appropriate monitoring, are carried out to assess and verify the impact of the activity.

If a CEE is required, the operator must adhere to the time limits applicable to such documentation. (See: Section II.D.3(c), below.) In the event that a determination is made that a CEE is required, EPA, at the operator's request, will consult with the operator regarding possible changes in the proposed activity which would allow preparation of an IEE.

The EPA, upon receipt of an IEE, will electronically publish notice of its receipt on the Office of Federal Activities' World Wide Web Site: <http://es.inel.gov/oeca/ofa/>. The Department of State will circulate to the Parties and make publicly available a copy of an annual list of IEEs prepared by U.S. operators in accordance with Article 2 and any decisions taken in consequence thereof. Any IEE prepared in accordance with these interim final regulations shall be made available by the EPA on request.

(c) *Comprehensive Environmental Evaluation (CEE)*. Article 3(4), of Annex I of the Protocol requires that draft CEEs be distributed to all Parties and the Committee 120 days in advance of the next Antarctic Treaty Consultative Meeting at which the CEE may be addressed. Since the next ATCM is now scheduled for May 19-30, 1997, CEEs prepared for nongovernmental activities

in the 1997-1998 season would have to have been distributed by January 1997, should the Protocol enter into force before or during the 1997-1998 season. Because it is now impossible for a CEE to be submitted for the 1997-1998 season as required by the Protocol, modifications to the proposed expedition which would eliminate any impacts that might require a CEE, and thereby allow for an IEE, would be necessary in order to comply with these interim final regulations and the Protocol. Operators who are anticipating activities for the 1997-1998 season which would require a CEE are encouraged to consult with the EPA as soon as possible.

For the 1998-1999 season, any operator who plans an activity which would require a CEE must submit a draft of the CEE to EPA by December 1, 1997. Within fifteen (15) days of receipt of the draft CEE, EPA will send it to the Department of State for transmittal as a draft CEE to other Parties in January 1998 and EPA will publish notice of receipt of the CEE in the **Federal Register** and will provide copies to any person upon request. The EPA will accept public comments on the CEE for a period of ninety (90) days following notice in the **Federal Register**. The EPA will make these public comments available to the operator.

The EPA, in consultation with other interested federal agencies, will review the CEE to determine if it meets the requirements under Annex I to the Protocol and the provisions of these interim final regulations and transmit its comments to the operator within 120 days following publication of notice of availability in the **Federal Register** to allow for the inclusion of any additional information in the CEE. The operator shall prepare a final CEE that addresses and includes or summarizes any comments on the draft CEE received from EPA, the public and the Parties, including comments offered at the XXII Antarctic Treaty Consultative Meeting in 1998. The final CEE shall be sent to EPA at least seventy-five (75) days before proposed departure. Following the final response from the operator, the EPA will inform the operator if EPA, with the concurrence of the National Science Foundation, makes the finding that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of these interim final regulations. This notification will occur within fifteen (15) days of submittal of the final CEE if the CEE is submitted by the operator within the time limits set out in these interim final regulations. If no final CEE

is submitted by the operator, or if the operator fails to meet these time limits, EPA will provide such notification sixty (60) days prior to departure of the expedition. If, after receipt of such notification, the operator proceeds with the expedition without fulfilling the requirements of these interim final regulations, the operator is subject to enforcement proceedings pursuant to Sections 7, 8, and 9 of the Antarctic Conservation Act, as amended by the Act; 16 U.S.C. 2407, 2408, 2409, and 45 CFR part 672. If EPA does not provide notice, the operator will be deemed to have met the requirements of these interim final regulations provided that procedures, which include appropriate monitoring, are carried out to assess and verify the impact of the activity. The EPA will transmit the final CEE to the Department of State which shall circulate it to all Parties no later than sixty (60) days before proposed departure of the expedition, along with a notice of any decisions by the operator relating thereto. The EPA will publish a notice of availability of the final CEE in the **Federal Register**.

Operators are encouraged to consult with the EPA as early as possible if there are questions as to whether a CEE will be required for a proposed expedition.

#### 4. Criteria for a CEE While this Interim Final Rule is in Effect

Article 3 of Annex I to the Protocol requires a CEE when it is determined that an activity is likely to have more than a minor or transitory impact. While the need for a CEE will be evaluated for each activity on a case-by-case basis, it is EPA's view that the type of nongovernmental activities that are currently being carried out will typically be unlikely to have impacts that are more than minor or transitory.

However, the need for a CEE could be triggered by a proposed activity which represents a major departure from current nongovernmental activities, resulting in a large increase in adverse environmental impact at a site. Similarly, a CEE may be required if an activity is likely to give rise to particularly complex, cumulative, large-scale or irreversible effects, such as perturbations in unique and very sensitive biological systems. An example of an activity which might require a CEE would be the construction and operation of a new crushed rock airstrip or runway.

In evaluating whether a CEE is the appropriate level of environmental documentation, the EPA will consider the impact in terms of the context of the Antarctic environment and the intensity

of the activity. The Antarctic environment is for the most part unspoiled, has intrinsic value, and is of great value to science and to humankind's overall understanding of the global environment. In addition, because of the location and uniqueness of the ecosystem, there would likely be great difficulty responding to environmental threats and mitigating damage to the Antarctic ecosystem. The EPA believes a comparable threshold should be applied in determining whether an activity may have an impact that is more than minor or transitory under these interim final regulations as is used in determining if the activity will have a 'significant' effect for purposes of the National Environmental Policy Act. C.f. 40 CFR 1508.27

#### 5. Measures to Assess and Verify Environmental Impacts

The Protocol and these interim final regulations require an operator to employ procedures to assess and provide a regular and verifiable record of the actual impacts of any activity which proceeds on the basis of an IEE or CEE. The record developed through these measures shall be designed to: (a) Enable assessments to be made of the extent to which such impacts are consistent with the Protocol; and (b) provide information useful for minimizing and mitigating those impacts, and, where appropriate, on the need for suspension, cancellation, or modification of the activity. Moreover, an operator must monitor key environmental indicators for an activity proceeding on the basis of a CEE. An operator may also need to carry out monitoring in order to assess and verify the impact of an activity for which an IEE has been prepared.

For activities requiring an IEE, an operator should be able to use procedures currently being voluntarily utilized by operators to provide the required information. For example, such information could include, as appropriate and to the best of the operator's knowledge: identification of the number of tourists put ashore at each site, the number and location of each landing site, the total number of tourists at each site per ship and for the season; number of times the site has been visited in the past; the number of times the site is expected to be visited in the forthcoming season; the times of the year that visits are expected to occur (e.g., before, during, or after the penguin breeding season); the number of visitors expected to be put ashore at the site at any one time and over the course of a particular visit; what visitors are expected to do while at the site;

verification that guidelines for tourists are followed; description of any tourist exceptions to the landing guidelines; and description of any activity requiring mitigation, the mitigative actions undertaken, and the actual or projected outcome of the mitigation.

These interim final regulations do not set out detailed monitoring procedures for activities requiring a CEE because the Parties are still working to identify monitoring approaches which can best support the Protocol's implementation. Thus, should an activity require a CEE, the operator should consult with EPA to: (a) Identify the monitoring regime appropriate to that activity, and (b) determine whether and how the operator might utilize relevant monitoring data collected by the U.S. Antarctic Program. The EPA will consult with the National Science Foundation and other interested federal agencies regarding this monitoring regime.

The EPA, in consultation with the National Science Foundation and other interested federal agencies, will review the results of the measures employed pursuant to these interim final regulations and may provide additional guidance in the final rule.

#### *E. Incorporation of Information, Consolidation of Environmental Documentation, and Waiver or Modification of Deadlines*

The EPA is strongly committed to minimizing unnecessary paperwork and to implementation of these interim final regulations such that undue burden is not placed on operators, particularly in view of the time requirements associated with environmental documentation requirements. Therefore, provided that documentation complies with all applicable provisions of Annex I to the Protocol and these interim final regulations, and, provided that the environmental documentation is appropriate in light of the specific circumstances of each operator's expedition or expeditions, the EPA will allow the following approaches to documentation: (1) Material may be incorporated by referring to it in the environmental document with its content briefly described when the cited material is reasonably available to the EPA; (2) more than one proposed expedition by an operator may be included within one environmental document and may, if appropriate, include a single discussion of components of the environmental analysis which are applicable to some or all of the proposed expeditions; and (3) one environmental document may also be used to address expeditions being

carried out by more than one operator, provided that the environmental documentation includes the names of each operator for which the environmental documentation is being submitted pursuant to obligations under these interim final regulations. Further, the EPA may waive or modify the deadlines of these interim final regulations if the Protocol has not yet entered into force or where EPA determines an operator is acting in good faith and that circumstances outside the control of the operator created delays, provided that environmental documentation fully meets deadlines under the Protocol.

#### *F. Submission of Environmental Documents*

The operator shall submit five copies of its environmental documentation, along with an electronic copy in HTML format, if available, to the EPA by mail to: U.S. Environmental Protection Agency, Office of Federal Activities, EIS Filing—Mail Code 2252-A, 401 M Street SW, Washington, DC 20460.

Environmental documents may also be sent by special delivery (Federal Express, United Parcel Service, etc.) or hand-carried to: U.S. Environmental Protection Agency, Office of Federal Activities, EIS Filing—Mail Code 2252-A, Room 7241, Ariel Rios Building (South Oval Lobby), 1200 Pennsylvania Avenue, NW, Washington, DC 20044.

An operator who wishes to may notify and submit environmental documentation at an earlier date than required for this interim final rule. The EPA review process, including notification for public review and comment, will commence with the submittal of environmental documentation and will follow deadlines for response indicated in the appropriate sections of this interim final rule.

#### *G. Prohibited Acts, Enforcement and Penalties*

It shall be unlawful for any operator to violate these interim final regulations. An operator who violates any of these interim final regulations is subject to enforcement, which may include civil and criminal enforcement proceedings, and penalties, pursuant to Sections 7, 8, and 9 of the Antarctic Conservation Act, as amended by the Act; 16 U.S.C. 2407, 2408, 2409, and 45 CFR part 672.

#### **III. Coordination of Review of Information Received from Other Parties to the Treaty**

Article 6 of Annex I to the Protocol provides that the following information shall be circulated to the Parties,

forwarded to the Committee for Environmental Protection, and made publicly available: (1) A description of national procedures for considering the environmental impacts of proposed activities; (2) an annual list of any IEEs and any decisions taken in consequence thereof; (3) significant information obtained and any action taken in consequence thereof with regard to monitoring from IEEs and CEEs; and (4) information in a final CEE. In addition, Article 6 requires that any IEE be made available on request, and Article 3 requires that draft CEEs be circulated to all Parties, who shall make them publicly available. A period of ninety (90) days is allowed for the receipt of comments. To implement these requirements of the Protocol, this interim final rule sets out the process for circulation of this information within the United States.

Upon receipt of a CEE from another Party, the Department of State shall publish notice of receipt in the **Federal Register** and shall circulate a copy of the CEE to all interested federal agencies. The Department of State shall coordinate responses from federal agencies to the CEE and shall transmit the coordinated response, if any, to the Party which has circulated the CEE. The Department of State shall make a copy of the CEE available upon request to the public. Members of the U.S. public should comment directly to the operator who has drafted the CEE and provide a copy to the EPA for its consideration.

Upon receipt of the annual list from another Party of IEEs prepared in accordance with Article 2 of Annex I and any decisions taken in consequence thereof, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy of any list of IEEs from other Parties prepared in accordance with Article 2 and any decisions taken in consequence thereof available upon request to the public.

Upon receipt of a description of appropriate national procedures for environmental impact statements from another Party, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make such descriptions available upon request to the public.

Upon receipt from another Party of significant information obtained, and any action taken in consequence therefrom from procedures put in place with regard to monitoring pursuant to Articles 2(2) and 5 of Annex I to the Protocol, the Department of State shall circulate a copy to all interested federal agencies. Notification of receipt of significant information regarding



monitoring will be published electronically on the EPA Office of Federal Activities' World Wide Web Site at: <http://es.inel.gov/oeca/ofa/>. The Department of State shall make a copy of this information available upon request to the public.

Upon receipt of a final CEE from another Party, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy available upon request to the public.

#### IV. Executive Order Clearance

Under Executive Order 12866, [58 FR 51735 (October 4, 1993)] the EPA must determine whether the regulatory action is "significant" and therefore subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this interim final rule is a "significant regulatory action." Although none of the first three criteria apply, this interim final rule raises novel legal or policy issues arising out of legal mandates under P.L. 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996 and the Protocol on Environmental Protection to the Antarctic Treaty of 1959. Accordingly, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

#### V. Regulatory Flexibility Act

The EPA has determined that this interim final rule being issued today is not subject to the Regulatory Flexibility Act (RFA), which generally requires an agency to conduct a regulatory flexibility analysis of any significant impact the interim final rule will have

on a substantial number of small entities. By its terms, the RFA applies only to rules subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act (APA) or any other statute. Today's interim final rule is not subject to notice and comment requirements under the APA or any other statute. The interim final rule is subject to the APA, but the EPA has invoked the "good cause" exemption under APA, 5 U.S.C. 553(b)(B), from the APA notice and comment requirements.

The EPA nonetheless believes that because this interim final rule only requires assessment of environmental impacts the effects on small businesses will be limited primarily to the cost of preparing such an analysis and that the requirements are no greater than necessary to ensure that the United States will be in compliance with its international obligations under the Protocol and the Treaty. Further, EPA has included a number of provisions, e.g., incorporation of information and consolidation of documentation, in this interim final rule which should minimize the cost of such an analysis.

#### VI. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. The UMRA does not apply to this interim final rule because it is necessary for the ratification and implementation of international treaty obligations. Thus, today's interim final rule is not subject to the requirements of sections 202 and 205 of the UMRA. In any event, EPA has determined that this interim final rule does not contain a Federal mandate that may result in annual expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or for the private sector. The EPA has also determined that this interim final rule contains no regulatory requirements that might significantly or uniquely affect small governments under section 203 of the UMRA.

#### VII. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* Under Section 1320.13 of this Act, EPA has requested OMB to authorize emergency processing. The OMB's approval was requested by April 17, 1997. An Information Collection Request (ICR)

document has been prepared by EPA (ICR No. 1808.01) and a copy may be obtained from Ms. Sandy Farmer, Regulatory Information Division (2136), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460; telephone: (202) 260-2740.

This emergency request for ICR approval along with the Interim Final Rule are necessary so that implementing regulations will be in place contemporaneously with the United States' ratification of the Protocol and in order to implement its obligations under the Protocol as soon as the Protocol enters into force. The Interim Final Rule provides nongovernmental operators with the specific environmental documentation requirements they must meet in order to comply with the Protocol.

Nongovernmental operators, including tour operators, conducting expeditions to Antarctica are required to submit environmental documentation to EPA that evaluates the potential environmental impact of their proposed activities. If EPA has no comments, or if the documentation is satisfactorily revised in response to EPA's comments, and the operator does not receive a notice from EPA that the environmental documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of these interim final regulations, the operator will have no further obligations pursuant to the applicable requirements of these interim final regulations provided that any appropriate measures, which may include monitoring, are put in place to assess and verify the impact of the activity. The type of environmental document required depends upon the nature and intensity of the environmental impacts that could result from the activity under consideration. The interim final rule provides for incorporation of material into an environmental document by referring to it in the document when the effect will be to reduce paperwork. Further, an operator may include more than one proposed expedition within one environmental document and one environmental document may also be used to address expeditions being carried out by more than one operator further reducing burden. For the limited time the Interim Final Rule will be in effect, the EPA anticipates that operators will make one submittal per year for all of their expeditions for that year. No capital costs or operational and maintenance costs are anticipated to be incurred as a result of this ICR.

*Frequency of Reporting:* Once per year.

*Affected Public:* Businesses, other nongovernmental entities including for profit entities, and not for profit institutions.

*Number of Respondents:* 8.

*Estimated Average Time Per Respondent:* 120 Hours.

*Total Annual Burden Hours:* 960.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to: review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

#### VIII. Executive Order 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The provisions of Executive Order 12898 do not apply to this regulatory action.

#### IX. Submission to Congress and the General Accounting Office

Under 5 U.S.C. 801(a)(1)(A) as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA submitted a report containing this interim final rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the General Accounting Office prior to publication of the interim final rule in today's *Federal Register*. This interim final rule is not a "major rule" as defined by 5 U.S.C. 804(2).

#### List of Subjects in 40 CFR Part 8

Environmental protection, Antarctica, Enforcement, Environmental documentation, Environmental impact assessment, Prohibited acts, Penalties.

Dated: April 23, 1997.

Carol M. Browner,  
Administrator.

Therefore, for the reasons set out in the Preamble, Title 40 Chapter 1 of the Code of Federal Regulations is amended by adding a new Part 8 as follows:

#### PART 8—ENVIRONMENTAL IMPACT ASSESSMENT OF NONGOVERNMENTAL ACTIVITIES IN ANTARCTICA

Sec.

- 8.1 Purpose.
- 8.2 Applicability and effect.
- 8.3 Definitions.
- 8.4 Preparation of environmental documents, generally.
- 8.5 Submission of environmental documents.
- 8.6 Preliminary environmental review.
- 8.7 Initial environmental evaluation.
- 8.8 Comprehensive environmental evaluation.
- 8.9 Measures to assess and verify environmental impacts.
- 8.10 Cases of emergency.
- 8.11 Prohibited acts, enforcement and penalties.
- 8.12 Coordination of reviews from other Parties.

*Authority:* 16 U.S.C. 2401 *et seq.*, as amended, 16 U.S.C. 2403a.

##### § 8.1 Purpose.

(a) This part is issued pursuant to the Antarctic Science, Tourism, and Conservation Act of 1996. As provided in that Act, this part implements the requirements of Article 8 and Annex I to the Protocol on Environmental Protection to the Antarctic Treaty of 1959 and provides for:

(1) the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty of 1959; and

(2) coordination of the review of information regarding environmental impact assessment received by the United States from other Parties under the Protocol.

(b) The procedures in this part are designed to: Ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. These procedures are consistent with and implement the environmental impact assessment provisions of Article 8 and

Annex I to the Protocol on Environmental Protection to the Antarctic Treaty.

##### § 8.2 Applicability and effect.

(a) This part is intended to ensure that potential environmental effects of nongovernmental activities undertaken in Antarctica are appropriately identified and considered by the operator during the planning process and that to the extent practicable, appropriate environmental safeguards which would mitigate or prevent adverse impacts on the Antarctic environment are identified by the operator.

(b) The requirements set forth in this part apply to nongovernmental activities for which the United States is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty of 1959: All nongovernmental expeditions to and within Antarctica organized in or proceeding from its territory.

(c) This part does not apply to activities undertaken in the Antarctic Treaty area that are governed by the Convention on the Conservation of Antarctic Marine Living Resources or the Convention for the Conservation of Antarctic Seals. Persons traveling to Antarctica are subject to the requirements of the Marine Mammal Protection Act, 16 U.S.C. 1371 *et seq.*

(d) This part is effective on April 30, 1997. This part will expire upon the earlier of the end of the 1998-99 austral summer season or upon issuance of a final regulation.

##### § 8.3 Definitions.

As used in this part:

*Act* means 16 U.S.C. 2401 *et seq.*, Public Law 104-227, the Antarctic Science, Tourism, and Conservation Act of 1996.

*Annex I* refers to Annex I, Environmental Impact Assessment, of the Protocol.

*Antarctica* means the Antarctic Treaty area; i.e., the area south of 60 degrees south latitude.

*Antarctic environment* means the natural and physical environment of Antarctica and its dependent and associated ecosystems, but excludes social, economic, and other environments.

*Antarctic Treaty area* means the area south of 60 degrees south latitude.

*Antarctic Treaty Consultative Meeting (ATCM)* means a meeting of the Parties to the Antarctic Treaty, held pursuant to Article IX(1) of the Treaty.

*Comprehensive Environmental Evaluation (CEE)* means a study of the reasonably foreseeable potential effects

of a proposed activity on the Antarctic environment, prepared in accordance with the provisions of this part and includes all comments received thereon. (See: 40 CFR 8.8.)

*Environmental document or environmental documentation (Document)* means a preliminary environmental review memorandum, an initial environmental evaluation, or a comprehensive environmental evaluation.

*Environmental impact assessment (EIA)* means the environmental review process required by the provisions of this part and by Annex I of the Protocol, and includes preparation by the operator and U.S. government review of an environmental document, and public access to and circulation of environmental documents to other Parties and the Committee on Environmental Protection as required by Annex I of the Protocol.

*EPA* means the Environmental Protection Agency.

*Expedition* means any activity undertaken by one or more nongovernmental persons organized within or proceeding from the United States to or within the Antarctic Treaty area for which advance notification is required under Paragraph 5 of Article VII of the Treaty.

*Impact* means impact on the Antarctic environment and dependent and associated ecosystems.

*Initial Environmental Evaluation (IEE)* means a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment prepared in accordance with 40 CFR 8.7.

*Operator or operators* means any person or persons organizing a nongovernmental expedition to or within Antarctica.

*Person* has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States except that the term does not include any department, agency, or other instrumentality of the Federal Government.

*Preliminary environmental review* means the environmental review described under that term in 40 CFR 8.6.

*Preliminary Environmental Review Memorandum (PERM)* means the documentation supporting the conclusion of the preliminary environmental review that the impact of a proposed activity will be less than minor or transitory on the Antarctic environment.

*Protocol* means the Protocol on Environmental Protection to the Antarctic Treaty, done at Madrid,

October 4, 1991, and all annexes thereto which are in force for the United States.

*This part* means 40 CFR part 8.

#### § 8.4 Preparation of environmental documents, generally.

(a) *Basic information requirements.* In addition to the information required pursuant to other sections of this part, all environmental documents shall contain the following:

- (1) The name, mailing address, and phone number of the operator;
- (2) The anticipated date(s) of departure of each expedition to Antarctica;
- (3) An estimate of the number of persons in each expedition;
- (4) The means of conveyance of expedition(s) to and within Antarctica;
- (5) Estimated length of stay of each expedition in Antarctica;
- (6) Information on proposed landing sites in Antarctica; and
- (7) Information concerning training of staff, supervision of expedition members, and what other measures, if any, that will be taken to avoid or minimize possible environmental impacts.

(b) *Preparation of an environmental document.* Unless an operator determines and documents that a proposed activity will have less than a minor or transitory impact on the Antarctic environment, the operator will prepare an IEE or CEE in accordance with this part. In making the determination what level of environmental documentation is appropriate, the operator should consider, as applicable, whether and to what degree the proposed activity:

- (1) Has the potential to adversely affect the Antarctic environment;
- (2) May adversely affect climate or weather patterns;
- (3) May adversely affect air or water quality;
- (4) May affect atmospheric, terrestrial (including aquatic), glacial, or marine environments;
- (5) May detrimentally affect the distribution, abundance, or productivity of species, or populations of species of fauna and flora;
- (6) May further jeopardize endangered or threatened species or populations of such species;
- (7) May degrade, or pose substantial risk to, areas of biological, scientific, historic, aesthetic, or wilderness significance;
- (8) Has highly uncertain environmental effects, or involves unique or unknown environmental risks; or
- (9) Together with other activities, the effects of any one of which is

individually insignificant, may have at least minor or transitory cumulative environmental effects.

(c) *Type of environmental document.* The type of environmental document required under this part depends upon the nature and intensity of the environmental impacts that could result from the activity under consideration. A PERM must be prepared by the operator to document the conclusion of the operator's preliminary environmental review that the impact of a proposed activity on the Antarctic environment will be less than minor or transitory. (See: 40 CFR 8.6.) An IEE must be prepared by the operator for proposed activities which may have at least (but no more than) a minor or transitory impact on the Antarctic environment. (See: 40 CFR 8.7.) A CEE must be prepared by the operator if an IEE indicates, or if it is otherwise determined, that a proposed activity is likely to have more than a minor or transitory impact on the Antarctic environment (See: 40 CFR 8.8.)

(d) *Incorporation of information and consolidation of environmental documentation* (1) An operator may incorporate material into an environmental document by referring to it in the document when the effect will be to reduce paperwork without impeding the review of the environmental document by EPA and other Federal agencies. The incorporated material shall be cited and its content briefly described. No material may be incorporated by referring to it in the document unless it is reasonably available to the EPA.

(2) Provided that environmental documentation complies with all applicable provisions of Annex I to the Protocol and this part and is appropriate in light of the specific circumstances of the operator's proposed expedition or expeditions, an operator may include more than one proposed expedition within one environmental document and one environmental document may also be used to address expeditions being carried out by more than one operator provided that the environmental document indicates the names of each operator for which the environmental documentation is being submitted pursuant to obligations under this part.

#### § 8.5 Submission of environmental documents.

(a) An operator shall submit environmental documentation to the EPA for review. The EPA, in consultation with other interested federal agencies, will carry out a review to determine if the submitted

environmental documentation meets the requirements of Article 8 and Annex I of the Protocol and the provisions of this part. The EPA will provide its comments, if any, on the environmental documentation to the operator and will consult with the operator regarding any suggested revisions. If EPA has no comments, or if the documentation is satisfactorily revised in response to EPA's comments, and the operator does not receive a notice from EPA that the environmental documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of this part, the operator will have no further obligations pursuant to the applicable requirements of this part provided that any appropriate measures, which may include monitoring, are put in place to assess and verify the impact of the activity. Alternatively, following final response from the operator, the EPA, in consultation with other federal agencies and with the concurrence of the National Science Foundation, will inform the operator that EPA finds that the environmental documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of this part. If the operator then proceeds with the expedition without fulfilling the requirements of this part, the operator is subject to enforcement proceedings pursuant to sections 7, 8, and 9 of the Antarctic Conservation Act, as amended by the Act; 16 U.S.C. 2407, 2408, 2409, and 45 CFR Part 672.

(b) The EPA may waive or modify deadlines pursuant to this part where EPA determines an operator is acting in good faith and that circumstances outside the control of the operator created delays, provided that the environmental documentation fully meets deadlines under the Protocol.

#### § 8.6 Preliminary environmental review.

(a) Unless an operator has determined to prepare an IEE or CEE, the operator shall conduct a preliminary environmental review that assesses the potential direct and reasonably foreseeable indirect impacts on the Antarctic environment of the proposed expedition. A Preliminary Environmental Review Memorandum (PERM) shall contain sufficient detail to assess whether the proposed activity may have less than a minor or transitory impact, and shall be submitted to the EPA for review no less than 180 days before the proposed departure of the expedition. The EPA, in consultation with other interested federal agencies, will review the PERM to determine if it is sufficient to demonstrate that the activity will have less than a minor or

transitory impact or whether additional environmental documentation, i.e., an IEE or CEE, is required to meet the obligations of Article 8 and Annex I of the Protocol. The EPA will provide its comments to the operator within fifteen (15) days of receipt of the PERM, and the operator shall have seventy-five (75) days to prepare a revised PERM or an IEE, if necessary. Following the final response from the operator, EPA may make a finding that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of this part. This finding will be made with the concurrence of the National Science Foundation. If EPA does not provide such notice within thirty (30) days, the operator will be deemed to have met the requirements of this part provided that any required procedures, which may include appropriate monitoring, are put in place to assess and verify the impact of the activity.

(b) If EPA recommends an IEE and one is prepared and submitted within the seventy-five (75) day response period, it will be reviewed under the time frames set out for an IEE in 40 CFR 8.7. If EPA recommends a CEE and one is prepared, it will be reviewed under the time frames set out for a CEE in 40 CFR 8.8.

#### § 8.7 Initial environmental evaluation.

(a) *Submission of IEE to the EPA.* Unless a PERM has been submitted pursuant to 40 CFR 8.6 which meets the environmental documentation requirements under Article 8 and Annex I to the Protocol and the provisions of this part or a CEE is being prepared, an IEE shall be submitted by the operator to the EPA no fewer than ninety (90) days before the proposed departure of the expedition.

(b) *Contents.* An IEE shall contain sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact on the Antarctic environment and shall include the following information:

(1) A description of the proposed activity, including its purpose, location, duration, and intensity; and  
(2) Consideration of alternatives to the proposed activity and any impacts that the proposed activity may have on the Antarctic environment, including consideration of cumulative impacts in light of existing and known proposed activities.

(c) *Further environmental review.* (1) The EPA, in consultation with other interested federal agencies, will review an IEE to determine whether the IEE meets the requirements under Annex I to the Protocol and the provisions of

this part. The EPA will provide its comments to the operator within thirty (30) days of receipt of the IEE, and the operator will have forty-five (45) days to prepare a revised IEE, if necessary. Following the final response from the operator, EPA may make a finding that the documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of this part. This finding will be made with the concurrence of the National Science Foundation. If such a notice is required, EPA will provide it within fifteen (15) days of receiving the final IEE from the operator or, if the operator does not provide a final IEE, within sixty (60) days following EPA's comments on the original IEE. If EPA does not provide notice within these time limits, the operator will be deemed to have met the requirements of this part provided that any required procedures, which may include appropriate monitoring, are put in place to assess and verify the impact of the activity.

(2) If a CEE is required, the operator must adhere to the time limits applicable to such documentation. (See: 40 CFR 8.8.) In this event EPA, at the operator's request, will consult with the operator regarding possible changes in the proposed activity which would allow preparation of an IEE.

#### § 8.8 Comprehensive environmental evaluation.

(a) *Preparation of a CEE.* Unless a PERM or an IEE has been submitted and determined to meet the environmental documentation requirements of this part, the operator shall prepare a CEE. A CEE shall contain sufficient information to enable informed consideration of the reasonably foreseeable potential environmental effects of a proposed activity and possible alternatives to that proposed activity. A CEE shall include the following:

(1) A description of the proposed activity, including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives;

(2) A description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity;

(3) A description of the methods and data used to forecast the impacts of the proposed activity;

(4) Estimation of the nature, extent, duration and intensity of the likely direct impacts of the proposed activity;

(5) A consideration of possible indirect or second order impacts from the proposed activity;

(6) A consideration of cumulative impacts of the proposed activity in light of existing activities and other known planned activities;

(7) Identification of measures, including monitoring programs, that could be taken to minimize or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents;

(8) Identification of unavoidable impacts of the proposed activity;

(9) Consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;

(10) An identification of gaps in knowledge and uncertainties encountered in compiling the information required under this section;

(11) A non-technical summary of the information provided under this section; and

(12) The name and address of the person or organization which prepared the CEE and the address to which comments thereon should be directed.

(b) *Submission of Draft CEE to the EPA and Circulation to Other Parties.*

(1) For the 1998-1999 season, any operator who plans a nongovernmental expedition which would require a CEE must submit a draft of the CEE by December 1, 1997. Within fifteen (15) days of receipt of the draft CEE, EPA will: send it to the Department of State which will circulate it to all Parties to the Protocol and forward it to the Committee for Environmental Protection established by the Protocol, and publish notice of receipt of the CEE and request for comments on the CEE in the **Federal Register**, and will provide copies to any person upon request. The EPA will accept public comments on the CEE for a period of ninety (90) days following notice in the **Federal Register**. The EPA, in consultation with other interested federal agencies, will evaluate the CEE to determine if the CEE meets the requirements under Article 8 and Annex I to the Protocol and the provisions of this part and will transmit its comments to the operator within 120 days following publication in the **Federal Register** of the notice of availability of the CEE.

(2) The operator shall send a final CEE to EPA at least seventy-five (75) days before commencement of the proposed activity in the Antarctic Treaty area. The CEE must include (or summarize) any comments on the draft CEE received

from EPA, the public, and the Parties, including comments offered at the XXII Antarctic Treaty Consultative Meeting in 1998. Following the final response from the operator, the EPA will inform the operator if EPA, with the concurrence of the National Science Foundation, makes the finding that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of this part. This notification will occur within fifteen (15) days of submittal of the final CEE by the operator if the final CEE is submitted by the operator within the time limits set out in this section. If no final CEE is submitted or the operator fails to meet these time limits, EPA will provide such notification sixty (60) days prior to departure of the expedition. If EPA does not provide such notice, the operator will be deemed to have met the requirements of this part provided that procedures, which include appropriate monitoring, are put in place to assess and verify the impact of the activity. The EPA will transmit the CEE, along with a notice of any decisions by the operator relating thereto, to the Department of State which shall circulate it to all Parties no later than sixty (60) days before commencement of the proposed activity in the Antarctic Treaty area. The EPA will also publish a notice of availability of the final CEE in the **Federal Register**.

(3) No final decision shall be taken to proceed with any activity for which a CEE is prepared unless there has been an opportunity for consideration of the draft CEE by the Antarctic Treaty Consultative Meeting on the advice of the Committee for Environmental Protection, provided that no expedition need be delayed through the operation of paragraph 5 of Article 3 to Annex I of the Protocol for longer than 15 months from the date of circulation of the draft CEE.

(c) *Decisions based on CEE.* The decision to proceed, based on environmental documentation that meets the requirements under Article 8 and Annex I to the Protocol and the provisions of this part, rests with the operator. Any decision by an operator on whether to proceed with or modify a proposed activity for which a CEE was required shall be based on the CEE and other relevant considerations.

#### **§ 8.9 Measures to assess and verify environmental impacts.**

(a) The operator shall conduct appropriate monitoring of key environmental indicators as proposed in the CEE to assess and verify the potential environmental impacts of

activities which are the subject of a CEE. The operator may also need to carry out monitoring in order to assess and verify the impact of an activity for which an IEE has been prepared.

(b) All proposed activities for which an IEE or CEE has been prepared shall include procedures designed to provide a regular and verifiable record of the impacts of these activities, in order, *inter alia*, to:

(1) Enable assessments to be made of the extent to which such impacts are consistent with the Protocol; and

(2) Provide information useful for minimizing and mitigating those impacts, and, where appropriate, information on the need for suspension, cancellation, or modification of the activity.

#### **§ 8.10 Cases of emergency.**

This part shall not apply to activities taken in cases of emergency relating to the safety of human life or of ships, aircraft, equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in this part. Notice of any such activities which would have otherwise required the preparation of a CEE shall be provided within fifteen (15) days to the Department of State, as provided below, for circulation to all Parties to the Protocol and to the Committee on Environmental Protection, and a full explanation of the activities carried out shall be provided within forty-five (45) days of those activities. Notification shall be provided to: The Director, The Office of Oceans Affairs, OES/OA, Room 5805, Department of State, 2201 C Street, NW, Washington, DC 20520-7818.

#### **§ 8.11 Prohibited acts, enforcement and penalties.**

(a) It shall be unlawful for any operator to violate this part.

(b) An operator who violates any of this part is subject to enforcement, which may include civil and criminal enforcement proceedings, and penalties, pursuant to sections 7, 8, and 9 of the Antarctic Conservation Act, as amended by the Act; 16 U.S.C. 2407, 2408, 2409, and 45 CFR part 672.

#### **§ 8.12 Coordination of reviews from other Parties.**

(a) Upon receipt of a draft CEE from another Party, the Department of State shall publish notice in the **Federal Register** and shall circulate a copy of the CEE to all interested federal agencies. The Department of State shall coordinate responses from federal

agencies to the CEE and shall transmit the coordinated response to the Party which has circulated the CEE. The Department of State shall make a copy of the CEE available upon request to the public.

(b) Upon receipt of the annual list of IEEs from another Party prepared in accordance with Article 2 of Annex I and any decisions taken in consequence thereof, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy of the list of IEEs prepared in accordance with Article 2 and any

decisions taken in consequence thereof available upon request to the public.

(c) Upon receipt of a description of appropriate national procedures for environmental impact statements from another Party, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy of these descriptions available upon request to the public.

(d) Upon receipt from another Party of significant information obtained, and any action taken in consequence therefrom from procedures put in place

with regard to monitoring pursuant to Articles 2(2) and 5 of Annex I to the Protocol, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy of this information available upon request to the public.

(e) Upon receipt from another Party of a final CEE, the Department of State shall circulate a copy to all interested federal agencies. The Department of State shall make a copy available upon request to the public.

[FR Doc. 97-11075 Filed 4-29-97; 8:45 am]  
BILLING CODE 6560-50-P

*Appendix 20: Scoping Comments Received  
by EPA*

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**Appendix 20**  
**Scoping Comments Received By EPA**

| <b><u>Scoping Meeting #1</u></b>                                      | <b><u>Page</u></b> |
|---|--------------------|
| 1) Darrel Schoeling, IAATO – August 22,1997                           | Appendix 20-2      |
| 2) John Splettstoesser, IAATO Spokesperson – July 7,1997              | Appendix 20-5      |
| 3) Denise Landau, Quark Expeditions – July 16,1997                    | Appendix 20-7      |
| 4) Victoria Underwood, Explorer Shipping Corporation – July 8,1997    | Appendix 20-9      |
| 5) Beth Clark, The Antarctica Project – Undated, emailed July 30,1997 | Appendix 20-11     |
| 6) Two Articles Submitted by Gerald Schatz, Citizen – July 8,1997     | Appendix 20-15     |
| 7) National Science Foundation – May 29,1997                          | Appendix 20-16     |

| <b><u>Scoping Meeting #2</u></b>                        | <b><u>Page</u></b> |
|---|--------------------|
| 1) Darrel Schoeling, IAATO – July 30,1998               | Appendix 20-18     |
| Statements attached:                                    |                    |
| Darrel Schoeling – July 18,1998                         | Appendix 20-19     |
| Denise Landau – July 18,1998                            | Appendix 20-20     |
| Victoria Underwood – July 14,1998                       | Appendix 20-22     |
| Naomi Morse – July 14,1998                              | Appendix 20-25     |
| Tom Ritchie – July 14,1998                              | Appendix 20-26     |
| 2) Beth Clark, The Antarctica Project – August 14, 1998 | Appendix 20-27     |
| 3) Paul C. Dalrymple, Citizen – July 15,1998            | Appendix 20-29     |





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August 25, 1997  
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**Darrel Schoelling**  
*Executive Secretary*

August 22, 1997

Richard E. Sanderson  
Director  
Office of Federal Activities  
U.S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, DC 20460

**Antarctic Conservation Act DEIS/Scoping Comments**

Dear Mr. Sanderson:

I am writing to provide these preliminary comments on behalf of the International Association of Antarctica Tour Operators (IAATO) in response to the "Notice of Intent to Prepare an Environmental Impact Statement for the Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica", as published in the May 9, 1997 Federal Register (62 Fed. Reg. 25611) (NOI). The Environmental Protection Agency (EPA) is soliciting such comments according to the requirements of the National Environmental Policy Act (NEPA) and its implementing regulations (40 CFR Part 6, Subpart D; 40 CFR Part 1501). Also please find enclosed an annotated copy of the "Environmental Assessment of Proposed Interim Rules for Non-Governmental Activity in Antarctica" (EA), prepared by Science Applications International Corporation (SAIC), where John Spletstoesser has provided comments.

**Timing of Rule**

As previously outlined in the letter by Eldon V.C. Greenberg on June 27, 1997, IAATO is deeply troubled by the procedures utilized to date by EPA to carry out its responsibilities under Section 4A(c) of the Antarctic Conservation Act (the Act). We believe that the novel legal and policy issues arising out of the legal mandate of the Act, and the unusual circumstances of the promulgation of the Interim Final Rule, compel EPA to pay more attention to the timing and scope of the Rule than it has shown to date. We look forward to your full response to the questions posed by Mr. Greenberg's letter, particularly regarding EPA's interpretation of the statutory mandate of the Act and self-imposed sunset clause for the Interim Final Rule.

**Nature of the Regulated Industry**

IAATO is a membership organization founded in 1991 to advocate, promote and practice safe and environmentally responsible private sector travel to the Antarctic. As such, IAATO and its members have gained experience operating under the requirements of the Antarctic Treaty System, including the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol) and implementing legislation. This experience unfortunately was not reflected in the EA, which was intended to fulfill NEPA requirements in connection with promulgation of the Interim Final Rule.

IAATO looks forward to a thorough elaboration and analysis of current national and international requirements and self-imposed good practices by current Antarctic tour operators in the Environmental Impact Statement (EIS) on the Final Rule currently in preparation by SAIC. We find the "no action" alternative (2.2) and analysis of the environmental consequences of the no action alternative (4.1) in the EA to be deeply flawed and incomplete.

Section 4A(c)(1)(A) of the Act calls for EPA to promulgate regulations "to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty." Given the small number of U.S. private operators and record of self-regulation by the Antarctic tour industry, IAATO sees a broad interpretation of this mandate as misguided with potentially serious consequences to the Antarctic environment. An unnecessarily burdensome, prescriptive rule could drive experienced Antarctic tour operators off-shore or out of business and dismantle the current flexible and proven approach to limiting impacts.

IAATO supports the interpretation of "persons required to carry out an Environmental Impact Assessment" set out in Section II.D.1 of the preamble to the Interim Final Rule. This focus on "operators," defined as a person subject to U.S. jurisdiction who "organizes" a nongovernmental expedition to Antarctica, is consistent with the interpretation of Advance Notification by the U.S. Department of State. We strongly believe that EPA has not been given oversight of international tourism to the Antarctic but rather the mandate to promulgate regulations for U.S. organizers only. Moreover, in our judgment, there is no question that the environmental assessment requirements of the Act do not extend to the actions of individual U.S. citizens who simply participate in expeditions.

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EPA has already devoted considerable resources to promulgating regulations which impact a handful of small private businesses representing a fraction of Antarctic tourism. The Interim Final Rule appears at present to impact just six mostly small and experienced companies doing business in the United States, representing 28% of the 103 commercially organized Antarctic expeditions planned in 1997-1998. IAATO asks that EPA take seriously its responsibilities under the Regulatory Flexibility Act, Executive Order 12866, and the Small Business Regulatory Enforcement Fairness Act of 1996 to ensure that the costs of regulation do not outweigh its benefits and to reduce burdens imposed on the regulated industry.

#### **Environmental Assessment: A Procedural Requirement**

IAATO looks forward to providing a transparent analysis of the potential impacts of its activities, which is our understanding of the requirements of the Protocol, Act and Interim Final Rule. In our view, EPA has not been given the mandate to promulgate a rule with substantive consequences, e.g., a rule which could effectively require that certain environmental impacts be avoided. Indeed, such an approach would be wholly inconsistent with the experience of the NEPA process, the intent of the Protocol and, therefore, the mandate of the Act. Nor do we believe that EPA has authority under the Act to pass on the adequacy of environmental documentation prepared by private parties. Rather, EPA's role is limited simply to the promulgation of rules governing environmental assessment. By the same token, contrary to the approach taken in the Interim Final Rule, we submit that EPA lacks authority under the Act, just as it lacks authority under NEPA, to require revision of environmental documentation submitted to the agency.

The further elaboration by EPA in the Final Rule of specific factors to consider in reviewing potential impacts is not warranted. The Interim Final Rule already incorporates the detailed factors contained in Article 2 and Article 3 of Annex I of the Protocol. IAATO takes the position, along with the U.S. Department of State and other agencies, that Article 3 Principles are principles which inform the entire Protocol but which were not intended to create binding legal obligations and should not be treated as such. IAATO is deeply concerned that the inclusion of this item as an issue in the NOI is an effort to turn a procedural requirement into a substantive review of potential impacts.

IAATO is deeply troubled by the ongoing focus by EPA and its contractor, SAIC, on issues that appear to be inconsistent with the substantial body of experience surrounding NEPA, as well as

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the Protocol and Act. While the purpose of the EIS is to elaborate reasonable alternatives, IAATO is puzzled by the attention to questions of substantive review, mitigation, monitoring, certification, required education and training and other issues that clearly do not pertain directly to the environmental assessment process.

IAATO believes that the potential impacts of Antarctic tourism activities can be most effectively managed through aggressive self-regulation, self-certification and guidance provided by the Scientific Committee on Antarctic Research (SCAR), Council of Managers of National Antarctic Programs (COMNAP) and other components of the Antarctic Treaty System. IAATO does not believe the environmental assessment process is intended, in and of itself, as a broad tool for maximum environmental protection. Rather, it is a planning tool that requires disclosure of environmental impacts of activities but does not dictate substantive results.

#### **Streamlining Documentation**

IAATO asks that serious consideration be given to the development of a provision parallel to the provisions of NEPA regulations allowing a categorical exclusion for certain kinds of carefully defined activities. The National Science Foundation has already established a categorical exclusion for a number of governmental activities. In particular, the model of ship-based tourism, accompanied by a thorough educational program and a qualified staff, followed to date by Antarctic tour operators, has been demonstrated in other environmentally sensitive parts of the world (e.g., the Galapagos Islands, Baja California), as well as in Antarctica itself, to have limited impact. Certainly, EPA should explore whether a categorical exclusion should be appropriate for many, if not all, such activities.

Given the international nature of Antarctic tourism and overlapping national jurisdiction, IAATO asks that EPA also give serious consideration to accepting the determination on environmental assessments by other appropriate national authorities. Domestic implementation of the Protocol by other countries includes provision for document reciprocity, thereby significantly streamlining paperwork and the regulatory burden on a small industry. It would serve no practical purpose for U.S. regulations to go beyond what is required by other national authorities. Indeed, such a rule could have serious environmental consequences, putting U.S. operators at a competitive disadvantage and encouraging operators to move their operations offshore.

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IAATO does not see the need to automatically require that operators file an environmental assessment with EPA on an annual basis. In some cases, companies have been operating at the same level of activity aboard the same vessels with the same staff for decades and, arguably, could be considered an existing activity.

IAATO sees no value in asking for a resubmission of documentation annually for these operators. A provision should be made in the Final Rule for a multi-year submission based on a projection of future activities.

The Interim Final Rule includes an additional category of documentation called a Preliminary Environmental Review Memorandum (PERM), which does not differ substantially from the information provided in accordance with paragraph 5 of Article VII of the Treaty and as elaborated in Recommendation XVIII-1 of the Antarctic Treaty System. IAATO sees no need for this category and asks that it be abandoned in the Final Rule. Detailed information on planned activities is already being provided to the State Department, which has the responsibility for distributing the information.

#### **Mitigation and Monitoring**

Annex I of the Protocol does not mandate mitigation nor does the NEPA process require mitigation. The Final Rule should not require mitigation for any activity. As provided in the Interim Final Rule, operators who choose to mitigate their activities will assess and verify the adequacy of proposed voluntary measures. The Interim Final Rule needs no further modification on this subject.

The information required by the Antarctic Treaty System and as incorporated in the Interim Final Rule regarding the scope, frequency and intensity of tourism and other nongovernmental activities in the Antarctic is sufficient to allow for a retrospective analysis of potential impact. IAATO notes that the standard Post Season Report (Final Report of the XXI ATCM, Resolution 3 (1997)) requires more information than reports filed on governmental activities. The standard report will greatly facilitate future work on the potential impact of tourism activities.

The Interim Final Rule needs no further modification in regard to monitoring. SCAR has not yet developed clear guidelines and recommendations on monitoring programs. It is not possible to create any scientifically credible monitoring regime at this time, and such a regime must be created with the advice of scientists familiar with the Antarctic. To mandate any further monitoring now would create an expensive additional

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burden on the tourism industry without any demonstrated scientific value to the results obtained.

#### **Public Comment on Environmental Documentation**

IAATO supports the approach taken in the Interim Final Rule with respect to the public availability of Initial Environmental Evaluations (IEEs), which should be retained without modification. The Protocol does not mandate public comment on IEEs, and provision has already been made in the Interim Final Rule for informal public access to any IEEs received. This seems sufficient and consistent with NEPA practice.

\* \* \*

Please do not hesitate to contact me if you have any questions about these comments or if you would like any additional information. We look forward to working closely with you as the NEPA process proceeds and participating in a second scoping session this fall.

Sincerely,

Darrel Schoeling  
Executive Secretary

Enclosure



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July 7, 1997

Mr. Richard E. Sanderson, Director  
Office of Federal Activities  
U.S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, D.C. 20460

Dear Mr. Sanderson,

I represent the International Association of Antarctica Tour Operators (IAATO) as Spokesperson, since the founding of IAATO in 1991. Prior to that year, I was invited to join a tour ship to Antarctica as a lecturer in 1983, my first time in that capacity, although I have also worked for many summers in Antarctica as a geologist with the U.S. Antarctic Program with grant support from the National Science Foundation.

My work on tour vessels in Antarctica includes some 60 individual cruises since 1983, on a variety of ships and for several different tour operators. As a result, I have experienced a variety of cruise itineraries, operational procedures, and everything else that comes with tourist cruises in Antarctica, including operations prior to the formation of IAATO in 1991. That year is a milestone, because it represents the union of 7, and now 12, full members which are competitive and profit-driven, but nevertheless have pooled their experience and knowledge to conduct environmentally-safe tourism in Antarctica according to self-imposed standards and guidelines (prior to Treaty regulations such as Recommendation XVIII-1) and now within formal guidance procedures. In fact, they have always operated according to environmental guidelines, realizing that Antarctica is a unique part of the world, with vulnerable fauna that can easily be affected by human presence. The fact that there are six countries within the 12 members makes the co-operative aspect even more unique, but it also introduces the potential for imposing different regulations on different operators, which is clearly contrary to the intent of the Protocol.

IAATO's record of environmentally responsible private-sector travel in Antarctica has gained itself a voice in Antarctic Treaty Consultative Meetings since its formation in 1991, advising Treaty Party delegates when requested and assisting in formulating regulations that pertain to tourism.

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Given the above background as it applies to recent events such as the Environmental Protocol and EPA regulations promulgated as a result of ratification of the Protocol, I have some comments about overall content of the Interim Final Rule as it might transfer to the Final Rule. First of all, I understand the reasons for implementing the Rule, given the timing of the XXI ATCM in May 1997, but I have misgivings about putting such a document into effect without benefit of public comment by either the tour industry or other interested parties. Because of the international nature of the tour industry in Antarctica, the operators were given little time with which to formulate a consolidated response, and little time as well to prepare required paperwork for the coming Antarctic season. The latter, in particular, can have disastrous results for an operator in the event that further time is requested by EPA in order for a specific submittal to be approved. In the worst case, a cruise, or cruises, might have to be cancelled, leading to potential loss of long-standing clientele; refunding large sums of money; potential lawsuits; cancellation of ship charters and incurring related extra costs; office costs of re-booking clients, changes in air travel and accommodations; and the list goes on. In other words, the timetable for conducting business in Antarctica is unrealistic for the near future, and can result in extreme economic hardship for one or more of the operators.

On the positive side and as a means to keep things simple, I wholeheartedly agree with the statements in Section VII. **Paperwork Reduction Act**, p. 25544, right column, that "an operator may include more than one proposed expedition within one environmental document and one environmental document may also be used to address expeditions being carried out by more than one operator further reducing burden." Also, "EPA anticipates that operators will make one submittal per year for all of their expeditions for that year." Operators are already engaged in formulating a programmatic EIA for operations in the Antarctic Peninsula, the area most commonly visited. Co-operation, once again, is the key to a viable and effective industry.

Finally, in **Part 8 - Impact Assessment....., §8.5, Submission of environmental documents, (b)**, p. 25545, col. 1, I noted that EPA may waive or modify deadlines if an operator is acting in good faith and that circumstances outside the control of the operator created delays, provided that the environmental documentation fully meets deadlines under the Protocol. I am uncertain about the meaning of the "deadlines under the Protocol" as it applies to waivers, but the concept of waivers should be part of the Final Rule to provide flexibility both for EPA and for the tour operators.

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In summary, the timetable and proposed Rule would pose a hardship on tour operators of an unnecessary economic nature, possibly resulting in them leaving Antarctica or even going out of business. Because the industry is vigilant to opportunities, those voids could be replaced by large companies with big ships, with no or little Antarctic experience, dutifully complying with the Final Rule (or its equivalent for non-U.S. operators), but probably resulting in a greater impact on the Antarctic environment. The strength and continuity of IAATO could be easily eroded as the co-ordinator of tour operations, and possible disintegration of the organization. The repercussion of that outcome, considering the environmentally sound record of IAATO, could lead to serious problems in protecting the Antarctic environment according to terms of the Protocol. As a final comment, I propose a re-examination of the Final Rule in order to avoid regulations that go beyond the intent of the content of the Protocol.

Very truly yours,



John Spieltstoesser  
IAATO Spokesperson



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July 16, 1997

TO: Joe Montgomery  
Katie Biggs  
Environmental Protection Agency  
Number of Pages: 3  
Fax: 202-564-0072  
RE: EPA Scoping Meeting July 8, 1997

FR: Denise Landau

Dear Joe and Katie

Attached is a copy of the comments I made at the Scoping Meeting. Thanks again for your efforts and I look forward to future co-operative efforts with EPA.

Kind regards,

  
Denise Landau

July 8, 1997: EPA Scoping, Arlington, Virginia Comments presented during the afternoon session.

Good Afternoon, My name is Denise Landau I am the Environmental Officer for Quark Expeditions and have had the pleasure of attending meetings and working with Antarctic tourism for over 8 years.

I appreciate the opportunity to speak before you today and your willingness to listen to our concerns.

Quark Expeditions operated 25 trips to Antarctica last year which includes both our sub charters and sub charters we've arranged through other IAATO companies. I have been on IAATO's executive committee for 4 years and have had the fortune of working closely with several of the Antarctic Tour Operators. Over the last several years I am impressed with the earnestness and willingness to operate under good faith by all IAATO members. As a small group of international operators we have always exceeded that which has been legally required of us.

In 1994 Quark and ANI commissioned Poles Apart to write Environmental Audits which were in depth documents assessing our operations and suggesting changes and improvements. Subsequently other companies, Zegrahm and Mountain Travel Sobek in conjunction with Quark Expeditions, Marine Expeditions, Orient Lines, Aurora Expeditions, Southern Heritage Expeditions have also completed various levels of assessments prior to it being a legal requirement.

I would like to briefly discuss the international nature of Antarctic Tourism.

Currently IAATO consists of 23 total companies representing 10 different countries. Out of that 23, 12 are Full members meaning that they operate vessels and or organize expeditions to Antarctica. All but 2 companies are from countries that have ratified the Protocol, although one of those companies constitute 40% of Antarctic Tourism. In addition there are 4 companies applying for IAATO membership, 2 of which have been members of IAATO previously. None of the vessels or air crafts proceeding to Antarctica are US owned or operated. Of the 23 companies 11 have offices in the USA.

Besides the International nature of the tour operators, so are the passengers. I counted the number of passengers for example traveling on Quark Expeditions in 96/97 vessels and during this season, we had a total of 1195 passengers who were non US and 436 passengers/staff who are US citizens.

For further information, refer to 8 years of data collected by the National Science Foundation, Nadene Kennedy and the most recent paper tabled at the Antarctic Treaty Meeting ATCM XX1 Inf paper 90 tabled by the United States.

All tour vessels operating in Antarctica are Russian, Bahamian, Liberian registry. None of the vessels are US registered.

Several of the companies have US offices which ticket passengers but the actual operations take place out of the USA. Therefore it is questionable whether or not the company is US based.

Quark Expeditions in particular works closely with various other countries. For example, our vessel the Kapitan Khlebnikov has operated on the Far Side of Antarctica, Ross Sea, Weddell Sea since 1992. We work closely with the Australian Antarctic program, Antarctica New Zealand, French and Australian Sub Antarctic. For this upcoming season and for this one vessel I have to submit 3 Environmental Impact Assessments (US, France and Australia) for the Antarctic and Sub Antarctic due to their legislative requirements. Last season 1996/97, I submitted a Preliminary Environmental Assessment for Australia and an Initial Environmental Assessment for Sweden. In the future, I would prefer to spend more of my time making sure our vessels, staff, passengers and crew comply with the regulations rather than spending time writing multiple assessments which virtually say the same in order to meet each countries expectations. I urge the EPA maintain their current stance and accept Environmental Assessments approved by other countries if at all possible.

The issue of Sub charters is also interesting and complicated. Quark charters vessels from the Russians, other IAATO companies may subcharter from us (for example Zegrahm and Aurora Expeditions sub charters from Quark. Quark also sub charters vessels from Hapag Lloyd and Marine Expeditions. The question is, where does the responsibility lie? If the regulations in the USA become too onerous than many of the companies which have international offices could possibly move out of the United States. Currently there are inconsistencies because companies operating out of the United States or in countries which have not ratified the protocol do not have the same legal requirements as companies whose countries have not or will never ratify the protocol. Non-Treaty Parties countries or countries who do not ratify will have an economic advantage over US companies. Virtually EPA has created regulations which favor non-US companies.

In the future, I recommend issuing regulations which take into account the International aspects of this business and which clearly defines responsibility by each operator in the Antarctic. Slowing down the Final Rule process is necessary in order to have effective legislation that will protect and encourage US companies to stay and comply with regulations. I can speak on behalf of the IAATO members in saying that we will continue to operate at a level which exceeds legal obligations as we have always historically done.

Thank you for the opportunity to speak to you today.

EPA'S SCOPING MEETING ON THE ENVIRONMENTAL IMPACT  
STATEMENT FOR EPA'S RULE-MAKING ON ENVIRONMENTAL IMPACT  
ASSESSMENT FOR NON-GOVERNMENTAL ACTIVITIES IN ANTARCTICA

08 JULY, 1997

Good afternoon and thank you for allowing me to speak before you today about the environmental impact assessment for non-governmental activities in Antarctica. My name is Victoria Underwood and I am Antarctic Operations Manager, Environmental Officer, Staffing Coordinator and Cruise Director for Abercrombie & Kent and Explorer Shipping Corporation who own and operate the m/s Explorer. The Explorer is a small expedition cruise ship, carrying 96 passengers. She has operated in the Antarctic continuously since 1970 -- longer than many other ships combined. My career in the Antarctic industry dates back to 1986. In 11 years of working in the industry, I have traveled to the Antarctic nearly 40 times, primarily to the Antarctic Peninsula region, but also to the Ross Sea sector. A&K / ESC has been a member of IAATO since 1992, although my involvement with the Antarctic tour industry began in the late-1980's when I co-wrote the original visitor and tour operator guidelines that were in effect prior to ATCM recommendation XVIII-1 which provided guidance for visitors and those organizing and conducting tourism to the Antarctic. Recommendation XVIII-1 took into account, and was modeled upon, the code of conduct created by the tour industry years prior. For the last two years I have also been elected to serve on IAATO's Executive Committee. As an active member of IAATO we fully support the effective implementation of the Protocol on Environmental Protection to the Antarctic Treaty.

The issue I would like to raise today is that of monitoring as the tour industry is greatly concerned about this issue. We appreciate the opportunity to raise this issue in depth at this public forum.

Of great concern to all of the users of the Antarctic -- including scientists, tourists, and others -- is the significant additional workload generated by the provisions of the Protocol in the area of environmental impact assessment. The EIA process appears to be fully integrated into the decision-making process in many countries, although the adoption of environmental impact assessment procedures in Antarctica has been slower in coming. Environmental impact evaluation has been discussed at Antarctic Treaty Consultative Meetings since the early 1970's and various codes of conduct were adopted. In 1991 the Treaty Nationals adopted the Protocol on Environmental Protection to the Antarctic Treaty. The Protocol is an amalgamation of the various environmental recommendations from the ATCM's, the 1964 Agreed Measures for the Conservation of Antarctic Flora and Fauna, and concepts developed under the Treaty framework, for instance, wording adapted from CRAMRA. As we are all aware, the Environmental Assessment procedures apply to any activity undertaken in the Antarctic Treaty area, including tourism. The obligation to carry out EIA's is set out in Article 8 of the Protocol, and the procedures in Annex I further develop the guidelines for Environmental Impact Assessment. We

haven't yet developed a body of practice in the Antarctic for what terms mean, for example, "minor or transitory."

The Protocol includes a general statement of environmental principles to guide planning, including a call for regular and effective monitoring. Annex I of the Protocol, on Environmental Impact Assessment, clarifies the distinction between assessments. Monitoring may be necessary for an Initial Environmental Evaluation. On the contrary it is clearly required for a Comprehensive Environmental Evaluation.

When considering any measures to assess and verify impacts there is a need for a realistic consideration of any limitations and difficulties that might be inherent. The Antarctic is unique. Not only is it difficult to determine base-line information, but it is next to impossible to identify activities other than your own which might have an unknown adverse impact.

Questions that may apply when considering a monitoring regime include:

- \* What are the cause and the effects of the impacts from an activity?
- \* What are the spatial and temporal extent of the impact?
- \* What is the intensity or significance of the impact?
- \* Is the activity being monitored to assess the impact? If so, what is being monitored, how and for how long will it continue?
- \* Are there baseline data against which to judge the impact? If not, can such information be obtained before the activity commences?

These are difficult questions to contend with and to date have not been answered.

As Antarctic tour ships are only operating in the Antarctic for 3 to 4 months each year, it is extremely difficult to access areas and obtain consistent data on a year-round basis. This is a reality that must be taken into consideration when considering monitoring regimes. Not only is it difficult to obtain crucial information on a dependable basis, but it is next to impossible to determine whether any changes detected are due to human impact from the tourism industry or attributable to natural variability or other human activity.

Until scientists familiar with the Antarctic environment have had an opportunity to conduct long-range studies looking at this particular issue that can create a scientifically based standard monitoring regime, we do not believe that it is appropriate for EPA to require details beyond that which is specified in section 8.4 of the Interim Rule, including contact information for the operator; the anticipated dates of departure; the estimated numbers involved; the means of conveyance; estimated length of stay; information on proposed landing sites and information concerning training of staff, supervision of



expedition members, and other measures, if any, that will be taken to avoid or minimize potential environmental impacts.

Tour operators have been supplying detailed information in a consistent fashion that enables researchers to do a retrospective analysis of impact and help to get at the different questions of cumulative impact. The tour operators have been working closely with the National Program Managers and hope that any regulations EPA puts into effect doesn't jeopardize any voluntary initiatives.

Thank you for the opportunity to speak before you today.



## ANTARCTIC AND SOUTHERN OCEAN COALITION

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### US ASOC Members:

- American Cetacean Society
- American Littoral Society
- Animal Welfare Institute
- The Antarctica Project
- The Atmosphere Alliance
- Cetacean Society International
- Defenders of Wildlife
- Earth Island Institute
- EarthKind
- Friends of the Earth - USA
- Friends of Whales
- Greenpeace - USA
- The Humane Society of the United States
- International Fund for Animal Welfare
- Monitor Consortium
- Monitor International
- National Audubon Society
- National Parks and Conservation Association
- National Wildlife Federation
- Natural Resources Defense Council
- Ocean Alliance
- Sierra Club
- Sierra Club Legal Defense Fund
- The Wilderness Society
- World Society for Protection of Animals
- World Wildlife Fund - USA

### ISSUES TO BE ADDRESSED IN THE FINAL RULE FOR EIA OF NONGOVERNMENTAL ACTIVITIES IN ANTARCTICA, PROMULGATED UNDER P.L. 104-227, THE ANTARCTIC SCIENCE, TOURISM, AND CONSERVATION ACT OF 1996

The Antarctica Project, Greenpeace, Sierra Club, and World Wildlife Fund, on behalf of the Antarctic and Southern Ocean Coalition, welcomes the opportunity to provide comments on issues to be addressed in the EIS for the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica.

The Protocol on Environmental Protection to the Antarctic Treaty represents a significant shift within the Antarctic Treaty System away from seeing Antarctica as a resource to be plundered and towards its preservation in its pristine state. The Protocol designates Antarctica as a "natural reserve, devoted to peace and science," and sets strict standards for the conduct of all activities in Antarctica. The Protocol is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. The EIA process is designed to ensure that the spirit of the Protocol is considered by identifying possible environmental impacts and mitigation methods. To ensure that the EIA process for tourism and non-governmental activities faithfully implements the Protocol, the following issues must be considered in promulgation of the Final Rule:

1. **Article 3: Compliance with the Environmental Principles of Article 3** must be demonstrated in EIA, and should be incorporated into the Final Rule as a requirement.

The heart of the Protocol is Article 3. It articulates a series of environmental principles, which "shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area." The Article requires that activities take place in a manner consistent with these principles. The principles are expected to guide and shape environmental planning and decision-making for all activities in Antarctica, regardless of whether or not they are covered explicitly by the Annexes. ASOC has always held that these principles are an integral and legally-binding element of the Protocol, and should constitute a binding set of obligations for the conduct of all activities, and must be taken into account in implementing the Protocol.

In particular, Article 3 states that "the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, shall be fundamental considerations in the planning and conduct of all

activities in the Antarctic Treaty area. To this end activities shall be planned and conducted so as to limit adverse impacts on the Antarctic environment... [including] degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance."

Further, Article 3 requires activities to be "planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment," taking full account of the cumulative impacts of the activity, whether the activity will detrimentally affect any other activity in the area, whether technology and procedures are available to provide for environmentally safe operations, whether monitoring can be put in place to provide early detection of potential impact, and whether there exists the capacity to respond promptly to accidents. If there is insufficient information upon which to make an informed judgment about a proposed activity, ASOC believes that the precautionary principle must apply.

Finally, Article 3 requires that activities be modified, suspended or cancelled if they result or threaten to result in impacts upon the environment or associated ecosystems inconsistent with Article 3.

The incorporation of the Article 3 principles into the review criteria will allow an understanding of the extent to which the activity will conform with Article 3.

2. **Procedural vs. Substantive regulation:** The Final Rule should provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity. Since the Protocol and its Annexes list prohibited activities, and environmental impacts that are to be avoided, in most cases preventing an activity from proceeding should not be an issue. However, there may be occasion when a permitted activity threatens to result in unacceptable impact, and there must be flexibility to require the modification, suspension or cancellation of the activity.

The purpose of EIA is to identify and mitigate as far as possible environmental impacts. This is backed up by a reading of Protocol Article 3, paragraph 2, which states that activities should be planned and conducted to LIMIT adverse impacts, the first paragraph of that Article states "the protection of the Antarctic environment...shall be fundamental considerations in the planning and conduct of all activities..." and paragraph 4 states that "activities...shall take place in a manner CONSISTENT WITH THE PRINCIPLES in this Article; and be modified, suspended or cancelled if they result or threaten to result in impacts upon the Antarctic environment."

The Protocol is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. Further, the EIA process is designed to ensure that the spirit of the Protocol is considered.

The Protocol's EIA procedures are based on our NEPA procedures. However, whereas domestic caselaw indicates that NEPA is procedural, in the sense that it does not impose

(by itself) substantive environmental requirements, the Protocol is both procedural and substantive. It is substantive in two ways: (1) by explicitly prohibiting certain activities and requiring permits for others, and (2) by providing in Article 3 basic principles to guide environmental planning. In addition, the NEPA process is "intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore and enhance the environment" (NEPA Regulations, CEO, July 1, 1986, p. 3). Accordingly, "the primary purpose of an EIS is to...insure that the policies and goals defined in the Act [i.e., to protect, restore and enhance the environment] are infused into the ongoing programs and actions of the Federal Government (p. 10)." Therefore, implementation of NEPA is supposed to ensure that, when activities are undertaken, its (NEPA's) intent to protect the environment is upheld.

There is international precedent for basing modification, suspension or cancellation of an activity on the conclusions of EIA. Cf the implementing legislation of Australia (s. 12N)2, and Norway (s. 12). The Netherlands (s. 19 & 20), Sweden (s. 19 & 20) and UK (Regulations s.10(4)(d)) have a similar requirement; however, a permit is also required for all Antarctic activities. In some countries which require a permit for all Antarctic activities, issuance of a permit is dependant on the conclusions of EIA (e.g., Germany, Finland).

**3. Definition of Operator:** The current draft Final Rule applies only to "nongovernmental expeditions to and within Antarctica organized in or proceeding from" the United States. s 8.2(b). An "operator" is defined as "any person or persons organizing a nongovernmental expedition to or within Antarctica." s 8.3(11). It has been suggested that the Final Rule should be applied only to tour operators incorporated in the United States.

Such an interpretation would be directly contrary to the language of the Antarctic Science, Tourism, and Conservation Act of 1996 (ASTCA). Congress specifically directed that it was unlawful for "any person who organizes, sponsors, operates or promotes a non-governmental expedition to Antarctica, and who does business in the United States" to fail to take steps to ensure compliance with the Protocol. ASTCA, s 4(a)(6). At a minimum, this means that the EIA provisions of section 4a of the Act should be applied to nongovernmental expeditions which, even though based outside of the United States, advertize and promote participation by U.S. citizens, accept booking here, and otherwise "do business in the United States."

"Doing business in the United States" is a legal term-of-art used elsewhere in the U.S. code. See, e.g., 8 USC 1375(e)(1)(A) (mail order brides); 15 USC 16a (antitrust laws); 26 USC 842 & 4371 (taxation of foreign insurance premiums); 31 USC 5314(a) (reporting foreign financial transactions). Courts have construed this language to mean that if a person or entity is doing business in the United States to justify the exercise of personal jurisdiction, then it is covered. A number of courts have held that continuous and systematic advertizing and promotion of foreign tours and cruises, as well as the acceptance of booking through U.S. travel agents, constitutes "doing business in the United States."

This interpretation is the only permissible one allowed by Congress in the ASTCA. Indeed, the draft Final rule seems to acknowledge this when it defines "person" as any individual or entity "subject to the jurisdiction of the United States." See s 8.3(12).

Any other interpretation would open a cavernous loophole in the application of the Final Rule. An entity, despite doing substantial business in the U.S. (and recall that at least one-third of all Antarctic tourists are Americans), could avoid regulation simply by incorporating elsewhere, perhaps even in a non-ATCP country. If this occurred, it would be impossible to enforce the explicit provisions of section 4(a)(6) of the ASTCA.

In such a case, the only alternative would be to require every U.S. citizen to acquire a permit before travelling to the Antarctic, and thus certifying directly that the provisions of section 4(a)(6) have been satisfied. ASOC asserts that EPA has the authority, like the National Park Service, to regulate entry by any U.S. citizen into Antarctica to ensure compliance with the Protocol's EIA provisions (see *National Park Service Organic Act, 16 U.S.C. 1 et seq* (1988) which states the purpose of the National Park Service is to conserve national parks [and etc.] "...by such means as will leave them unimpaired for the enjoyment of future generations."; *Wilderness Act of 1964, 16 U.S.C. 1131 et seq* (1988) which states that Wilderness Areas are to be administered "...in such manner as will leave them unimpaired for future use and enjoyment as wilderness, so as to provide for the...preservation of their wilderness character...")

There is also some international precedent for this in view of the Swedish legislation that became effective on April 1, 1994. This law required all Swedish tourists to have permits (see section 16). Indeed, every such permit application by every tourist was required to contain an environmental impact assessment (section 18(1)). Germany and Finland have similar permit requirements.

This alternative would be unnecessary if the Final Rule were applied to all tour operators who did substantial business in the United States. The regulations could provide a threshold for such a status, perhaps if (in any one year) U.S. citizens constituted a quarter or more of the participants for a particular tour.

**4. Notice and reporting:** Protocol Annex I Article 2 requires that an IEE or CEE contain sufficient detail to assess whether a proposed activity could have an impact. Notification should include, at a minimum, details on passenger numbers, vessel type, all locations and sites to be visited and planned dates of visits. It is necessary to include as much detail as possible about an expedition for the following reasons: it is only in the details that outright violations of the Protocol would be disclosed and potential impacts can get teased out, and alternative actions or mitigation proposed, it is the only way to allow consideration of cumulative impacts, and it provides a record of activity which can be used in the future to determine possible causes of (e.g., environmental, biological) change. The point of EIA is to identify potential impact, predict their likelihood and magnitude, identify alternative actions and mitigation measures, and ultimately to make an informed decision about whether and how to proceed. Although this may be arduous at first, it will become simpler and routine as experience is gained.

**5. Environmental thresholds and impact characterization, mitigation and monitoring:** Impact thresholds need to be decided on a case by case basis (at least until a body of knowledge is built up). Disclosing all possible impacts/risks is the only way to determine if an activity needs to be altered, or if a potential impact can be mitigated. The Protocol requires that monitoring be put in place to assess and verify impacts, regardless of impact threshold, and to assess the success of mitigative measures.

Thus, the Final Rule should include a requirement to identify mitigation measures, as required by Protocol Annex I, Article 3(2)(g) which requires that a CEE include "identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity...". Mitigation measures could include: control areas and "no-go" areas (e.g., prohibition of visits to colonies during sensitive times in the breeding cycle); limits on group size per expedition leader and on the number of groups at a site at a single time; limits on total number of visits to a site in a single day; avoiding having more than one ship at a site at one time; prohibition of visits to new sites; and education of expedition leaders, passengers and staff.

The Final Rule should also require identification and, as appropriate, implementation, of monitoring programs, as required by Protocol Article 3(d), and Annex I Article 2(2), Article 3(2)(g) and Article 5.

Monitoring to allow assessment of impacts, verify predicted impacts and to facilitate early detection of unforeseen effects of activities both within and outside of Antarctica is required by the Protocol and should be required in the Final Rule. With respect to appropriate monitoring regimes: the Treaty Parties are working to identify monitoring approaches that can best support the Protocol's implementation. At present, the Interim Rule requires that operators report on their present and future activities as well as provide a description of mitigative actions undertaken. Given that there is no monitoring protocol in place within the ATS, we agree that the Final Rule should continue the requirements of the Interim Rule with the proviso that once additional information becomes available, it can be incorporated into the Final Rule.

**6. Timing and distribution of documents:** EIA needs to be done sufficiently ahead of a planned expedition to allow for agency and public comment. The Protocol requires circulation of CEEs to Parties and the CEP 120 days prior to an ATCM, at which meeting it may be discussed. Although the Protocol does not require the circulation of IEEs, if the goal is to produce the best possible document, there is utility in having it reviewed widely. Given the years of experience of most Antarctic tour operators, it is reasonable to expect that they can make assumptions based on past experience concerning passenger numbers, vessels, sites, timing of visits. If the EIA is based on the broadest assumptions--e.g., maximum possible passengers, probable timing of visits, and lists all potential sites, then deviations in actual itineraries would be covered without too much difficulty.

**7. Enforcement and penalties:** Penalties are appropriate only where there is the intent to violate the regulations, especially if an operator has a history of infractions. The most important aspect at present is that an operator complies with the EIA

procedures, attempts to identify possible impacts, and puts in place mitigation and response actions. If an accident occurs despite this planning, the operator should have the capacity to respond (mitigation measures, insurance), but should not necessarily be penalized.

**8. Parity vs. non-parity regarding international regulations:** Although there is the concern that if the US regulations are too strict or burdensome the tour operators will move their business to a country that is less strict or has no regulations, this is not a reason to legislate weak requirements. (In fact, cf. implementing legislation and regulations of Australia and New Zealand, which require authorization of activities before they may proceed; s. 12F, J, L and N(3), and s. 10(3) and 12(3) respectively, and of UK which requires a permit for British expeditions to Antarctica; a British expedition includes all expeditions which depart from British territory; s. 3(3) and which requires a permit for activities requiring completion of a CEE; Regulations s.6(6).) We believe that the best way to ensure that this does not happen is to ensure that US citizens are regulated even if the operators are not (cf 3. above).

**9. Simple vs. cumulative impacts/scientific knowledge:** At present, the understanding of cumulative impacts is minimal both inside and outside the Antarctic Treaty System. Nations are beginning to design programs which will give a better understanding of what cumulative impacts mean in terms of environmental management in the Antarctic. IUCN's workshop on Cumulative Impacts in the Antarctic produced recommendations that should help Antarctic operators include consideration of cumulative impacts in their EIAs. For the present, operators should attempt to assess cumulative impacts as far as they are able. As the body of knowledge grows, this additional information should be included in EIAs. This holds as well for other areas of impact assessment where understanding of impacts is minimal, especially as there is not much baseline data with which to compare present states.

**10. Heuristic vs. deterministic evaluation criteria and assessment methods:** Impacts must be assessed on a case by case or site by site basis. For all potential impacts, the key factors usually are where the site (rookery etc) is located, who the visitors are and how they are behaving, the environmental conditions, biological conditions (chicks/eggs present), and if there are or recently were other activities taking place at or near the site. The determination of an impact threshold (e.g., the "acceptable" number of annual visitors to a rookery), must be based on rigorous research, which is subjected to broad scientific review up to the standard of peer-reviewed scientific journals. Until such determination is made, the precautionary principle must apply, i.e., visitation should not be increased unless and until there is sufficient information to determine acceptable visitation levels. Impact thresholds should be regularly reviewed as new information becomes available.

**11. Streamlining documentation:** We are supportive of minimizing the paperwork burden on tour operators; however, we believe it would be risky to automatically assume that satisfactory completion of EIA for another country would be sufficient to meet the EIA requirements of this Rule. Thus, operators should be encouraged to provide copies of EIA submissions made to other governments (with translations, if need be) and

incorporate them by reference. But completion of these documents should not prejudice consideration by EPA. In addition, ASOC supports the undertaking of a "programmatic EIA" to be conducted for similar activities within a specified region. This will decrease the paperwork burden and, more importantly, will allow an assessment of cumulative impacts. In order to be truly useful, this "programmatic EIA" must take account of all other activities occurring in the area.

**12. The role of the private sector risk distribution mechanisms:** We believe that commercial instruments such as insurance and performance bonding are useful in implementing the Final Rule. These would require operators to demonstrate compliance with Protocol standards (eg vessel standards) in order to obtain insurance. Performance bonds could work the same way to ensure that expedition procedures are designed to minimize risk to the environment, and stipulated mitigation measures are carried out. Another method for minimizing risk/impact which we would support is requiring certification of expedition leaders, as this would better ensure an awareness and implementation of ATS and Protocol obligations.

**13. Transparency:** Broad public review of all IEEs and CEEs is very important as it is the only way to begin to build a body of common knowledge, and to ensure a quality document. Availability of IEEs should be advertised in the Federal Register and/or on EPA's Web site, and the public should have a minimum of 30 days to provide comments.

**14. Change in an activity:** The Protocol Article 8 requires that the EIA procedures apply to any change in an activity, whether the change arises from an increase or decrease in the intensity of the activity, from the addition of an activity, the decommissioning of a facility, etc. Thus, if there is a significant increase or decrease in the number of tourists planning on traveling to the Antarctic, a new EIA must be prepared. The tour operators are predicting a doubling in the number of tourists within five years. If this holds true, a case could be made that a CEE would be the appropriate level of impact assessment for this period. With respect to the proposed "programmatic EIA" for ship-borne Antarctic Peninsula activities of IAATO members, if this assessment is conducted for multiple years, it would need to be reviewed annually and modified if activities significantly increase or decrease.

**15. Application of Annex I:** Because paragraph 1 of Annex I refers to assessing the environmental impacts of "proposed" activities, there is the implication that EIA is not needed for existing activities (e.g., established bases, structures, runways, etc.) unless the level of activity changes. However, this "exemption" should not be construed to cover "ongoing" activities (e.g., tourism, scientific research projects), which, although they occur annually, are not continuous and are modified annually.

**16. Decision to proceed:** The scientific or other benefits of an activity must be weighed against the possible environmental impacts when deciding whether or not to proceed with the activity. If it is ultimately decided that despite an impact, the activity outweighs the environmental impact, this must be documented. This way there is the assurance that the decision to proceed was deliberative not capricious.

## Conclusion

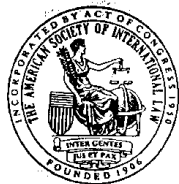
The Antarctic Environmental Protocol is a landmark agreement designed to provide comprehensive protection of the world's last great wilderness. Faithful implementation of the Protocol will ensure that the values of Antarctica, as envisioned by the original signers of the Antarctic Treaty, will be strengthened and preserved. Therefore, regulations designed to implement the Protocol's provisions must ensure that the spirit as well as the substance of the Protocol are realized in the conduct of all activities. To achieve this the Final Rule for EIA for nongovernmental activities should:

1. require compliance with the Environmental Principles of Article 3;
2. provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity;
3. require the identification and mitigation of possible environmental impacts;
4. apply equally to and reach all U.S. citizens;
5. apply to all tour operators which do business in the U.S.;
6. require sufficient detail within EIA to allow informed judgments about proposed activities;
7. require identification and implementation of monitoring programs;
8. allow for a transparent process by facilitating broad public review of all IEEs and CEEs;
9. require the identification and impact assessment of alternative actions, including the alternative of not proceeding;
10. require the identification of all potential impacts, and their probability of occurring;
11. allow for flexibility to require the incorporation of new information (e.g., on cumulative impact assessment, monitoring programs) as it becomes available;
12. require documentation which explains why the least impacting alternative is not the preferred alternative; and
13. give preference to the precautionary principle when there is insufficient information upon which to make a sound judgment about a proposed activity.

prepared by  
Beth Clark, Director  
The Antarctica Project

## DOCUMENT HIGHLIGHTS:

Antarctic Treaty Measures  
Arab League Summit Communiqué  
Canada-U.S. Softwood Lumber Agreement  
European Convention on Insolvency  
Proceedings  
Financial Action Task Force  
Recommendations on Money Laundering  
OAS Inter-American Juridical Committee  
Opinion Examining U.S. Helms-Burton Act  
Pan American Federation Law on Production  
Sharing Agreements  
U.S. Iran and Libya Sanctions Act



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# International Legal Materials

**ASIL** 

NEWSLETTER

ASIL INTEREST GROUP ON  
ANTARCTICA

NOVEMBER 1995

### MESSAGE FROM THE CHAIR

The ASIL Interest Group on Antarctica encourages studies of the implementation of the Protocol on Environmental Protection.

The Conclusion of the Madrid Protocol on Environmental Protection marks the start of a new phase in the joint management of Antarctica. Not only does it bring together strands of regulation that have been developing separately over the years, the Protocol and its annexes incorporate several innovative features.

How and to what extent the Antarctic Treaty states implement the Protocol and Annexes will largely determine the shape of Antarctic governance in coming years. In addition, Antarctic experience will provide useful lessons for efforts to incorporate greater environmental sensitivity into governance structures in other parts of the world.

These considerations motivated the American Society of International Law Interest Group on Antarctica to propose comparative studies of national efforts to implement the Protocol. We hope this outline will help inspire such studies and that this newsletter will serve as a vehicle for wider dissemination of their results. The Interest Group long has enjoyed a transnational membership, and we welcome contributions from researchers in all parts of the world.

M.J. Peterson

### ANALYZING RESPONSES TO THE ANTARCTIC ENVIRONMENTAL PROTOCOL\*

The Madrid Protocol on Environmental Protection to the Antarctic Treaty presents unusual and important opportunities for contributions to the understanding of international regimes for environmental protection. Accordingly, the American Society of International Law Interest Group on Antarctica encourages timely research on:

- The Protocol itself;
- Interim and transitional international and national measures and procedures pending the Protocol's entry into force;
- International and national implementation measures and procedures;
- Relationships of interim and implementation measures and procedures to national and international law already in effect;
- Enforcement and efficacy;
- Related theoretical issues.

\*This set of suggestions for cooperative research on implementation of Antarctic environmental protection was adopted at the April 1995 meeting of the Interest Group on Antarctica. It was prepared by Professor M.J. Peterson (University of Massachusetts-Amherst), and Gerald S. Schatz, Esq. (District of Columbia and Pennsylvania Bars), Vice Chair, on the basis of other members' comments on earlier drafts at the Group's 1994 and 1995 meetings. Dr. Ethel R. Theis, of Washington, DC, assisted Schatz in preparation of the checklist.

NATIONAL SCIENCE FOUNDATION

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May 29, 1997



OFFICE OF THE  
GENERAL COUNSEL

Ms. B. Katherine Biggs  
Associate Director of NEPA Compliance Division  
U.S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, D.C. 20460

Dear Ms. Biggs:

As requested at our recent working group meeting, NSF is providing comments on the scoping issues contained in the Notice of Intent (NOI) for the EIS for the Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica. The NOI raises ten specific issues which EPA plans to consider. We address these below and raise one additional issue.

*(1) Do the time frames of the Interim Final Rule for the submittal and review of environmental documentation need to be changed?*

The interim rule currently provides EPA with flexibility to waive specific deadlines under appropriate circumstances. We believe that the final rule should retain these provisions.

*(2) Should EPA's review criteria more explicitly identify factors to assess in determining the environmental impact of proposed actions?*

This item then goes on to discuss whether Article 3 principles can or should be more fully integrated into the review criteria. As we have stated repeatedly, in negotiating the Protocol, the United States agreed that the Article 3 principles were not mandatory or enforceable obligations and that the specific obligations of the Parties with respect to environmental impact assessments are set forth in Annex I. During the interagency process for drafting implementing legislation, all parties agreed that the Article 3 principles would not be requirements for the implementation of Annex I or Article 8. The environmental groups and all Federal agencies understood this when they endorsed the implementing legislation and agreed that Article 3 principles would not be legally enforceable obligations. For these reasons, NSF objects to framing the discussion of review criteria in terms of Article 3 principles. This is totally inconsistent with previous agreements among the agencies and the U.S. understanding of its Treaty obligations. It also is beyond the scope of EPA's or any other agency's authority and outside the scope of the legislation.

The interim regulations already reference the Article 3 principles in several sections. For example, section 8.4 incorporates details from Article 3 that an operator should consider in preparing environmental documentation. Because the interim regulations and Annex I already contain very detailed and specific criteria to be considered by the operator, no additional detail is required nor is further clarification needed. Any further incorporation of Article 3 principles would not be helpful in clarifying the process for the operators. It would also turn the Article 3 principles into binding legal obligations and would transform the EIA process from a procedural process into a substantive process, wholly inconsistent with the intent of the Protocol, the implementing legislation, and NEPA.

*(3) What is the appropriate monitoring regime, if any, that should be set out for various types of nongovernmental expeditions?*

In considering any monitoring regime, we must be realistic about the limitations and difficulties inherent in any monitoring conducted in Antarctica. As our Polar Biology Program Manager explained, it is extremely difficult to access areas within Antarctica on a routine, year-round and dependable basis. This reality limits the type of information that could be required as part of any monitoring program. In addition, it severely impedes the ability to ascertain whether any changes detected are attributable to natural variability or human impact. In the development of any monitoring regime, it is imperative to seek the input of scientists familiar with the Antarctic. At this point in time, with the uncertainty in the ability to create any scientifically based standard monitoring regime, we do not believe that it is appropriate to require any more than the information currently required by §8.4 of the interim rule, which includes numbers of persons ashore, information on landing sites, and information on training of staff and supervision of persons ashore.

*(4) Are there other options for streamlining the documentation requirements?*

We recommend including categorical exclusions for activities that have negligible impacts. In addition, tour operators may find themselves in the position of having to prepare multiple environmental impact assessment documents for the same activity to meet the varied format requirements of the different Parties to the Protocol. We recommend the regulation allow for adoption by reference or some certification procedure that would avoid the preparation of duplicate assessments. The scoping discussion should also include consideration of EPA giving full recognition to approval of an EIA by another Treaty Party. We favor providing the tour operators with the choice of preparing programmatic environmental documents which could cover several operators or multiple seasons on an area wide basis. We also support the use of these documents as a basis for tiering. The

EIS which EPA prepares for the final rule should also be used for tiering -- this could be a very efficient use of resources resulting in a decreased work load for the operator and EPA.

(5) What mitigation options should be considered as part of the EIA process? Should mitigation be required for certain activities?

Annex I of the Protocol does not mandate mitigation. The final rule should not require mitigation for any particular activity. However, if an operator chooses to mitigate and the mitigation reduces the impact from more than minor or transitory to minor or transitory, they should be required to follow through with the proposed mitigation or prepare a CEE. The interim rule already requires this and needs no further modification.

(6) What is the best way to address cumulative impacts?

This remains a difficult and contentious issue. The scientific community continues to struggle with finding answers to this question.

(7) Are there activities or categories of activities that can be excluded from the environmental documentation requirements?

As we stated above, we favor providing for categorical exclusions. NSF has categorical exclusions in its regulation so this would achieve uniformity of approach.

(8) Should there be provision for public comment on IEEs?

We believe that the approach taken in the interim regulation is sufficient and should be retained in the final rule. No further requirement for public comment on IEEs should be created. NSF has previously opposed a public notice and comment requirement for IEEs. Neither the Protocol, the implementing legislation, nor NEPA require public notice or comment on IEEs. The preamble to the interim rule states that EPA will, as a matter of practice, publish notice of receipt of an IEE on OFA's World Wide Web Site. As we have stated previously, we have no objection to this as a matter of practice but do not agree that it should be a regulatory requirement.

(9) With regard to the review of environmental documents received from other Parties, should the process as delineated in the Interim Rule be modified?


The procedures outlined in the interim rule are sufficient and adequate for both public information purposes and Treaty obligations and do not need to be modified.

(10) Do the paperwork projections in the Interim Final Rule accurately reflect the reporting requirements for those subject to the Final Rule?

This is a question that must be addressed by those affected by the rule, based on their experience to date with preparing environmental impact assessments. Based upon our experience, the 120 hours of effort per respondent is probably an understatement of the actual time required, particularly for the first IEE prepared under these new regulations.

One additional issue that should be addressed is whether or not the regulations should equate more than "minor or transitory" with "significant". We favor explicitly equating the two in the regulation. This would harmonize the U.S. governmental and nongovernmental assessments because the ASTCA specifically states that the term "significantly affecting the quality of the human environment" shall have the same meaning as the term "more than minor or transitory" for governmental activities.

Sincerely,

  
Anita Eisenstadt  
Assistant General Counsel





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Darrel Schoeling  
Executive Secretary

Ms Katherine Biggs  
Mr Joseph Montgomery  
July 30, 1998  
Page Two

July 30, 1998

Ms Katherine Biggs  
Mr Joseph Montgomery  
Office of Federal Activities (2252A)  
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Implementation of the Antarctic Conservation Act

Dear Ms. <sup>Katie + Joe</sup> Biggs and Mr. Montgomery,

IAATO is pleased to provide written comment, following the second public scoping meeting on July 14, 1998. Presentations were made by eight individuals representing IAATO and U.S. Antarctic operators: Abercrombie & Kent, Clipper Cruise Line, Orient Lines, Quark Expeditions, Society Expeditions, Special Expeditions, and Zegrahm Expeditions.

Much of the comment was aimed at streamlining of documentation requirements, which Beth Clark Marks, representing the Antarctic Project, supported in her response at the end of the meeting. Many speakers emphasized the international, cooperative nature of Antarctic tourism. Our counsel Buzz Bailey (Garvey, Schubert & Barer), underscored that reciprocity was a foundation of international treaties and that it would not be unusual for the EPA to recognize authorization by other appropriate national authorities in the promulgation of the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica. This was a significant concern expressed by many at the scoping meeting.

After I introduced a number of issues, **Denise Landau** (Quark Expeditions, Zegrahm) spoke of some of the difficulties in providing advance notification and environmental documentation on activities sponsored by several operators. She gave specific examples of difficulties already encountered. **Deborah Natansohn** (Orient Line) in her capacity as an executive of the Cruise Line Association of America spoke of the basic rights of Freedom of Travel and Freedom of the Seas and the danger that EPA may in its zeal infringe on these fundamental rights. **Victoria Underwood** (Abercrombie & Kent) documented the nature of Antarctic tourism, where many of the same activities by the same operators continue year-after-year at approximately the same level with the same ships and same staff, arguing for multi-year documents. **Naomi Morse** (Clipper) emphasized that the EPA should use the flexibility granted it by Congress to put into place the most cost-effective and efficient rule that avoids duplication of efforts and paperwork. **John Tillotson** (Society Expeditions) described the model for choosing and managing Antarctic visitor sites, emphasizing current good practices that include systematic data collection and regular exchange of environmental information. He pointed out the value of cooperation and aggressive self-regulation in protecting the Antarctic environment as demonstrated by the work of IAATO. **Tom Ritchie** (Special Expeditions) noted the great opportunity presented by IAATO members as a group of committed, environmentally responsible and self-governing companies that are organized and responsive.

Thank you for your careful consideration of these comments and other concerns expressed by Antarctic tour operators. As secretary of IAATO, I continue to be struck by the dedication and experience of members and their commitment to safe and environmentally responsible private sector travel to Antarctica.

Sincerely,

Darrel Schoeling

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Final Rule  
July 18, 1998  
Statement by Darrel Schoeling  
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My name is Darrel Schoeling, secretary of the International Association of Antarctica Tour Operators, and I am speaking today on behalf of the Association. IAATO is encouraged by some recent actions of the EPA, particularly the extension of the Interim Final Rule (as published in the Federal Register April 15, 1998) and the scheduling of this second opportunity to provide public comment.

Represented today are all U.S. Antarctic tour operators with the exception of IAATO charter member, Mountain Travel Sobek, whose president Richard Weiss sends his regrets. He had planned to be here but had to cancel at the last moment. We appreciate the scheduling of this meeting in conjunction with the 10<sup>th</sup> annual meeting of the National Science Foundation and Antarctic tour operators.

IAATO suggested in its letter of June 27, 1997 to Richard Sanderson that comments "would be more meaningful if they reflect the real, practical issues encountered in the assessment process." That is what we will report today. Many of the comments you will hear echo our letter of August 25, 1997, provided in response to the "Notice of Intent to Prepare an Environmental Impact Assessment for the Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica." We encourage the EPA to refer to this letter and to take it seriously in the elaboration of the Final Rule.

It has been repeatedly suggested to us that the primary value of the EIA process is as an effective planning tool and, in fact, that turned out to be true. It has led us to think systematically about our Antarctic activities and to document potential impacts. The process has also made it clear what EIA is NOT. It:

- Does NOT provide for comprehensive protection of the Antarctic Environment;
- CANNOT cover all Antarctic tourism, just that of US organizers; and
- Is NOT a management plan or guide to management for individual sites.

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As indicated in our letter of August 25, 1997 -- and also in the June 22, 1998 letter by Eldon Greenberg in response to the "Information Collection Request" -- we see a number of areas where EPA can improve upon the Interim Rule. We support, in general, the approach of the Interim Rule -- and our comments today are in the interest of improving upon it, especially with regard to streamlining of documentation and recognition of voluntary measures.

These issues include:

- Provision for multi-year filing. There is no automatic need for annual documentation;
- Allowance for a "categorical exclusion" of certain types of activities such as Antarctic activities organized along a carefully defined "Lindblad Model;"
- Elimination of the category "PERM" and requirement for "updates" since it duplicates "Advance Notification;"

And, most significantly:

- the allowance for reciprocity with other appropriate national authorities so that the same activity by the same operator will not require redundant and time-consuming engagement with multiple authorities.

US-based Antarctic tour operators are a small group of well-organized and responsive companies that are in the business of environmental education. We take our responsibilities in the Antarctic seriously -- and trust that the EPA will take advantage of the opportunity to work with private industry to protect the Antarctic environment in promulgation of the Final Rule. Thank you for consideration of these comments.

## EPA Scoping Meeting on the Final Rule, July 1998

### Implementation of the Antarctic Conservation Act

Good Afternoon, My name is Denise Landau and I'm here representing and speaking for US based tour operators: Quark Expeditions, Clipper Cruise Line and Zegrahm Expeditions. I would like to discuss the international nature of Antarctic Tourism relative to ship operating companies and the submission of EIAs.

#### Overview of Antarctic Tourism

IAATO consists of:

- 28 membered companies from 10 countries.
- 15 out of the 15 ships are operated by IAATO member companies
- One Land Based operator ANI, 1 Yacht Operator and the rest are ship operators
- 9 of the 28 are Full or Provisional Members of IAATO are the primary ship operators.
- Of that 9, there are 5 members (representing 8 out of the 14 vessels who are US
- In addition there are two full member companies who charter vessels from one of the nine ship operators.

#### Who is the Organizer?

IAATO members subcharter ships from each other, which can often cause confusion as to who the actual "organizer" is of the voyage. This is an important consideration should any one nation put into place unusually stringent laws and obligations. For example

- Quark Expeditions will operate the Kapitan Khlebnikov, Vavilov, Multanovskiy, and Molchanov. In addition Quark will subcharter 3 departures from Clipper Cruise Line on board the Clipper Adventurer.
- Zegrahm Expeditions also will subcharter this upcoming season the Clipper Adventurer.
- Clipper Cruise Line operates the vessel the Clipper Adventurer.
- Australian based Aurora Expeditions subcharterers from Quark Expeditions the Kapitan Khlebnikov and the Molchanov.
- Quark and Zegrahm subcharter from Clipper Cruise Line

These examples demonstrate that tour operators have a choice of which national authority to provide Advance Notification – and it is not always clear who would be the most appropriate. The "organizer" of any particular voyages can be confusing. Subcharterers

can and do sometimes provide their own staff and are responsible for adherence to IAATO guidelines, relevant national legislation, Treaty Recommendation XV111-1 etc.

As you can see from the above interrelationships, Antarctic tourism is a complicated industry which has succeeded due to the voluntary spirit within the industry and the willingness to self regulate.

On behalf of Zegrahm Expeditions, Werner Zehnder would like to emphasize the point he made last year that he could become Zimbabwe company and charter a ship with Pakistani Crew and Egyptian staff. None of these countries are currently either Consultative or Non-Consultative parties to the Antarctica or Treaty or perhaps interested in ratifying the protocol.

At present, tour operators find themselves in the arduous position of having to submit multiple environmental impact assessment documents for the same activity to comply with varied format requirements of the treaty parties. Duplication should be minimized wherever possible and reciprocal agreements put into place.

#### Reciprocity

Even if an authority will accept the same document, the schedule for submission may be different and regardless it still requires understanding and following the procedures of more than one government office. The comments received from the various national authorities can also be conflicting.

- NZ based Heritage Cruise Lines submits IEE's to New Zealand. If a US company subcharterers the Shokalski and the Shokalski's IEE and operation meets the obligations of NZ it would be optimal that EPA would accept the IEE written by a NZ company for the US subcharter. This would both reduce unnecessary paper work and duplication of effort
- Hapag Lloyd is required to submit an EIA to the German government. If a US company subcharterers from Hapag Lloyd, the US company would have to rewrite the environmental assessment to German standards.
- Australian companies submit Environmental Impact Assessments, however under Australian legislation, the PEA's are acceptable for most tourism activities.
- Australian based company Aurora Expeditions and two US companies, Quark and Zegrahm Expeditions submitted a JOINT IEE to both the US and to Australia during the 1997/98 operating season.
- Currently Canada has no EIA requirements. Two companies operating trips to Antarctica are not required to submit EIA's. Marine Expeditions present today, however has participated fully in the writing and planning process of the US based

Programmatic IEE and voluntarily, operates their business as if Canada has ratified the Protocol.

- Canadian based Adventure Network International, land based tourism works closely with the UK Foreign Office and this year will submit their IEE to the U.K and apply for a permit to operate in Antarctica through the U.K. Again, this is voluntary on behalf of MEI and ANI and proves how responsible these operators can be despite being located in a country that has not ratified the protocol.

#### Various National Obligations

##### **Sweden**

Legislation in Sweden requires that each citizen be issued a permit when traveling to Antarctica, however Sweden has agreed that if a Swedish citizen is traveling to Antarctica with a company who has fulfilled the obligations of the country of which the operator is established the citizen will not be required to apply for a permit. Until last year all US companies carrying Swedish citizens, pax, crew had to submit to Sweden an IEE "Form" which covered the ship operation. Quark, MEI, A&K/ESC all had submitted this on file with the Swedish government. *Fortunately Sweden has within their legislation that now individual citizens don't have to apply for a permit if the ship company has fulfilled their own national requirements.* This is an example of how a treaty party can flexible to minimize the paper work requirements of the operator.

##### **United Kingdom**

The United Kingdom permits companies and private expeditions. Their actual law as it relates to tourism is "an expedition is defined in the Act as any tour or other journey, whatever its purpose, made by one or more person. It is a British expedition if: 1) it was organized in the U.K. and if the place of final departure for Antarctica of the expedition was in the UK (ie Falkland Islands) of the extension of the Act to UK. A permit must be applied for and an EIA submitted. UK nationals are prohibited from activities in Antarctica *unless they have a permit, or written authorization from another contracting party.* Again, another example of a reciprocal agreement.

**Norway** requires that an EIA be produced anytime Norwegian Territory is entered. That means that technically if the Kapitan Khlebnikov lands passengers in Droning Maud Land, then an EIA will have to be submitted to the US because Quark as a US company operates the ship and to the Norwegians. It would be of particular interest to Quark that Norway and the US agree on the content of an IEE and that there would be reciprocity between countries. I'm not even going to bring up the issue of Sovereignty.

**Japan's** recent implementation of the Environmental Protocol states that: Japanese law is applied to Japanese Nationals and aliens residing in Japan or to Japanese nationals who are not currently living in Japan, Japanese employees engaging in Antarctic Activities or are involved in the supervision of Antarctic Activities in connection with the business. *Like the U.K, Japan will accept written authorization from a contracting party.*

**Netherlands:** a permit is required for an "organizer but does not require an individual citizen to have permit. An organizer is required to submit an EIA and if the EIA meets with the Netherlands approval, than a permit is issued. Currently a Dutch company owns one of the Russian Registered ships. The ship is operated by American and Australian companies.

**Finland:** Requires a permit for most activities in Antarctica including science and tourism. The law applies to Finnish citizens, Finnish legal person, vessels, foreign citizens permanently resident in Finland and vessels which take part in expeditions origination or arranged from Finland. Organizers are required to submit and EIA.

#### Conclusion

As you can see by the complexities of various legislation and the fact that Organizers or companies charter ships from one another its an international challenge. Although the Environmental Protocol serves to protect Antarctica it has created a paper work challenge for tour operators who are conscientious and want to make sure we are following the correct procedures.

We appreciate the flexibility that EPA has shown in working with U.S.-based tour operators thus far. As responsible tour operators with a long term interest in visiting and protecting Antarctica we look towards international cooperation, acceptance of multiple year IEE's, reciprocity between nations regarding the production and writing of EIA's. We commend EPA for extending the final rule for 2 years in light of the time period required to test the practical feasibility and how it relates to the International nature of Antarctic tourism.

Thank you or listening to our concerns.

Denise Landau  
Environmental Officer, Quark Expeditions  
Representative of Zegrahm Expeditions  
Representative of Clipper Cruise Line

**EPA's 2nd Scoping Meeting for EPA's Environmental Impact Statement  
for the final rule for environmental impact assessment of  
nongovernmental activities in Antarctica**

**July 14, 1998**

**Statement by Victoria Underwood**

Good afternoon and thank you for allowing me to speak before you today about EPA's Environmental Impact Statement for the final rule for environmental impact assessment of nongovernmental activities in Antarctica.

My name is Victoria Underwood and I am Antarctic Environmental Officer for Abercrombie & Kent and Explorer Shipping Corporation who own and operate the expedition ship, m/s Explorer. I am joined today by Charlie Scarlett, president of Explorer Shipping Corp.

My career in the travel industry dates back to 1982, however I have been involved with the Explorer since 1986 and have participated in over forty voyages to the Antarctic, primarily to the Peninsula region, but also to the Ross Sea. I am one of the co-authors of the IAATO visitor and tour operator guidelines that served as a foundation for Recommendation XVIII-1, adopted by the Antarctic Treaty Party system. For the last three years I have served on the Executive Committee of IAATO and recently attended the XXII Antarctic Treaty Consultative Meeting in Tromsø, Norway, along with other industry representatives.

For your background information, Explorer Shipping Corporation is an off-shore company chartered in the British Virgin Islands. Abercrombie & Kent, our parent company, was founded as a safari company in 1962 in Nairobi, Kenya and is today an international group of companies, with offices in 27 countries world-wide. A&K provides upscale adventures in more than 100 countries and on all seven continents. Headquartered in Oak Brook, Illinois, A&K also has offices in England, Egypt, Kenya, South Africa, Tanzania, Uganda, Zimbabwe, China, India, Japan, Thailand, Australia, New Zealand, Denmark, France, Germany, Italy and Spain. A&K employs more than 3,000 travel professionals around the world and has served more than 500,000 clients. My reasoning for mentioning the organization structure of our company, as have other speakers to the organization of their company's, is to point out the complexity of our industry.

The Explorer, registered in Monrovia, Liberia, is a small expedition cruise ship, carrying 96 passengers, and was the first ship purposely built for polar expedition cruising. She has operated in the Antarctic continuously since 1970 -- first as the Lindblad Explorer (from 1970 until 1984), then as the Society Explorer (from 1984 until 1992) and since

1992 as the Explorer, the flagship of A&K. It is a noteworthy achievement within this industry to see the same ship, operate with many of the same staff, offering essentially the same itineraries to the same number of travelers for twenty-eight years now.

Before addressing two specific issues, we would like to commend EPA on extending the Interim Final Rule through the 2000-2001 austral summer. This allows the tour operators to gain experience with the Rule itself and to ensure that the industry is more informed and better able to comment on EPA's environmental impact statement. We have been watching the development of the rule-making process with great interest and thank you for the opportunity to comment today.

In my comments, I would like to address two specific issues: 1) The need to streamline documentation, and 2) Support for one document for multiple operators covering multiple expeditions over several seasons. The reasoning behind this is as follows:

- Activities by the tour industry have been substantially similar from year-to-year. For example, the Explorer is about to begin her twenty-ninth season of operation in the Antarctic. Many of the officers, crew and expedition staff have been aboard for years. Our staff, in fact, average nine years of experience in the Antarctic. Nearly all of the places we visit are the same, and the same type of activity is being carried out. The same can also be said for many of the other ships presently being operated in the Antarctic by IAATO member companies. The World Discoverer, for example, operated by Society Expeditions, has been conducting voyages to Antarctica since 1977. The Bremen (formerly the Frontier Spirit), operated by Hapag-Lloyd, has been there since 1989. Several of the Russian ships operated by Mountain Travel / Sobek, Quark Expeditions, and Marine Expeditions, among others, have been employed since the early 1990s.
- This model of ship-based tourism, as developed by Lars-Eric Lindblad in the late 1960s, has been the same model that has been replicated by all of the Antarctic tour operators represented here today. The "Lindblad" model of responsible tourism has also been adopted by some of the larger ships, for example the Marco Polo. Lars-Eric Lindblad designed the Antarctic program for Orient Lines and led the voyages for the first few seasons. In addition, Orient Lines has hired some of the same expedition staff and crew who were trained by Lindblad himself or had worked for other companies operating under this same model.
- Many industry representatives have also been trained under the "Lindblad" model, including:

Werner Zehnder, who first started working for Lindblad as a chef aboard the Explorer in 1969 (aboard her maiden voyage) and later as an Expedition Leader for Society Expeditions for 7 years before becoming Sr. V.P. of Planning and Operations. In

1990, he and a group of expedition leaders and naturalists founded Zegrahm Expeditions. Werner continues to charter vessels from several of the IAATO member companies to operate his own voyages to the Antarctic.

Mike McDowell, who began working aboard the Explorer with Lindblad in 1977 as a staff assistant and Zodiac driver, and worked as an expedition leader until 1984. Since 1985, Mike has been one of the co-owners of Quark Expeditions and, along with Werner Zehnder, is considered to be one of the visionaries in the expedition tourism industry. Continuing in the Lindblad tradition of opening up new areas to tourism, Quark offered the first complete circumnavigation of Antarctica during the 1996-97 season, and has offered pioneering voyages to the Weddell Sea.

Baerbel Kraemer, head of ship operations and environmental affairs with Hapag Lloyd, responsible for the operations of the Hanseatic and Bremen, began her career as purser, cruise director and later as hotel manager aboard the Explorer, from 1978 to 1991. (Baerbel also has many years of experience working aboard the World Discoverer -- as do I.)

Nigel Sitwell worked aboard many voyages of the Lindblad Explorer in the 1970s and 1980s as a lecturer. Since then he has been employed as an Antarctic expedition leader or lecturer aboard the Illiria, Alla Tarasova (now the Clipper Adventurer), Ocean Princess, Khromov and Marco Polo.

Finally, Lindblad's son, Sven-Olaf Lindblad, president of Special Expeditions, will continue the Lindblad tradition of trips to the Antarctic this season aboard the Caledonian Star. Special Expeditions has employed Tom Ritchie, a very experienced expedition leader who worked aboard the Explorer from 1977 - 1984 and Captain Leif Skog as master. Leif was affiliated with the Explorer for many years in the late 1970s and early 1980s and again for several years during the mid-1990s with A&K/Explorer Shipping Corp. He now oversees the marine operations for Special Expeditions.

These individuals are but a few of the many, many people who are still working in the Antarctic industry today, carrying on the tradition started in the 1960s by Lars-Eric Lindblad. All of this is very important not only for experience within the industry, but also for the cooperative and voluntary spirit that exists today between competing companies.

- To comply with regulations under the Interim Final Regulations for Environmental Impact Assessment of Nongovernmental Activities in Antarctica [40 CFR Par 8.2.], five U.S. based companies submitted environmental documentation regarding its planned activities during the 1997-1998 austral season to EPA for its review. Documentation included the following:

- a) transmittal letter;
- b) "Notice of Intent to Travel";
- c) consolidated document entitled "Initial Environmental Assessment: Ship Based Tourism by Five U.S. Organizers"

- The "Notice of Intent to Travel" is the same as the "Advance Notification of Intent to Travel" as submitted to the U.S. Department of State in fulfillment of obligations under Section 7 of the Antarctic Conservation Act implementing paragraph 5 of Article 7 of the Antarctic Treaty, and as further amplified by Recommendation XVIII-1 of the Antarctic Treaty System.

- Information submitted to the State Department by tour operators under "Advance Notification" includes the following, which is contained in Attachment A "Information to be Provided in Advance Notice" under ATCM Recommendation XVIII-1 "Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic":

- a) Activities to be undertaken and purpose and intended itinerary, including the date of departure of and places to be visited in the Antarctic Treaty Area;
- b) Registered name and national registration of the vessel to be used;
- c) Name, nationality and contact details of organiser;
- d) Number and qualifications of crew and accompanying guides and expedition staff;
- e) Estimated number of visitors to be carried;
- f) Intended use of vessel (or aircraft if applicable);
- g) Number and type of other vessels, including small boats, to be used in the Antarctic Treaty Area;
- h) Information about insurance coverage;
- i) Details of equipment to be used, including for safety purposes, and arrangements for self-sufficiency;
- j) Other matters required by national laws

- As the "Advance Notification" mandated by the Antarctic Treaty system, especially as elaborated in Recommendation XVIII-1 includes much -- if not all -- of the information required in an IEE, IAATO's position is that the request for a Preliminary Environmental Review Memorandum (PERM) be omitted from the Final Rule as it duplicates the information already required by the Treaty. Secondly there is no need for an "update" as mentioned in the Information Collection Request (ICR) by EPA (section 3d) as this again duplicates notification.

This follows the line of thinking as echoed in the "Summary of Questions / Answers on the Interim Final Rule" (dated 08 July 1997, signed by Mr. William Dickerson, EPA),

whereby EPA has stated that..."some of the general requirements for environmental documentation are the same as for the information provided to the Department of State for notification purposes (see 40 CFR Part 8.4(a))."

- IAATO proposes that the Preliminary Environmental Review Memorandum, as a category, be deleted from the Final Rule as this is again a duplication of effort and defeats the goal of reducing paperwork. The filing of annual documentation to the Department of State under Treaty obligations and also to the EPA as a PERM is burdensome and unnecessary.
- Tour operators have the strongest interest in the development of a sound, workable system for conducting environmental assessments of nongovernmental activities in the Antarctic which are consistent with the requirements of the Protocol and the various national regulations which apply.
- As the old adage goes, "If it ain't broke, don't fix it." This reasoning is echoed in the following quote by Mr. Richard Sanderson, of EPA, in the "Summary of Questions / Answers on the Interim Final Rule," dated July 8th, 1997:

"The tour industry has had a long-standing tradition of voluntary compliance with the establishment of industry-established guidelines. Some of these guidelines are being adopted by the Antarctic Treaty Consultative Meeting on a trial basis and tour operators provide post-season reports to the National Science Foundation. EPA needs to factor these voluntary programs into its final rule; e.g. if the system now used is good and works, base the rule on its continued use."

- With this in mind, tour operators recognize that certain elements of this voluntary process are present in the Interim Final Rule, for example notification and post-trip verification reporting. Tour operators therefore strongly recommend that the EPA consider the voluntary process in developing the Final Rule.
- IAATO therefore does not see the need to automatically require that operators file an environmental assessment with EPA on an annual basis. In some cases, companies have been operating at the same level of activity aboard the same vessels with the same staff for decades and, arguably, could be considered an existing activity. IAATO sees no value in asking for resubmission of documentation annually for these operators. A provision should be made in the Final Rule for a multi-year submission based on a projection of future activities.
- EPA's mandate is to promulgate regulations "to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty." Given the small number of U.S. private operators and the record of self-

regulation by the Antarctic tour industry, IAATO sees a broad interpretation of this mandate as misguided with potentially serious consequences to the Antarctic environment. An unnecessary burdensome, prescriptive rule could drive experienced Antarctic tour operators off-shore -- potentially to a country that is not a party to the Treaty -- or out of business and dismantle the current flexible and proven approach to limiting impacts.

Thank you once again for the opportunity to raise these issues.

**Clipper Cruise Line comments to EPA on July 14, 1998**

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Although this is our first season in the Antarctic with the *Clipper Adventurer*, Clipper Cruise Line operated in Antarctic for 3 years with the *World Discover* and we a similar level of activity and educational programming for our new ship.

Our preparations for the 1998/99 Antarctic season continued when we officially rejoined IAATO last summer. IAATO has been instrumental in sharing with Clipper the procedures and concerns we need to be aware of before our ship enters the Antarctic area.

We have provided advance notification to the U.S. Department of State, with copies to IAATO. Our ship is in compliance with all MARPOL, ISM and ISO requirements. We have hired qualified experienced staff and have put together a wealth of information to be sent to our passengers before they even board the vessel.

Like many other US tour operators operating cruises in Antarctica, we are small, US based and involved in many other areas of the globe besides Antarctica.

We can only ask that the EPA take its mandate to streamline documentation and obligations seriously and make the IEE process as efficient as possible. The purpose and scope of the Final Rule should be to report potential environmental impacts. An IEE that would cover several years would be most helpful. In addition, the advance notification we send to the State Department could serve as a yearly update to the IEE.

We are encouraged that we will be able to submit an IEE that has already been prepared by other US tour operators. IAATO members voluntarily work together on so many issues that cumbersome reports year after year seem costly, redundant and wasteful.



EPA Scoping Meeting of July 14, 1998.

**Special Expeditions Conservation and Management Experience in Relation to IAATO**  
**Presented by Tom Ritchie, Expedition Leader, Special Expeditions.**

Special Expeditions (SPEX) is proud to be the newest member of IAATO. In order to explain the significance of this new relationship, it is important first to establish a degree of credibility for those people not familiar with SPEX. The company was established in 1979, as a division of Lindblad Travel, and became independent the following year. Its president is Sven Olof Lindblad, son of the late Lars-Eric Lindblad who pioneered adventure travel. As expected, SPEX operates on the Lindblad Model of tourism. Our field personnel are largely composed of biologists, naturalists, and wildlife photographers who believe that you can turn people on to the wonders of nature, and they will care and participate in its preservation. The company has built a business on environmental education and client experience, and has earned a reputation in the conservation community as an innovative leader in environmentally responsible travel.

In 1993, SPEX received the ASTA/Smithsonian award for environmental achievement, primarily for the floating symposiums that we hosted to foster participatory management strategies for destinations like Baja California, Mexico, and Central America. The SPEX clientele, like that of other IAATO members, are generally well-educated, well-traveled people, many of whom already have a strong conservation ethic and support environmental protection through international NGOs. The staff of naturalist guides also have a strong environmental ethic, and environmental responsibility and stewardship is part of their interpretive framework. The company has a handbook of internal environmental policies for the field, including necessary briefing to passengers before landings, and how to conduct groups around seabird colonies, marine mammals, etc.

We design a conservation strategy by asking ourselves "How can we be a positive force in our destinations?" It is important to establish communication and credibility with the management or leadership of various destinations, and with the local conservation organizations. Sometimes this is difficult because management bodies do not exist, or there may be no interest in communicating with the private sector. One must also learn the conservation needs (management objectives) of the destination. Next, we examine our abilities, which vary greatly in each area and try to best match our abilities with the defined conservation needs of an area. In places where we have been able to integrate ourselves into the regional conservation community and management process, we have achieved things such as the initiation of local guide-training programs, whalewatching standards, and safety criteria, as well as the introduction of conservation organizations (NGOs) and internship programs into certain areas, and most importantly, establish forums for dialogue between management, NGOs, private sector, and local communities.

Among the case studies in the aforementioned management relationships is Baja California, Mexico. When we first operated in Baja in 1981, there was literally no management of an incredibly rich and fragile desert and marine environment. There was also no competition, which enabled us to operate freely. These conditions were perfect in that we had a very strong environmental ethic and communicated environmental messages to our passengers. As time went on and the Sea of Cortez and the Pacific gray whale lagoons became more popular, we realized that there had to be some kind of management, so we started to actively engage government authorities, NGOs, researchers, local communities, and tour operators into active dialogue about the importance of managing the area for

the future. Much of the success in this endeavor was achieved through the use of our ships as symposia platforms. Today, most major international conservation NGOs are actively working in Baja, and the Mexican government has established management strategies and is now working with NGOs and the private sector on a long-term management strategy for the Sea of Cortez.

This mentality is likewise to be found among the members of IAATO. The fact that a like-minded body of environmentally concerned tour operators like IAATO exists is an incredible opportunity for anyone concerned with environmental protection to work with and through those people who are already engaged in environmental education and management of visitor impact and experience, and who have a vested interest in the long-term integrity of that environment.

It is an honor for Special Expeditions to be welcomed as a new member into the community of IAATO. The fact that a self-governing body of environmentally concerned tour operators is already in place is a monumental achievement and opportunity. Special Expeditions would encourage the EPA, and anyone trying to establish management or conservation policies in Antarctica, to appreciate the great opportunity in environmental protection that IAATO provides. The IAATO members are the kind of tour operators that you WANT to have in Antarctica. They serve the function of environmental education to visitors, and they provide an opportunity for any management body to communicate desired messages to visitors. IAATO members can provide an important monitoring function in that they are on site, and have a vested interest in the health and integrity of landing sites and flora and fauna. No management body is going to have the funds to provide the monitoring or presence that IAATO members can provide. IAATO members can provide any management body valuable feedback and realistic analysis of field conditions and visitor impacts that would be virtually impossible to understand otherwise.

We encourage the EPA to listen closely to the members of IAATO because they have more than simple experience in Antarctica, but have a soulful concern for the maintenance of its future. The mere fact that these tour operators organized together to set guidelines and standards for operation and establish a forum for communication should show the EPA that the ambassadors for environmental protection in Antarctica are already in place.



August 14, 1998

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Friends of the Earth - USA  
Friends of Whales  
Greenpeace - USA  
The Humane Society of the United States  
International Fund for Animal Welfare  
Monitor Consortium  
Monitor International  
National Audubon Society  
National Parks and Conservation Association  
National Wildlife Federation  
Natural Resources Defense Council  
Ocean Alliance  
Sierra Club  
Sierra Club Legal Defense Fund  
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### RE: COMMENTS ON EPA'S ENVIRONMENTAL IMPACT STATEMENT FOR THE FINAL RULE FOR EIA OF NONGOVERNMENTAL ACTIVITIES IN ANTARCTICA, PROMULGATED UNDER P.L. 104-227, THE ANTARCTIC SCIENCE, TOURISM, AND CONSERVATION ACT OF 1996

Dear Mr. Montgomery and Ms. Biggs:

Per the Federal Register notice of June 18, 1998 (supplemented by your letter of July 21 allowing a two-week delay in receiving our comments) The Antarctica Project, Greenpeace, Sierra Club, and World Wildlife Fund, on behalf of the Antarctic and Southern Ocean Coalition, welcome the opportunity to provide comments on issues to be addressed in the EIS for the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica. These comments supplement the comments we sent in July 1997, in response to your request for comments following the first public scoping meeting on the Final Rule. We request that you refer to both sets of comments when drafting the Final Rule.

The Protocol on Environmental Protection to the Antarctic Treaty is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. Activities must be planned so as to limit adverse impacts on the environment and on the basis of prior assessment of possible impacts. In order to faithfully implement the Protocol, impacts identified by the EIA process should be mitigated to the greatest extent possible, and activities which threaten to impact Antarctica's environment must be modified to minimize the possibility of this occurring.

To ensure that the EIA process, within the U.S., for tourism and non-governmental activities faithfully implements the Protocol, the following issues must be considered in promulgation of the Final Rule:

1. **Article 3 Compliance:** Compliance with the Environmental Principles of Article 3 must be demonstrated in EIA (as required by this Article), and should be incorporated into the Final Rule as a requirement. The principles are expected to guide and shape environmental planning and decision-making for all activities in Antarctica, regardless of whether or not they are covered explicitly by the Annexes. The incorporation of the Article 3 principles into the review criteria will allow an understanding of the extent to which the activity will conform with Article 3.

Article 3 requires activities to be "planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment," taking full account of the cumulative impacts of the activity, whether the activity will detrimentally affect any other activity in the area, whether technology and procedures are available to provide for environmentally safe operations, whether monitoring can be put in place to provide early detection of potential impact, and whether there exists the capacity to respond promptly to accidents. The Final Rule must request that sufficient information be included in the EIA to allow an informed judgment to be made about a proposed activity. If insufficient information is included, then the precautionary principle must apply.

2. **Article 3 requires that activities be modified, suspended or canceled if they result or threaten to result in impacts upon the environment or associated ecosystems** inconsistent with Article 3. The Final Rule should provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity. Since the Protocol and its Annexes list prohibited activities, and environmental impacts that are to be avoided, in most cases preventing an activity from proceeding should not be an issue. However, there may be occasion when a permitted activity threatens to result in unacceptable impact, and there must be flexibility to require the modification, suspension or cancellation of the activity.

3. **Definition of Operator:** It is our firm view that the Final Rule must apply to all operators doing business within the United States, regardless of whether or not they are incorporated within the United States. The Interim Final Rule currently applies only to operators of "nongovernmental expeditions [to and within Antarctica] organized in or proceeding from" the United States. *s 8.2(b)*. An "operator" is defined as "any person or persons [subject to the jurisdiction of the United States] organizing a nongovernmental expedition to or within Antarctica." *s 8.3*.

It has been suggested that the Final Rule should be applied only to tour operators incorporated in the United States. Such an interpretation would be directly contrary to the language of the Antarctic Science, Tourism, and Conservation Act of 1996 (ASTCA). Please refer to our comments of last year for our detailed analysis of this issue.

Applying the Final Rule to all organizers who do business in the U.S. is potentially the single most important way to ensure that U.S. standards are applied to all U.S. citizens. Without being able to reach non-U.S. based operators who do business in the U.S., the possibility exists that an operator will "shop around" and base themselves in a country to escape compliance with U.S. requirements. This is a concern if that country has standards which are less stringent than U.S. standards and which may not therefore fully implement the Protocol, or if that country is not a signatory to the Protocol, and so imposes no obligations upon an operator. It is our belief that

operators will not be willing to forego the lucrative U.S. market, and will be less likely to relocate solely to evade U.S. obligations.

Applying the Final Rule in this way will have an additional benefit: given the nature of the tourist industry where companies subcontract tours and boats from each other, it will remove the question of who is the organizer, and is that company required to comply with U.S. law. In the case of Antarctic tourism, the answer will always be yes, and it will be up to the tour operators to decide amongst themselves who will fulfill this obligation.

**4. Streamlining documentation -- acceptability of foreign EIAs:** We are supportive of minimizing the paperwork burden on tour operators; however, we believe it would be risky to automatically assume that satisfactory completion of EIA for another country would be sufficient to meet the EIA requirements of the Final Rule. Thus, operators should be encouraged to provide copies of EIA submissions made to other governments (with translations, if need be) and incorporate them by reference.

It is worth noting, however, that most other countries have the ability to require the modification, suspension or cancellation of an activity if it threatens to impact the environment. This means that completion of an EIA for another country does not necessarily imply the acceptance of that activity. Most countries also require a permit prior to the onset of any activities in the Antarctic. Therefore, completion of these documents for other countries should not prejudice consideration by EPA.

**5. Streamlining documentation -- Multi-year EIA:** As noted above, we are supportive of minimizing the paperwork burden on tour operators, and support the completion of multi-year EIAs, on the following conditions:

- (i) a supplement is filed which reports on minor changes;
- (ii) a new EIA is produced if there is a significant change in the activity (some predetermined percentage increase or decrease in e.g., passenger number, could trigger this; and
- (iii) a CEE is completed if the number of passengers in any given year is predicted to meet or exceed 25% of the 1997/98 level.

The Protocol Article 8 requires that the EIA procedures apply to any change in an activity, whether the change arises from an increase or decrease in the intensity of the activity, from the addition of an activity, the decommissioning of a facility, etc. Thus, if there is a significant increase or decrease in the number of tourists planning on traveling to the Antarctic, a new EIA must be prepared. Since the Protocol was signed in 1991, the number of passengers traveling to the Antarctic has increased by 50%. In spite of statements that the number of passengers is expected to remain constant, the tour operators are predicting an additional 40-50% increase in the number of tourists in less than half that time — by the 2000/2001 Antarctic season in three years. This increase follows the 50% increase in the number of passengers since the Protocol was signed in 1991. If this increase holds true, a case could be made that a CEE would be the appropriate level of impact assessment for this period.

**5. Operator's responsibilities:** The Final Rule must be explicit in detailing an operator's

responsibility with respect to ensuring that the boat used to transport passengers to, from or within Antarctica is able to comply with the Protocol's standards. The registry of a boat does not determine whether or not it must be in compliance with the Protocol and with U.S. implementing regulations. The nationality of the operator (and hopefully whether an operator does business within the U.S.) determines whether the operator must comply with U.S. regulations. The boat is just one part of the expedition.

#### Conclusion

The Antarctic Environmental Protocol is a landmark agreement designed to provide comprehensive protection of the world's last great wilderness. Faithful implementation of the Protocol will ensure that the values of Antarctica, as envisioned by the original signers of the Antarctic Treaty, will be strengthened and preserved. Therefore, regulations designed to implement the Protocol's provisions must ensure that the spirit as well as the substance of the Protocol are realized in the conduct of all activities. We hope that you will consider ASOC's comments of July 30, 1997 along with these comments when preparing the Final Rule for EIA for nongovernmental activities. We stand ready to assist EPA and other government agencies in their preparation of the Final Rule.

prepared by  
Beth Clark, Director  
The Antarctica Project  
August 14, 1998

July 15, 1998

To: Darrel Schoeling  
From: Citizen Paul C. Dalrymple  
Subject: Antarctic Tourism - Environment

1. Thoughts passed through my head yesterday afternoon at the Hearings at EPA -- thoughts created mostly from being in Antarctica three of the last four austral summers with Quark and MEI, plus my awareness of the Antarctic Protocol.
2. As Beth Clark said near the end of the afternoon, I have not heard anything new which I had not heard before, and it seems that at the first meeting since the U.S. ratification of the Antarctic Protocol there might have been some new innovative thinking/proposals.
3. Everyone seemed to talk about the Lindblad Model. I found this distressing, as we are in a new era. Lindblad was in and out of the Antarctic arena before anyone ever thought of preserving the environment through the Protocol. And what was sacred about Lindblad? Sure he was very good, but perhaps a bit lucky, in what he did in Antarctica. He was also plagued by more than a few disasters with his ships which had to be rescued. And some of his staff people did some weird things which would never be tolerated today, such as capturing a penguin and bringing it back to the ship for an on-board lecture. Lindblad Model, upon close inspection, is probably outdated in today's mode of the Antarctic Protocol.
4. Instead of the Lindblad Model, why not the Naveen Model, something responsive to today's activities, where specific guidelines have been established for treating the fauna, flora, and wildlife of Antarctica? His Site Guide is the greatest thing to ever happen for the Antarctic environment, although it needs to be revised and updated, even though it is only a year old. Naveen is much more responsive to the environment than Lindblad was.
5. I think what is needed now is for NSF - EPA - USCG to produce a new film explaining the concept of the Antarctic Protocol, how travelers and scientists should act/ behave while in Antarctica, what is acceptable/not acceptable, and what penalties confront those of us who do not conform. With close to 10,000 tourists alone, a film is the best way to get the new message through to the people. As you know, there are expedition leaders and there are expedition leaders. A good one, like Dennis Mense, has a person with a clipboard checking off people at the door to make sure they hear the mandatory films provided by NSF. Others, no names here, regard it as optional. But my feeling is that a new film should be made on the newly enacted legislation, and make it MANDATORY for all passengers to see on shipboard. I also feel strongly that Naveen's Site Guide should be put into the hands of all travelers.
6. As you well know, over 99% of the tourists are excellent ashore. Based on my experience, the biggest problem is a nationality problem. No one yesterday wanted to point fingers, but let's be honest with ourselves; the Germans are a hard group to control. I know one megabuck frequent

traveler to Antarctica who will just not go on an Antarctic ship if she finds out there are going to be many Germans aboard. It was a German tourist several years ago who encroached on an elephant seal on Hannah Point, Livingston Island, and he/she started moving and fell down onto the beach, 80-100 feet below. Maybe the film I'm suggesting should be in English, German, Japanese. I have been on at least five all-Japanese cruises, and have never found them to be any problem, as they come with an entourage of leaders who keep them under control. They do tend to climb every hill they see, and occasionally some of the hills are off limits. But how do you handle a German without a fixed bayonet?

7. One thing I wonder about is whether we should have separate guidelines for different species of penguins, or separate guidelines for different landing sites. Take the cool, calm, and collected gentoos. It's impossible to visit the British base at Port Lockroy, and go to their building without walking within a foot of the birds breeding right on the paths or steps into the building, yet none exhibit any outward anxiety as people walk by. For the past two summers there has been a macaroni right off the landing beach at Hannah Point, and since this is the only site where passengers will normally see a macaroni, everyone wants to stretch the criteria for getting closer. You can tell the passengers on ship what to do, but when they get a macaroni in their lens finder, they seem to suffer Alzheimer's. But the bottom line here is that when NSF put ice cops on different ships several years ago, the answers coming back were that there were no problems with tourists.
8. One thing which I feel IAATO could do would be to prepare a guideline of operations for expedition leaders. They come from all walks of life, generally not being scientists or naturalists, but most are very good in what they do. Some expedition leaders never come near the lecture hall; some are always there. I know one learned expedition leader who has to have the last word on every lecture, even when a Polly Penhale is aboard.
9. As a person who is in contact with a lot of Antarcticans, I think IAATO should consider making a master listing of Antarcticans who would like to lecture. I was on one cruise where three lecturers were in Antarctica for their very first time. Not good!
10. If these meetings, such as yesterday's, are to be an annual affair, I think it might be interesting to have an input from some of the travelers themselves. There are many, many extremely environmental-conscious travelers aboard, some of whom are naturalists who publish in the open literature. From my last trip, I could name three who would welcome the opportunity to submit written statements on their thoughts. How many times have we now heard Victoria Underwood say she has been on forty cruises? A new viewpoint from a naturalist might be more interesting.

*Paul C. Dalrymple*  
July 15, 1998

***Appendix 21: Scoping Information Considered During Development of the Alternatives***

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| Information Presented  | Consideration of the Information and Any Relationship to EPA Scoping Issues   |                            |
|--|---|----------------------------|
| <p>3. Consider the need to assure that the regulatory process is designed to identify impacts and mitigation alternatives in the planning stage for expeditions.</p> | <p>As discussed in Section 4.3.1, the mitigation provisions of the Interim Final Rule will be incorporated into the five alternatives for the final rule. If an operator chooses to mitigate and the mitigation measures are the basis for the level of environmental documentation, EPA assumes the operator will proceed with these mitigation measures. Otherwise, the documentation may not have met the requirements of Article 8 and Annex I and the provisions of the regulations.</p> <p><u>EPA Scoping Issue 5: Mitigation: what measures and for which activities</u></p> | <p>8.4(a)(7), 8.7, 8.8</p> |

***Appendix 22: Significant Issues Identified  
During Scoping: Commentors, Summary of  
Comments, and Any Related Interim Final  
Rule Requirements***

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## Appendix 22

### Significant Issues Identified During Scoping: Commentors, Summary of Comments and Any Related Interim Final Rule Requirements

#### ***Category A: Issues related to the requirements to be applied to operators and EPA's role in the EIA process for nongovernmental operators***

1. **Article 3 of the Protocol. Consider a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation (see Appendix 23).**

TAP/ASOC: Recommended the final rule require that environmental documentation submitted by a nongovernmental operator demonstrate that the activities associated with an expedition are in compliance with Article 3 of the Protocol. The EIA process should be a means to impose substantive environmental requirements as set out in Article 3.

IAATO and Individual Tour Operators: Article 3 is hortatory and does not impose specific obligations on Parties regarding actions in Antarctica. An unnecessary, burdensome, and prescriptive rule could have potentially serious adverse environmental consequences in Antarctica by driving experienced U.S.-based operators offshore, possibly to countries that are not Party to the Treaty, or out of business. This approach could also have the effect of dismantling the current voluntary industry approach to limiting impacts.

National Science Foundation: Article 3 is hortatory and does not impose specific obligations on Parties regarding actions in Antarctica. Article 8 and Annex 1 set out the Protocol's binding obligations on EIA, and these provisions are procedural in nature; that is, they do not impose environmental obligations beyond those established elsewhere in the Antarctic Treaty System. The Act explicitly limits EPA's authority to issue regulations consistent with Annex I to the Protocol, and Article 3 is not mentioned anywhere in the statute.<sup>1</sup>

Interim Final Rule: The Interim Final Rule does not contain a substantive provision implementing Article 3 of the Protocol. For operators preparing an IEE or CEE,<sup>2</sup> Section 8.4(b) of the Interim Final Rule directs that the operator should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment, elements similar to those in Article 3. The approach in the Interim Final Rule is analogous to NEPA. It ensures full disclosure of all potential environmental impacts and then leaves to the operator the decision whether to proceed with the action which may include plans to mitigate the action's potential environmental impacts.<sup>3</sup>

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<sup>1</sup> The position of the U.S. government is that the principles as expressed in Article 3 are given effect through the rules as expressed in the Annexes.

<sup>2</sup> IEE means an Initial Environmental Evaluation, a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment prepared in accordance with 40 CFR §8.7. CEE means Comprehensive Environmental Evaluation, a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment, prepared in accordance with the provisions of this part and includes all comments received thereon. (See: 40 CFR §8.8.)

<sup>3</sup> Consistent with the Annex I, the public and other Parties have an opportunity to comment on activities, as described in a CEE, for which the impacts may be more than minor or transitory.

2. **Prevention of Activities. Consider preventing an activity from proceeding if anticipated impacts are determined to be unacceptable.**

TAP/ASOC: Recommended the final rule provide authority for the U.S. government to prevent a proposed activity by a nongovernmental operator from proceeding if the government's review of the environmental documentation found that the environmental impacts would be unacceptable. As stated under Issue 1, Article 3 is substantive and obligates Parties to ensure that activities must be planned and conducted to limit adverse impacts; accordingly, activities should be modified, suspended or canceled if they result, or threaten to result, in impacts on the Antarctic environment.

IAATO: EPA does not have authority under the Act to promulgate a final rule with substantive provisions which could effectively require that certain environmental impacts be avoided.

Interim Final Rule: The Interim Final Rule does not include a provision for the U.S. government to prevent a proposed activity by a U.S.-based nongovernmental operator from proceeding if the government's review of the environmental documentation finds that the environmental impact(s) would be unacceptable. However, consistent with the Protocol, the Interim Final Rule requires an operator to prepare a level of EIA documentation that is consistent with the impacts of the proposed activities on the Antarctic environment or on dependent or associated ecosystems according to whether those activities are identified as having: (a) less than a minor or transitory impact; (b) a minor or transitory impact; or (c) more than a minor or transitory impact.

EPA may, in consultation with the National Science Foundation, find that an operator's IEE documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. The operator may then decide to prepare a CEE for the proposed activities before proceeding to Antarctica. Section 8.8 lists the specific requirements that must be addressed for CEE level documentation. Any CEE must be circulated to other Parties and the public, and the operator must address and include (or summarize) any comments received. Following the final response from the operator, EPA, with the concurrence of the National Science Foundation, may make a finding that the document submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the requirements of the regulations. Under the enforcement provision at Section 8.11, it is unlawful for an operator to violate the provisions of the Interim Final Rule, and any operator who violates any of the provisions of the regulations is subject to enforcement, which may include civil and criminal enforcement proceedings, and civil and criminal penalties pursuant to the Antarctic Conservation Act. Thus, if the operator proceeds with the proposed activities in Antarctica with EIA documentation that does not meet Article 8 and Annex I and the provisions of the regulations, as determined by EPA with the concurrence of the National Science Foundation, the operator would be subject to enforcement action, including civil and criminal penalties under the Antarctic Conservation Act.

3. **Requirement for Insurance and Bonding. If a substantive provisions cannot be included in the final rule, consider requiring insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause environmental harm.**

TAP/ASOC: The final rule should include a requirement for insurance and bonding to be used for compensation or restoration if the environmental effects of a proposed action turned out to impose unacceptable impacts.

Interim Final Rule: The Interim Final Rule does not contain any provision related to insurance or bonding.

4. **EPA Review and Determination on EIA Documentation. Consider whether EPA should continue to review EIA documentation to determine if it meets the**

**requirements of Article 8 and Annex I of the Protocol and the provisions of the rule, and whether the associated enforcement provision should be retained.**

IAATO: EPA does not have authority under the Act to assess the adequacy of EIA documentation prepared by the operators; rather, EPA's basic role is limited to promulgating rules governing environmental assessment. It is questionable whether EPA has authority to require revisions if a document is found not to meet the requirements of the Protocol and the Interim Final Rule, and thus by extension, the final rule.

Interim Final Rule: The procedures in the Interim Final Rule are designed to ensure that U.S.-based nongovernmental operators identify and assess the potential impacts of their proposed activities, and that operators consider these impacts in deciding whether or how to proceed with proposed activities.<sup>4</sup> Section 8.5(a) and other parts of the Interim Final Rule provide for review of EIA documentation by EPA, in consultation with other federal agencies, to determine whether the EIA meets the requirements of Article 8 and Annex I of the Protocol and the provisions of the Interim Final Rule. EPA may, with the concurrence of the National Science Foundation, make a finding that the documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the Interim Final Rule. Under the enforcement provisions of Section 8.11, if the operator proceeds with the expedition without fulfilling the requirements of the Interim Final Rule, the operator would be subject to enforcement action.

**5. Elaboration of Factors to be Considered in the EIA. Consider whether EIA documentation should be required to address compliance with other applicable provisions of the Protocol and relevant U.S. statutes.**

TAP/ASOC: The operators' EIAs must weigh the scientific or other benefits of an activity against the environmental impacts when deciding whether or not to proceed with the activity and must document any decision that the benefits of proceeding outweigh the environmental impacts. The EIA documentation must explain why the least impacting alternative is not the preferred alternative. The final rule must be explicit in detailing an operator's responsibility for ensuring that the vessel used to transport passengers to, from, or within Antarctica is able to comply with the Protocol's standards.

Public Commentor: Consider separate guidelines for different species of penguins, or separate guidelines for different landing sites.

IAATO: The final rule should not provide further elaboration beyond what is already in the Interim Final Rule as to factors which must be considered in the EIA.

National Science Foundation: The final rule should not provide further elaboration beyond what is already in the Interim Final Rule as to factors which must be considered in the EIA.

Interim Final Rule: The Interim Final Rule does not require that EIA documentation address compliance with other provisions of the Protocol. However, compliance with other obligations may be discussed in EIA documents, particularly if compliance with these obligations is relevant to mitigation of environmental impacts of the proposed expedition and the conclusion of the operator in the document (e.g., for an IEE, the potential impacts are no more than minor or transitory).

The Interim Final Rule provides direction as to what factors are to be considered for the different

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<sup>4</sup> 40 CFR §8.1(b).

levels of EIA documentation.<sup>5</sup> Section 8.4(a) states the basic information requirements, and Section 8.4(b) directs that operators preparing an IEE or CEE should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment, elements similar to those in Article 3. (See Issue 1: Article 3 of the Protocol.) Section 8.4(c) provides direction on the type of environmental document required relative to the nature and intensity of the environmental impacts that could result from the activity under consideration. For operators preparing an IEE<sup>6</sup> or CEE,<sup>7</sup> Sections 8.7 and 8.8 direct the content of the documents, respectively.

**6. New Sites. Consider whether a CEE should be required for planned tourist expeditions to new sites.**

TAP/ASOC: A mitigation measure that could be considered in a CEE would be a prohibition on visits to new sites by nongovernmental operators, namely tour operators.

Interim Final Rule: The Interim Final Rule does not distinguish between new or rarely visited sites and sites that have been previously visited. However, as stated above for Issue 4, Section 8.4(b) directs that operators preparing an IEE or CEE should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment. Section 8.4(c) provides direction on the type of environmental document required relative to the nature and intensity of the environmental impacts that could result from the activity under consideration. Sections 8.7 and 8.8 direct the content of IEE and CEE documentation, respectively.

***Category B: Issues concerning the scope of the application of the final rule and consideration of other Parties' requirements***

**1. Definition of Operator. Consider whether the definition of operator should include foreign operators "doing business in the United States" in order to cover foreign-based operators carrying U.S. citizens. If this is not feasible, consider applying the EIA requirements to all U.S. citizens going to Antarctica on nongovernmental expeditions.**

TAP/ASOC: Since one third of all tourists to Antarctica are U.S. citizens, the final rule should be expanded to include all operators "doing business in the U.S." or, if this is not feasible, the final rule should include other provisions to ensure that all U.S. citizens going to Antarctica are covered. The Congress, in Section 4(a)(6) of the Act, specifically directed that it is unlawful for "...any person who organizes, sponsors, operates or promotes a non-governmental expedition to Antarctica, and who does business in the United States..." to fail to take steps to ensure compliance with the Protocol.

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<sup>5</sup> The levels of documentation provided for in the Interim Final Rule include: Preliminary Environmental Review Memorandum (PERM) to assess whether the proposed activity may have less than a minor or transitory impact; Initial Environmental Evaluation (IEE) to assess whether a proposed activity may have no more than a minor or transitory impact; and Comprehensive Environmental Evaluation (CEE) for activities likely to have more than a minor or transitory impact.

<sup>6</sup> IEE, an Initial Environmental Evaluation, means a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment prepared in accordance with 40 CFR §8.7.

<sup>7</sup> CEE, a Comprehensive Environmental Evaluation, means a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment, prepared in accordance with the provisions of the Interim Final Rule and includes all comments received thereon. (See: 40 CFR §8.8.)

IAATO: The final rule should be limited to U.S. operators only; this approach is more consistent with provisions of the Act which requires EIA of nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Treaty.

Interim Final Rule: The Interim Final Rule defines operator or operators as "...any person or persons organizing a nongovernmental expedition to or within Antarctica;" and "[p]erson has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States except that the term does not include any department, agency, or other instrumentality of the Federal Government."<sup>8</sup> The Interim Final Rule does not apply to individual U.S. citizens or groups of citizens planning to travel to Antarctica on an expedition for which they are not acting as an operator, nor does the Rule apply to U.S. citizens who participate in tours organized in or proceeding from countries other than the United States.<sup>9</sup> The Interim Final Rule was issued pursuant to the Act and provides for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty of 1959.<sup>10</sup>

**2. Reciprocity Provision. Consider an automatic reciprocity provision for environmental documentation prepared for other Parties and submitted by a U.S.-based operator.**

TAP/ASOC: Supports minimizing the paperwork burden on operators but believes it would be risky to automatically assume that satisfactory completion of an EIA for another Party would meet the requirements of the final rule. The final rule could allow incorporation of these documents by reference in the submittal to the U.S. Many Parties have procedures which allow the Party to require modification, suspension, or cancellation of an activity (including, for some Parties, a requirement to have a permit), and that completion of the EIA for these countries does not necessarily imply acceptance of that activity. For this reason, completion of the EIA documents for these countries should not automatically be presumed to meet the U.S. EIA documentation requirements.

IAATO and Some Individual Operators: The final rule should allow for U.S. approval without independent review where another Party to the Treaty has approved an EIA for a proposed expedition by a U.S.-based operator. Other Parties allow reciprocity and that failure to include this provision in the final rule could have serious environmental consequences if U.S. operators are put at a competitive disadvantage and U.S.-based operators are thereby encouraged to move their operations offshore, possibly to non-Party countries. The industry is complex and international in nature as are the variety of requirements that an operator might have to meet in dealing with two or more Parties.

National Science Foundation: Supports the concept of allowing for incorporation by reference EIAs prepared by nongovernmental operators for other Parties, or of some certification procedure of the other Party's EIA review process by EPA that would avoid the preparation of duplicate assessments.

Interim Final Rule: The Interim Final Rule does not specify the format for EIA documentation and allows considerable flexibility including a provision to incorporate material into an environmental document by referring to it. This provision allows operators to submit EIAs to EPA which may have been prepared to meet the requirements of other Parties to the Treaty. However, independent U.S. federal government review of the EIA document is still required.

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<sup>8</sup> 40 CFR §8.3, Definitions.

<sup>9</sup> 40 CFR Part 8, Preamble, II.D.1.

<sup>10</sup> 40 CFR §8.1(a).

## **Category C: Process-Oriented Issues**

### **1. Multi-Year Environmental Impact Assessments (EIA)s. Consider including a provision for multi-year EIAs.<sup>11</sup>**

TAP/ASOC: Does not oppose multi-year EIAs but urged that such EIAs should be reviewed annually by the operators, and EPA, with the document modified to address any change in the activities or if the activity intensity significantly increases or decreases.

IAATO and Some Individual Operators: Recommends adding a provision to the final rule to allow operators to submit multi-year EIA documentation for activities repeated over two or more seasons thereby eliminating the need for annual submission of EIA documentation for these expeditions. Only the annual information needed for U.S. notification to other Parties would be submitted (e.g., the annual Advanced Notice submitted to the Department of State).

National Science Foundation: Supports adding a provision for EIA documentation which would cover multiple seasons.

Interim Final Rule: The Interim Final Rule requires annual submission of environmental documentation. However, previous EIA documentation can be incorporated by referring to it when the effect will be to reduce paperwork without impeding the review of the environmental document by EPA and other federal agencies. The incorporated material must be cited and its content briefly described. No material may be incorporated by referring to it in the document unless it is reasonably available to EPA.<sup>12</sup> This allows operators who plan no changes in activities to submit EIA documentation consisting of a letter incorporating the previous year's environmental documentation by referring to it and a copy of the advance notice provided to the State Department for the upcoming season.

### **2. PERMs. Consider eliminating the PERM<sup>13</sup> provision of the Interim Final Rule.<sup>14</sup>**

IAATO: Recommends that the preliminary environmental review provision in the Interim Final Rule be eliminated since, in their view, a PERM duplicates the information sent to the Department of State for purposes of Advance Notification of expeditions to Antarctica.

Interim Final Rule: Section 8.6 of the Interim Final Rule provides that unless the operator has determined to prepare an IEE or CEE, the operator must conduct a preliminary environmental review in sufficient detail to assess whether the proposed activity may have less than a minor or transitory impact on the Antarctic environment. This provision is consistent with Annex I to the Protocol. EPA's review, in consultation with other interested federal agencies, may result in a finding, with the concurrence of the National Science Foundation, that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol. A PERM must include the basic information

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<sup>11</sup> This falls under EPA Scoping Issue 4: *Options for streamlining documentation requirements* as listed in Section 4.3.

<sup>12</sup> 40 CFR §8.4(d).

<sup>13</sup> A Preliminary Environmental Review Memorandum (PERM) means the documentation supporting the conclusion of the preliminary environmental review that the impact of a proposed activity will be less than minor or transitory on the Antarctic environment.

<sup>14</sup> This falls under EPA Scoping Issue 4: *Options for streamlining documentation requirements* as listed in Section 4.3.

requirements listed in Section 8.4. This information is similar to the information sent to the Department of State for purposes of Advance Notification of expeditions to Antarctica.

**3. Categorical Exclusions. Consider including a provision for categorical exclusions and categorically exclude Antarctic ship-based tourism conducted according to the “Lindblad Model.”<sup>15</sup>**

IAATO: Endorsed a provision for categorical exclusions and recommended a categorical exclusion for Antarctic tourism activities organized under a carefully defined “Lindblad Model,” but did not provide definition for this model.

National Science Foundation: Noted that its NEPA regulations set out categorical exclusions for certain types of governmental activities in Antarctica.

**4. Public Comment on IEEs. Consider requiring a formal public review process for IEEs similar to that provided for CEEs.<sup>16</sup>**

TAP/ASOC: The final rule should provide for a formal public comment period for IEEs with a minimum of 30 days to provide comments.

IAATO: The existing approach is sufficient and should not be modified; the Protocol does not require public comment on IEEs.

National Science Foundation: The existing approach is sufficient and the Protocol does not require public comment on IEEs. Further, NEPA does not require public notice or comment on Environmental Assessments.<sup>17</sup>

Interim Final Rule: The Interim Final Rule provides for a 90 day public review of CEEs as required by Annex I to the Protocol. Neither the Protocol or the Act provide for public reviews of IEEs. Consistent with Annex I to the Protocol, the Interim Final Rule does not provide for a comment period for public review of IEEs. However, upon receipt of an IEE, EPA electronically publishes notice of its receipt on the Office of Federal Activities’ website<sup>18</sup> and makes copies of the documents available to the public upon request.<sup>19</sup> EPA also accepts comments from the public during its review of an IEE. In addition, the Department of State circulates to the Parties and makes publically available a copy of an annual list of IEEs prepared by U.S. operators in accordance with Article 2 and any decisions taken in consequence thereof.<sup>20</sup>

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<sup>15</sup> This issue is EPA Scoping Issue 7: *Possible “categorical exclusions”* as listed in Section 4.3.

<sup>16</sup> This issue is EPA Scoping Issue 8: *Public comment on IEEs* as listed in Section 4.3.

<sup>17</sup> Under the practices of the U.S. Antarctic Program which is managed by the National Science Foundation, EAs under NEPA are also considered IEEs for purposes of meeting the obligations of the Protocol.

<sup>18</sup> [www.epa.gov/oeca/ofa](http://www.epa.gov/oeca/ofa)

<sup>19</sup> 40 CFR Part 8, Preamble, II.D.3(b). Further, TAP/ASOC has a standing request with EPA that it be provide a copy of any IEE, or other EIA documentation, submitted by a U.S.-based operator.

<sup>20</sup> 40 CFR §8.12.

5. ***Threshold for “More Than Minor or Transitory Impact”.*** Consider including a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

National Science Foundation: Recommended that the threshold for “more than a minor or transitory impact” and “significant effect” for purposes of the National Environmental Policy Act be explicitly equated in the final rule.

Interim Final Rule: The Preamble to the Interim Final Rule indicates that a determination as to whether an activity in Antarctica may have an impact that is more than minor or transitory is equivalent to a finding that the activity will have a “significant effect” for purposes of NEPA.<sup>21</sup>

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<sup>21</sup> 40 CFR Part 8, Preamble, Section II.D.4.



*Appendix 23: Protocol on Environmental  
Protection to the Antarctic Treaty: Article  
3, Article 8 and Annex I*

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**Appendix 23**  
**Protocol on Environmental Protection to the Antarctic Treaty:**  
**Article 3, Article 8 and Annex I**

| <b><u>Article</u></b> | <b><u>Title</u></b>             | <b><u>Page</u></b> |
|-----------------------|---------------------------------|--------------------|
| 3                     | Environmental Principles        | Appendix 23-2      |
| 8                     | Environmental Impact Assessment | Appendix 23-3      |

**Annex I: Environmental Impact Assessment**

| <b><u>Article</u></b> | <b><u>Title</u></b>  | <b><u>Page</u></b> |
|-----------------------|--|--------------------|
| 1                     | Preliminary Stage  | Appendix 23-4      |
| 2                     | Initial Environmental Evaluation                                 | Appendix 23-4      |
| 3                     | Comprehensive Environmental Evaluation                           | Appendix 23-4      |
| 4                     | Decisions to be Based On Comprehensive Environmental Evaluations | Appendix 23-6      |
| 5                     | Monitoring   | Appendix 23-6      |
| 6                     | Circulation of Information                                       | Appendix 23-6      |
| 7                     | Cases of Emergency   | Appendix 23-6      |
| 8                     | Amendment or Modification  | Appendix 23-7      |

**Appendix 23**  
**Protocol on Environmental Protection to the Antarctic Treaty**

**ARTICLE 3**  
**ENVIRONMENTAL PRINCIPLES**

1. The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.
  
2. To this end:
  - (a) activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;
  
  - (b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:
    - (i) adverse effects on climate or weather patterns;
    - (ii) significant adverse effects on air or water quality;
    - (iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;
    - (iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora;
    - (v) further jeopardy to endangered or threatened species or populations of such species; or
    - (vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance;
  
  - (c) activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research; such judgements shall take full account of:
    - (i) the scope of the activity, including its area, duration and intensity;
    - (ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty area;
    - (iii) whether the activities will detrimentally affect any other activity in the Antarctic Treaty area;
    - (iv) whether technology and procedures are available to provide for environmentally safe operations;
    - (v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems; and
    - (vi) whether there exists the capacity to respond promptly and effectively to accidents particularly those with potential environmental effects;
  
  - (d) regular and effective monitoring shall take place to allow assessment of the impacts of ongoing activities, including the verification of predicted impacts;
  
  - (e) regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems.

4. Activities shall be planned and conducted in the Antarctic Treaty area so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research, including research essential to understanding the global environment.
5. Activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required in accordance with Article VII (5) of the Antarctic Treaty, including associated logistic support activities, shall:
  - (a) take place in a manner consistent with the principles in this Article; and
  - (b) be modified, suspended or canceled if they result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems inconsistent with those principles.

### **ARTICLE 8 ENVIRONMENTAL IMPACT ASSESSMENT**

1. Proposed activities referred to in paragraph 2 below shall be subject to the procedures set out in Annex I for prior assessment of the impacts of those activities on the Antarctic environment or on dependent or associated ecosystems according to whether those activities are identified as having:
  - (a) less than a minor or transitory impact;
  - (b) a minor or transitory impact; or
  - (c) more than a minor or transitory impact.
2. Each Party shall ensure that the assessment procedures set out in Annex I are applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.
3. The assessment procedures set out in Annex I shall apply to any change in an activity whether the change arises from an increase or decrease in the intensity of an existing activity, from the addition of an activity, the decommissioning of a facility, or otherwise.
4. Where activities are planned jointly by more than one Party, the Parties involved shall nominate one of their number to coordinate the implementation of the environmental impact assessment procedures set out in Annex I.

# **Annex I to the Protocol on Environmental Protection to the Antarctic Treaty**

## **Environmental Impact Assessment**

### **ARTICLE 1 PRELIMINARY STAGE**

1. The environmental impacts of proposed activities referred to in Article 8 of the Protocol shall, before their commencement, be considered in accordance with appropriate national procedures.
2. If an activity is determined as having less than a minor or transitory impact, the activity may proceed forthwith.

### **ARTICLE 2 INITIAL ENVIRONMENTAL EVALUATION**

1. Unless it has been determined that an activity will have less than a minor or transitory impact, or unless a Comprehensive Environmental Evaluation is being prepared in accordance with Article 3, an Initial Environmental Evaluation shall be prepared. It shall contain sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact and shall include:
  - (a) a description of the proposed activity, including its purpose, location, duration, and intensity; and
  - (b) consideration of alternatives to the proposed activity and any impacts that the activity may have, including consideration of cumulative impacts in the light of existing and known planned activities.
2. If an Initial Environmental Evaluation indicates that a proposed activity is likely to have no more than a minor or transitory impact, the activity may proceed, provided that appropriate procedures, which may include monitoring, are put in place to assess and verify the impact of the activity.

### **ARTICLE 3 COMPREHENSIVE ENVIRONMENTAL EVALUATION**

1. If an Initial Environmental Evaluation indicates or if it is otherwise determined that a proposed activity is likely to have more than a minor or transitory impact, a Comprehensive Environmental Evaluation shall be prepared.
2. A Comprehensive Environmental Evaluation shall include:
  - (a) a description of the proposed activity including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives;
  - (b) a description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity;
  - (c) a description of the methods and data used to forecast the impacts of the proposed activity;
  - (d) estimation of the nature, extent, duration, and intensity of the likely direct impacts of the

- proposed activity;
- (e) consideration of possible indirect or second order impacts of the proposed activity;
  - (f) consideration of cumulative impacts of the proposed activity in the light of existing activities and other known planned activities;
  - (g) identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents;
  - (h) identification of unavoidable impacts of the proposed activity;
  - (i) consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;
  - (j) an identification of gaps in knowledge and uncertainties encountered in compiling the information required under this paragraph;
  - (k) a non-technical summary of the information provided under this paragraph; and
  - (l) the name and address of the person or organization which prepared the Comprehensive Environmental Evaluation and the address to which comments thereon should be directed.
3. The draft Comprehensive Environmental Evaluation shall be made publicly available and shall be circulated to all Parties, which shall also make it publicly available, for comment. A period of 90 days shall be allowed for the receipt of comments.
  4. The draft Comprehensive Environmental Evaluation shall be forwarded to the Committee at the same time as it is circulated to the Parties, and at least 120 days before the next Antarctic Treaty Consultative Meeting, for consideration as appropriate.
  5. No final decision shall be taken to proceed with the proposed activity in the Antarctic Treaty area unless there has been an opportunity for consideration of the draft Comprehensive Environmental Evaluation by the Antarctic Treaty Consultative Meeting on the advice of the Committee, provided that no decision to proceed with a proposed activity shall be delayed through the operation of this paragraph for longer than 15 months from the date of circulation of the draft Comprehensive Environmental Evaluation.
  6. A final Comprehensive Environmental Evaluation shall address and shall include or summarise comments received on the draft Comprehensive Environmental Evaluation. The final Comprehensive Environmental Evaluation, notice of any decisions relating thereto, and any evaluation of the significance of the predicted impacts in relation to the advantages of the proposed activity, shall be circulated to all Parties, which shall also make them publicly available, at least 60 days before the commencement of the proposed activity in the Antarctic Treaty area.

**ARTICLE 4  
DECISIONS TO BE BASED ON COMPREHENSIVE  
ENVIRONMENTAL EVALUATIONS**

Any decision on whether a proposed activity, to which Article 3 applies, should proceed, and, if so, whether in its original or in a modified form, shall be based on the Comprehensive Environmental Evaluation as well as other relevant considerations.

**ARTICLE 5  
MONITORING**

1. Procedures shall be put in place, including appropriate monitoring of key environmental indicators, to assess and verify the impact of any activity that proceeds following the completion of a Comprehensive Environmental Evaluation.
2. The procedures referred to in paragraph 1 above and in Article 2 (2) shall be designed to provide a regular and verifiable record of the impacts of the activity in order, inter alia, to:
  - (a) enable assessments to be made of the extent to which such impacts are consistent with the Protocol; and
  - (b) provide information useful for minimising or mitigating impacts, and, where appropriate, information on the need for suspension, cancellation or modification of the activity.

**ARTICLE 6  
CIRCULATION OF INFORMATION**

1. The following information shall be circulated to the Parties, forwarded to the Committee and made publicly available:
  - (a) a description of the procedures referred to in Article 1;
  - (b) an annual list of any Initial Environmental Evaluations prepared in accordance with Article 2 and any decisions taken in consequence thereof;
  - (c) significant information obtained, and any action taken in consequence thereof, from procedures put in place in accordance with Articles 2 (2) and 5; and
  - (d) information referred to in Article 3 (6).
2. Any Initial Environmental Evaluation prepared in accordance with Article 2 shall be made available on request.

**ARTICLE 7  
CASES OF EMERGENCY**

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in this Annex.

2. Notice of activities undertaken in cases of emergency, which would otherwise have required preparation of a Comprehensive Environmental Evaluation, shall be circulated immediately to all Parties and to the Committee and a full explanation of the activities carried out shall be provided within 90 days of those activities.

**ARTICLE 8  
AMENDMENT OR MODIFICATION**

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that period, that it wishes an extension of that period or that it is unable to approve the measure.
2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party.



***Appendix 24: Potential Environmental  
Impacts and Proposed Control Measures  
Identified by U.S.-Based Nongovernmental  
Operators***

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**Appendix 24**  
**Potential Environmental Impacts and Proposed Control Measures**  
**Identified by U.S.-Based Nongovernmental Operators**

| <b><u>Table</u></b> | <b><u>Title</u></b>   | <b><u>Page</u></b> |
|---------------------|---|--------------------|
| 24.1                | Ship-Based Tourism: Ship and Zodiac Operations  | Appendix 24-2      |
| 24.2                | Ship-Based Tourism: Landing Operations Including Helicopter Overflights/Landings  | Appendix 24-4      |
| 24.3                | Nongovernmental Scientific Expeditions: Land-based Research Activities Supported by Ship Transport and Helicopter Overflights | Appendix 24-5      |

**Appendix 24**  
**Potential Environmental Impacts and Proposed Control Measures**  
**Identified by U.S.-Based Nongovernmental Operators<sup>1</sup>**

**Table 24.1 Ship-Based Tourism: Ship and Zodiac Operations**

| Potential Environmental Impacts from Sources/Activities  | Proposed Control Measures to Minimize/Avoid Impacts  |
|--|--|
| Potential impacts to water, air and marine fauna/flora from:<br><br>Fuel and oil-related activities and/or incidents including burning fuel and/or stack emissions and fuel and/or oil spill | <ul style="list-style-type: none"> <li>• Experienced ship/Zodiac operators employed</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• Staff education and training including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations</li> </ul> |
|  | <ul style="list-style-type: none"> <li>• Ship operated in accordance with MARPOL, SOLAS, applicable domestic statutes and regulations, and vessel's SOPs</li> </ul>                                      |
|  | <ul style="list-style-type: none"> <li>• Ship fueled at home port rather than in the Antarctic Treaty Area</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Diesel electric vessel propulsion may be used</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• MARPOL-approved fuels used; high quality, low sulfur fuel</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Monitor stacks to ensure particulate emissions minimized</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• Operate ship at steady speed to minimize load shifts</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• Ship carries spill retention and absorbent materials</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• Ship's crew perform fuel, oil and chemical spill response drills</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Impacts are no more than minor or transitory from discharge amounts allowable under MARPOL and Annex IV of the Protocol</li> </ul>                  |  |
| Potential impacts to water and marine fauna/flora from:<br><br>Ballast discharge   | <ul style="list-style-type: none"> <li>• Discharge in accordance with MARPOL, SOLAS, applicable domestic statutes and regulations, and vessel's SOPs</li> </ul>  |
| Potential impacts to water and marine fauna/flora from:<br><br>Ocean transit, ice breaking, and maneuvering ship/Zodiacs   | <ul style="list-style-type: none"> <li>• Ship visits familiar areas making risk of running aground small</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Ocean transit and ice breaking impacts are no more than minor or transitory</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Ship captain and Zodiac drivers closely monitor weather conditions</li> </ul>   |

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<sup>1</sup> These tables are a compilation of various control measures identified by the various U.S.-based operators.

|   |  |
|---|--|
| <p>Potential impacts to water, air and marine fauna/flora from:</p> <p>Waste-related activities/incidents including: discharges of sewage water to Antarctic Treaty waters, stack emissions from incineration of dry garbage, and accidental waste/litter releases. Wastes include: sewage water, food waste, medical waste, batteries, and any other garbage</p> | <ul style="list-style-type: none"> <li>• MARPOL and Annexes III and IV of the Protocol apply</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>• Sewage waste macerated and disposed of north of 60/S through a screen with openings no greater than 25 millimeters</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>• Dry garbage incinerated daily with fuel and stack emissions monitoring; all other wastes and garbage, including batteries, compacted and stored for later shoreside disposal outside the Treaty Area</li> </ul>               |
|   | <ul style="list-style-type: none"> <li>• Educate passengers on need to control litter to prevent releases</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>• Accidental releases cleaned up as possible; natural dispersion by wind/wave action</li> </ul>   |
| <p>Potential impacts to marine fauna from:</p> <p>Vessel noise and lights</p>   | <ul style="list-style-type: none"> <li>• Slow ship or Zodiac or shut down engines when in the presence of marine mammals</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>• Keep ship speed no faster than required for safe navigation, run at reasonably constant RPM and propeller pitch settings; use diesel electric propulsion, resilient or floating engine mounts, isolate pipe mounts</li> </ul> |
|   | <ul style="list-style-type: none"> <li>• Light impacts are no more than minor or transitory</li> </ul>   |
| <p>Potential impacts to marine fauna/flora and science program research from:</p> <p>Anchoring</p>  | <ul style="list-style-type: none"> <li>• Avoid protected areas</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>• Experienced crew and use of available maps</li> </ul>   |
| <p>Potential impacts to water, air, marine fauna/flora and science program research from:</p> <p>Inadvertently entering protected areas</p>   | <ul style="list-style-type: none"> <li>• Experienced crew and use of available information on protected areas including maps</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>• Avoid protected areas</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>• No anchoring inside marine protected areas</li> </ul>   |
| <p>Potential impacts to water, air, marine fauna/flora and near shore habitats from:</p> <p>Zodiac operations including: fueling, waste disposal, marine incidents, and point source pollution</p>  | <ul style="list-style-type: none"> <li>• No refueling or fuel discharges while at sea</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>• Any refuse or waste generated during Zodiac activities returned to the ship for disposal</li> </ul>   |

**Table 24.2 Ship-Based Tourism: Landing Operations Including Helicopter Overflights/Landings**

| Potential Environmental Impacts from Sources/Activities   | Proposed Control Measures to Minimize/Avoid Impacts  |
|---|--|
| <p>Potential impacts of human activity on fauna/flora from:</p> <p>Trampling nesting sites and fragile plant communities; noise; predation and scavenging of eggs and chicks if adults are forced to leave their nests or young unattended</p>  | <ul style="list-style-type: none"> <li>• Staff education/training and passenger education including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations; passenger education includes pre-departure materials, and onboard briefings and videos</li> <li>• Passengers on shore not allowed to fish, hunt, or engage in other sporting activities that are prohibited or which may adversely affect wildlife or the environment</li> <li>• Number of passengers ashore at any one time limited to 100</li> <li>• Passengers closely supervised by staff with staff to passenger ratio of 1:15-20</li> <li>• Passengers spend a relatively short amount of time ashore at each landing site with off-limits areas defined by staff</li> <li>• Ship's captain revoking future landing privilege for a passenger's flagrant violation of the landing procedures</li> </ul> |
| <p>Potential impacts of human activity on fauna from:</p> <p>Introduction of alien species or microbes; spread of disease from other colonies</p>   | <ul style="list-style-type: none"> <li>• Boot washing stations standard on tour vessels for visitors to clean their boots before and after each landing</li> <li>• Careful checking of clothing</li> <li>• Avoid direct contribution to the spread of the IBDV virus by not taking any poultry products or vegetation ashore for any reason</li> <li>• Helicopter skids cleaned between landings</li> </ul>  |
| <p>Potential impacts of human activity on water, air, fauna/flora, aesthetics, and science program research from:</p> <p>Harm to protected areas and destruction of the aesthetic value and general well-being of the Antarctic environment</p> | <ul style="list-style-type: none"> <li>• Expedition leader verifies that no protected areas are in the vicinity of the proposed landing site</li> <li>• No protected sites are visited and a minimum distance of 100 meters from protected areas is maintained</li> <li>• Staff reconnaissance of site following passenger landings to ensure no trash or other items left behind</li> </ul>   |
| <p>Potential impacts of human activity on water, air, fauna/flora and science program research from:</p> <p>Harm to new sites</p>   | <ul style="list-style-type: none"> <li>• Visits managed and evaluated according to established factors: <ul style="list-style-type: none"> <li>• whether or not the site is in close proximity to a protected area</li> <li>• species diversity at the site</li> <li>• the amount of space available for visitors to walk freely</li> <li>• whether or not the site features nesting southern giant petrels or other flying birds</li> </ul> </li> <li>• Site visit report with sketch map and preliminary survey of existing environment prepared</li> <li>• Post-trip report completed and filed with IAATO and appropriate national authority</li> </ul>  |

|  |   |
|--|---|
| Potential impacts of human activity on historic buildings and artifacts including taking biological and historic mementos as souvenirs   | • Degradation avoided by enforcing strict guidelines established prior to departure from the vessel   |
|  | • Passenger education   |
|  | • Close passenger supervision while in historic buildings and around artifacts  |
| Potential impacts of human activity on science program research and operations   | • Science station visits coordinated w/National Science Foundation and other appropriate national programs                                      |
|  | • No entry into SSSIs   |
| Potential impacts of helicopter flight activity on fauna/flora from:<br><br>Fuel spill during refueling, dust creation and surface destruction from rotor down drought, increased predation following disturbance by aircraft/aircraft noise | • Fueling onboard ship only with spill/clean up provisions in-place   |
|  | • No flights directly over Emperor Rookeries or below 500 meters and only land a minimum of 1 km from the rookeries                             |
|  | • Land on ice and snow when possible to minimize soil impacts   |
|  | • No helicopter landings near fresh water lakes (e.g., Dry Valleys or Zhongshan Station areas)  |
|  | • Land in areas designated by national program authorities deemed "tourist" landing sites to avoid interference with ongoing science activities |
|  | • Wastes managed in accordance with U.S. Antarctic Conservation Act Permit  |
|  | • Comply with company's guidelines and SOP for helicopter operations  |

**Table 24.3 Nongovernmental Scientific Expeditions: Land-based Research Activities Supported by Ship Transport and Helicopter Overflights**

| Potential Environmental Impacts from Sources/Activities   | Proposed Control Measures to Minimize/Avoid Impacts   |
|---|---|
| <p>Potential impacts to water, air and marine fauna/flora from ship-based transport platform:</p> <p>See Table 24.1 above, 'Ship-Based Tourism: Ship and Zodiac Operations'</p> | <ul style="list-style-type: none"> <li>• Researchers rely on tour ships and national program vessels for ship transportation; see Table 24.1 above, 'Ship-Based Tourism: Ship and Zodiac Operations'</li> </ul> |

|  |  |
|--|--|
| Potential impacts of researchers on fauna including 'taking' <sup>2</sup> or 'harmful interference' <sup>3</sup> | • Education and training of research personnel including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations   |
|  | • Awareness of site-specific sensitivities   |
|  | • Actual on-site conduct including paying close attention to wildlife and maintaining a safe distance that does not cause the animals to alter their behavior in any fashion   |
|  | • Identification activities done via photography to minimize/avoid contact with fauna  |
|  | • Work around fauna conducted in accordance with U.S. Antarctic Conservation Act Permit  |
| Potential impacts of researchers on flora including 'taking' <sup>4</sup> or 'harmful interference' <sup>5</sup> | • Education and training of research personnel including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations   |
|  | • Awareness of site-specific sensitivities   |
|  | • Actual on-site conduct including paying close attention to areas where standing, walking and hiking to avoid trampling or walking on flora   |
|  | • Identification activities done via photography to minimize/avoid contact with flora  |
|  | • Work around flora conducted in accordance with U.S. Antarctic Conservation Act Permit  |
| Potential impacts of helicopter flight activity on fauna/flora from helicopter transport platform                | • Researchers rely on national program helicopter aboard the <i>HMS Endurance</i> for overflight transportation which complies with the guidelines established by the UK Foreign and Commonwealth Office to avoid harmful interference with concentrations of Antarctic wildlife |

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<sup>2</sup> The term 'take' means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected. From: P.L. 104-227, Title I, Sec. 3, Definitions.

<sup>3</sup> The term 'harmful interference' means – (A) flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds or seals; (B) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals; (C) using explosives or firearms in a manner that disturbs concentrations of birds or seals; (D) willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot; (E) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and (F) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate. From: P.L. 104-227, Title I, Sec. 3, Definitions.

<sup>4</sup> See Footnote 2.

<sup>5</sup> See Footnote 3.

*Appendix 25: Assessment of the Possible  
Cumulative Environmental Impacts of  
Commercial Ship-Based Tourism in the  
Antarctic Peninsula Area*

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**Appendix 25**  
**Assessment of the Possible Cumulative Environmental Impacts**  
**of Commercial Ship-Based Tourism in the Antarctic Peninsula Area**

**Preliminary Summary of Proceedings of a Workshop**  
**Sponsored by EPA, National Science Foundation, and IAATO**  
**June 7-9, 2000<sup>1</sup>**

The issue of cumulative impacts, particularly in the Peninsula area, remains a concern in light of such factors as the increasing number of tour operators, expeditions, and passengers landed; the number of sites visited; and the frequency at which certain sites are visited. To better address the issue of possible cumulative environmental impacts associated with ship-based Antarctic tourism, the EPA, the National Science Foundation and IAATO sponsored a workshop for scientists and government, industry and environmental interest group representatives to consider the research needed to assess whether any changes in the fauna and flora are related to natural variation or to tourism activities.

It is unlikely that any single landing by tourists to particular sites, including sites in the Peninsula area, will have significant environmental effects if carried out in accordance with the applicable provisions of the Protocol, Recommendation XVIII-1, and the general reporting guidelines for tourism and nongovernmental activities. However, it is possible that multiple visits to some areas, during the same year or over a series of years, could have cumulative adverse impacts even if the visits are carried out in accordance with the provisions of the Protocol and applicable guidelines.

Various information gathering efforts and research activities have been and are being done to provide the kinds of information necessary to assess and determine how best to prevent or mitigate the possible cumulative effects of tourist activities, particularly in the Peninsula area. However, information currently available is insufficient to accurately predict how or to what extent the physical features and biota at particular sites may be affected by repeated visits. Similarly, available information is insufficient to accurately predict the frequency and duration of visits likely to produce particular effects (i.e., to predict likely cause-effect relationships) particularly in light of the need to, and difficulty of, separating natural variability from anthropogenic impacts. Available information is also insufficient to determine how best to avoid or mitigate possible cumulative adverse impacts and whether effects are related linearly to the level of activity or occur only when disturbance reaches some threshold level. Thus, the principal objectives of the workshop were to:

1. Identify, based upon available information and experience elsewhere, the types of cumulative environmental impacts that possibly could result from commercial, ship-based tourist operations in the Antarctic Peninsula area;
2. Review on-going research and monitoring programs in the Peninsula area to determine whether they likely will be able to detect the possible cumulative adverse effects of ship-based tourism before they reach significant levels (i.e., levels that would not be considered minor or transitory under the Protocol); and

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<sup>1</sup> "Assessment of the Possible Cumulative Environmental Impacts of Commercial Ship-Based Tourism in the Antarctic Peninsula Area: Proceedings of a Workshop Held in La Jolla, California, 7-9 June 2000." Draft Report. Workshop sponsors: National Science Foundation, EPA, and IAATO. Undated.

3. Describe changes in existing research and monitoring programs or additional programs that would be required to detect cumulative adverse effects before they reach significant levels.

The attached table is a preliminary summary of various elements identified and discussed during the workshop including examples of: possible cumulative impacts, site variables affecting possible cumulative effects, activity variables possibly affecting cumulative impacts, and impact avoidance/mitigation measures.

With regard to assessing the practicality of possible management measures, workshop participants recognized that all possible measures for assessing and avoiding or minimizing the cumulative effects of ship-based tourism may not be practical to implement (e.g., monitoring every site that might be subject to visitation would be cost prohibitive). Variables that may need to be considered include: (1) the likely acceptance of the measure(s) by the Antarctic Treaty Consultative Parties, by IAATO members, and by tour operators not members of IAATO; (2) the ease and economic consequences of implementation; (3) possible alternative measures; (4) the actual and perceived effectiveness of existing measures; (5) the uniqueness or novelty of the site to which the measure(s) will apply; (6) the evidence indicating that a cumulative impact is occurring or likely to occur and that the contemplated measure(s) will prevent, minimize, or mitigate the impact; and (7) the presence of a comparable, similarly accessible site or sites near the site that the management measure(s) would affect.

Four long-term research and monitoring programs being conducted in the Peninsula area that are compiling information potentially useful for detecting the possible cumulative environmental effects of tourism and other activities in the area were reported on at the workshop. These programs include:

- (1) Antarctic Site Inventory being carried out by Oceanites, a U.S.-based nongovernmental research organization for the purpose of:
  - determining whether opportunistic visits can be used to effectively and economically detect possible changes in the physical features, flora, and fauna of sites in the Antarctic Peninsula being visited repeatedly by ship-borne tourists; and
  - compiling baseline data and activity information necessary to detect and determine the possible causes of changes in the physical or biological features of the sites.
- (2) Antarctic Marine Living Resources (AMLR) Research Program being carried out by the Southwest Fisheries Science Center of the U.S. National Marine Fisheries Service for the purpose of:
  - conducting ship-board studies to document and monitor changes and trends in krill distribution, abundance, age structure, and related oceanographic conditions in the area around the South Shetland Islands, particularly the waters around Elephant, King George, and Livingston Islands;
  - conducting trawl surveys to document and monitor the distribution, abundance, and trends of bottom fish in the waters around the South Shetland and South Orkney Islands;
  - compiling and assessing catch and related data concerning crab and any other fisheries conducted in the CCAMLR Area by vessels under U.S. jurisdiction; and
  - conducting land-based studies of penguins and seals that could be affected indirectly to krill harvesting in the area around the South Shetland Islands. Additional land-based studies of penguins are carried out cooperatively with National Science Foundation grantees on Torgersen Island adjacent to Palmer Station on Anvers Island, and at Admiralty Bay on King George Island.
- (3) Palmer Station Long-Term Ecological Research (LTER) Program being supported by the

National Science Foundation.

- The central tenet of the program is that the annual advance and retreat of sea ice is a major determinant of temporal and spatial variability in the structure and function of the Antarctic marine ecosystem, from total annual primary production to breeding success in sea birds.
- Research includes: documenting the interannual variability of annual sea ice and the corresponding variability in nutrient availability and in primary and secondary productivity; monitoring the distribution, abundance, and recruitment of krill and the breeding success and survival of sea birds in the study area; and construction and validation of models that relate ecosystem processes to environmental variability.

- (4) Penguin Studies at Torgersen Island, near Palmer Station, and at King George Island being supported by the National Science Foundation and the National Marine Fisheries Service (see item 2, above).

Among other things, these study results indicate that long-term observations will be necessary to detect any possible cumulative impacts of ship-based tourism.

The conclusions of the workshop will be presented in the final report of the workshop.

| <b>Preliminary Summary of Workshop Elements</b>                       |   |
|---|---|
| Examples of Site Variables Affecting Possible Cumulative Effects:     | • Biological diversity at the site  |
|   | • Location relative to the distributional ranges of the species present   |
|   | • Robustness of the species present   |
|   | • Availability of open space  |
|   | • General topography  |
|   | • Novelty of the site   |
|   | • Ice and weather conditions  |
|   | • Availability of safe anchoring or holding sites   |
|   | • Acoustic characteristics  |
|   | • Location of comparable sites nearby   |
| Examples of Activity Variables Possibly Affecting Cumulative Impacts: | • Timing of visits relative to the life cycles or breeding chronologies of species present at sites   |
|   | • Number, frequency and length of visits to sites   |
|   | • Number of visitors ashore at any one time, how long they are at the site, where they go and what they do while ashore, and how well briefed they are before landing and obey the landing 'rules' for particular sites |

|   |  |
|---|--|
| Examples of Impact Avoidance/Mitigation Measures: | • Limit the number of visits and visitors to particular sites                        |
|   | • Maximize, minimize, or alternate the number of sites visited                       |
|   | • Categorize and develop site-specific management plans for different types of sites |
|   | • Establish universal qualification standards for ship operations and manning        |
|   | • Design and conduct comparative studies and perturbation experiments                |
|   | • Site modification (e.g., marking walking paths)                                    |
|   | • Encourage self-regulation and self-policing  |
|   | • Establish guidelines or codes of conduct for additional activities                 |
|   | • Periodic review and revision of applicable guidelines                              |

*Appendix 26: Summary of Conventions,  
the Protocol, and MARPOL 73/78 as  
Applicable to Nongovernmental Activities  
in Antarctica*

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## Appendix 26

### Summary of Conventions, the Protocol, and MARPOL 73/78 As Applicable to Nongovernmental Activities in Antarctica

#### **Convention for the Conservation of Antarctic Seals (CCAS)<sup>1</sup>**

Concluded: 1972

Entered into Force: 1978

Objective: Establishes limitations upon, and provides a mechanism to deal with, commercial sealing in Antarctica.

Background and Description: CCAS was negotiated primarily as a precautionary measure in light of concern over the possible re-initiation of pelagic commercial sealing in Antarctica. Interest in such sealing has not materialized as was confirmed at the meeting of Parties to CCAS in September 1988.

#### **Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)<sup>2</sup>**

Concluded: 1980

Entered into Force: 1982

Objective: CCAMLR is intended to ensure that any harvesting of Antarctic marine living resources is consistent not only with the health of target populations, but also with that of dependent and related species and with maintenance of ecological relationships.

Background and Description: CCAMLR resulted from a 1977 ATCM initiative and represents a precedent-setting effort to develop and apply an ecosystem-wide management approach to the waters surrounding Antarctica. Consistent with its conservation objectives, the CCAMLR applies to a geographic area defined to approximate the full extent of the Antarctic marine ecosystem. This area, defined by specific coordinates, extends to those waters found south of the Antarctic Convergence which is the transition zone between Antarctic waters to the south and warmer sub-Antarctic waters to the north. Note that the CCAMLR area is considerably larger than the Antarctic Treaty area (which applies to the area south of 60° south latitude).

CCAMLR establishes the Commission for the Conservation of Antarctic Marine Living Resources; the Scientific Committee for the Conservation of Antarctic Marine Living Resources, charged with providing objective scientific assessments and recommendations to the Commission; and a Secretariat to serve both the Commission and Scientific Committee. CCAMLR provides that the Commission will operate on the basis of consensus, or no-objection, procedure characteristic of the ATS.

#### **The Protocol on Environmental Protection to the Antarctic Treaty (Protocol)<sup>3</sup>**

Concluded: 1991

Entered into Force: 1998

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<sup>1</sup> "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

<sup>2</sup> "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

<sup>3</sup> "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

Objective: Extends and improves the Treaty's effectiveness as a mechanism for ensuring the protection of the Antarctic environment.

Background and Description: The Protocol designates Antarctica as a natural reserve, devoted to peace and science, and sets forth basic principles and detailed requirements applicable to human activities in Antarctica, including obligations to accord priority to scientific research. The Protocol:

- Prohibits all activities related to Antarctic mineral resources, except for scientific research; this prohibition cannot be amended by less than unanimous agreement for at least 50 years following entry into force of the Protocol.
- Requires Parties to protect Antarctic fauna and flora.
- Imposes strict limitations on disposal of wastes in Antarctica and discharge of pollutants into Antarctic waters.
- Requires Parties to provide for response to environmental emergencies, including through the development of joint contingency plans.
- Requires application of environmental impact assessment procedures to activities undertaken in Antarctica, including nongovernmental activities, for which advance notice is required under the Antarctic Treaty.

Detailed mandatory rules for environmental protection pursuant to these requirements are incorporated in a system of annexes to the Protocol:

|           |   |
|-----------|---|
| Annex I   | Environmental Impact Assessment             |
| Annex II  | Conservation of Antarctic Fauna and Flora   |
| Annex III | Waste Disposal and Waste Management         |
| Annex IV  | Prevention of Marine Pollution <sup>4</sup> |
| Annex V   | Area Protection and Management              |

Annexes I-IV were adopted in 1998 with the Protocol; Annex V has not yet entered into force. The Protocol also provides for additional annexes to be incorporated. The Protocol includes procedures for settling disputes over the interpretation or application of the provisions of the Protocol relating to mineral resource activities, environmental impact assessment and response actions.

The Protocol establishes a Committee for Environmental Protection (CEP), as an expert advisory body to provide advice and formulate recommendations to the ATCMs in connection with the implementation of the Protocol; the CEP was chartered in 1998.

### **International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)<sup>5 6</sup>**

International Agreement Adopted: 1973

MARPOL Protocol Adopted: 1978

Objective: MARPOL (1973) and its Protocol (1978) address prevention of pollution from ships

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<sup>4</sup> Annex IV of the Protocol contains rules to control marine pollution from ships operating in the Antarctic Treaty Area and closely follows the MARPOL 73/78 provisions.

<sup>5</sup> "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

<sup>6</sup> "Guidelines for Antarctic Shipping and Related Activities." Working Paper Submitted by the United Kingdom for 'Antarctica: Meeting of Experts on Guidelines for Antarctic Shipping.' April 11, 2000.

operating on the high seas including the waters of Antarctica.

Background and Description: MARPOL 73/78, as it is commonly known, includes six annexes:

|           |   |
|-----------|---|
| Annex I   | Regulations for the Prevention of Pollution by Oil <sup>7</sup>   |
| Annex II  | Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk                                 |
| Annex III | Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Package Form <sup>8</sup> |
| Annex IV  | Regulations for the Prevention of Pollution by Sewage from Ships <sup>9</sup>                                 |
| Annex V   | Regulations for the Prevention of Pollution by Garbage from Ships <sup>10</sup>                               |
| Annex VI  | Regulations for the Prevention of Air Pollution from Ships <sup>11</sup>                                      |

Currently, Annexes I, II, III and V are in force; Annexes IV and VI are not. The International Maritime Organization (IMO) has designated the Antarctic Treaty Area (sea area south of 60° south latitude) as a Special Area under Annexes I, II and V. This designation prohibits the discharge into the sea of oil and oily waste (except in cases permitted by Annex I), noxious liquid substances carried in bulk, all plastics and other garbage. The provisions require that oil and oily wastes, all plastics and all other garbage should be discharged at port reception facilities outside of the Antarctic Treaty Area.

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<sup>7</sup> Annex I requires ships to carry a shipboard oil pollution emergency plan. All vessels operating in the Antarctic Treaty Area should have the capability to contain and clean up onboard spills. An oil record book must be maintained onboard and completed each time oil or oily mixtures are discharged, or in the event of an oil spill.

<sup>8</sup> Vessels cannot dispose of hazardous or polluting chemicals or substances (e.g., battery acid, antifreeze) into the sea in the Treaty Area in quantities or concentrations that are harmful to the marine environment.

<sup>9</sup> Discharge of untreated sewage within 12 miles of shore is prohibited.

<sup>10</sup> Annex V requires ships (400 grt or above) to carry a garbage management plan and a garbage record book. The management plan sets out written procedures for collecting, storing, processing and disposing of garbage; the record book is completed each time garbage is discharged or incinerated, or in the event of any accidental loss of garbage. Food waste may be discharged into the sea in the Treaty Area if it has been passed through a comminuter to a size less than 25 mm and is discharged not less than 12 miles from shore.

<sup>11</sup> Onboard incineration of ship-generated waste is permitted in the Treaty Area.



*Appendix 27: U.S. Domestic Statutes and  
Regulations Implementing the Antarctic  
Treaty System Conventions and the Protocol  
Applicable to Nongovernmental Activities in  
Antarctica*

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**Appendix 27**  
**U.S. Domestic Statutes and Regulations Implementing**  
**the Antarctic Treaty System Conventions and the Protocol Applicable**  
**to Nongovernmental Activities in Antarctica**

**Marine Mammal Protection Act of 1972, Public Law 92-522, 16 U.S.C. 1371 et seq.**

Implements: Convention for the Conservation of Antarctic Seals (CCAS)

Responsible Agency: National Marine Fisheries Service, within the National Oceanic and Atmospheric Administration (NOAA)

Description: Subject to certain exceptions, the Marine Mammal Protection Act (MMPA) established a moratorium on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. Taking is defined to include intentional and unintentional harassment, as well as hunting, capturing, and killing any marine mammal (including seals). The MMPA includes, amongst other things, provisions authorizing the taking of marine mammals incidental to commercial fisheries.

**Marine Mammal Protection Act (MMPA) of 1972, Public Law 92-522, 16 U.S.C. 1371 et seq.; and Antarctic Marine Living Resources Conservation Act (AMLRCA) of 1984, 16 U.S.C.A. 2431-2444.**

Implements: Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

Responsible Agency: Various including: Departments of Commerce, the Interior, and State; National Marine Fisheries Service, within the National Oceanic and Atmospheric Administration (NOAA); Marine Mammal Commission; National Science Foundation. Enforcement of AMLRCA is mandated to the U.S. Coast Guard, or any other U.S. department or agency.

Description: Relative to Antarctica, the MMPA: (1) directs actions to be taken as appropriate or necessary to protect and conserve marine mammals under existing international agreements; (2) provides for the Marine Mammal Commission to make recommendations to other agencies on actions needed to conserve marine mammals which may include marine mammals listed as endangered or threatened under the Endangered Species Act or depleted under the MMPA, as well as other species or populations facing special conservation challenges; and (3) directs the National Science Foundation to continue to support basic marine research in the Antarctic. The National Marine Fisheries Service regulations govern commercial fishing in Antarctic waters and apply to all marine biota, including bird and mammal populations.<sup>1</sup>

AMLACA prohibits any person under the jurisdiction of the U.S. from engaging in harvesting activities that violate CCAMLR or its associated conservation measures. AMLRCA gives the U.S. authority to enforce CCAMLR's conservation standards on its nationals and vessels on the high seas within the area south of the Antarctic Convergence.

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<sup>1</sup> These regulations include provision for environmental impact assessment of permitted activities; thus, to avoid duplication, EPA's Interim Final Rule at 40 CFR Part 8 does not include environmental documentation for commercial fisheries conducted under a permit issued by the National Marine Fisheries Service.

**The Antarctic Conservation Act of 1978 (ACA), Public Law 95-541, as amended, 16 U.S.C. 2401 et seq.**

Implements: Protocol on Environmental Protection to the Antarctic Treaty<sup>2</sup>

Responsible Agency: National Science Foundation

Description:<sup>3</sup> The ACA conserves and protects the native mammals, birds, and plants of Antarctica and the ecosystems of which they are a part. The law applies to: U.S. citizens in Antarctica; certain persons in Antarctica who participate in U.S. government activities; U.S. corporations or other legal entities that organize expeditions into the Antarctic; and U.S. persons wherever located, or foreign persons while in the United States, who handle certain Antarctic animals and plants.<sup>4</sup>

The ACA applies to land and fast ice south of 60 degrees south latitude. A permit system authorized by the ACA allows certain activities, otherwise prohibited, when performed within prescribed restrictions for scientific or other worthwhile purposes. Under the National Science Foundation regulations, it is unlawful, unless authorized by permit, to:<sup>5</sup>

1. Take native mammals or birds;
2. Engage in harmful interference;
3. Enter specially designated areas;
4. Introduce non-indigenous species to Antarctica;
5. Use or discharge designated pollutants;

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<sup>2</sup> Originally implemented the Agreed Measures for the Conservation of Antarctic Fauna and Flora which have since been superseded by the Protocol on Environmental Protection.

<sup>3</sup> "Antarctic Conservation Act of 1978 (Public Law 95-541) with Regulations, Descriptions and Maps of Special Areas, Permit Application Form, Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964), and Protocol on Environmental Protection (1991)," National Science Foundation, Arlington, VA 22230, October 1995.

<sup>4</sup> The Antarctic Science, Tourism, and Conservation Act of 1996 amends the Antarctic Conservation Act to include the following definition of the term 'harmful interference:'  
(A) flying or landing helicopters or other aircraft in a manner that disrupts concentrations of birds or seals;  
(B) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals;  
(C) using explosives or firearms in a manner that disturbs concentrations of birds or seals;  
(D) willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot;  
(E) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and  
(F) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate.

The term 'take' means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected.

Further, certain acts are specifically prohibited unless authorized by permit.

<sup>5</sup> The National Science Foundation, the agency of the U.S. Government that funds and manages the U.S. Antarctic Program (USAP), administers most provisions of the ACA including its permit system.

6. Discharge wastes; and
7. Import certain Antarctic items into the United States.

Certain National Science Foundation employees in Antarctica are designated enforcement officers. These Federal officials are responsible for ensuring compliance with the ACA, implementing regulations and permits. The ACA provides penalties of up to \$25,000 and 1 year imprisonment for violations.

### **The Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227, amends the Antarctic Conservation Act of 1978**

Implements: Protocol on Environmental Protection to the Antarctic Treaty

Responsible Agencies: National Science Foundation, U.S. Environmental Protection Agency, and the U.S. Coast Guard

Description:

**A. Environmental Impact Assessment of Nongovernmental Activities:** The EPA has regulations that require environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty; and coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol.<sup>6</sup>

**B. Environmental Protection Information:** The National Science Foundation has proposed regulations requiring that any person organizing a nongovernmental expedition to or within Antarctica and who does business in the United States must notify expedition member of the environmental protection obligations of the ACA.<sup>7</sup>

**C. Emergency Response Plans:** The National Science Foundation has proposed regulations requiring any person organizing an expedition to or within Antarctica who is transporting passengers aboard a non-U.S. flagged vessel to ensure that the vessel owner or operator has a shipboard oil pollution emergency plan, and that the vessel owner or operator agrees to take all reasonable measures to implement the plan in the event of an emergency.<sup>8</sup>

**D. Controlling Pollution from U.S. Vessels:** The Act upgrades and reinforces U.S. regulations controlling pollution activities.<sup>9</sup>

### **Act to Prevent Pollution from Ships (APPS), Public Law 96-478, 33 U.S.C. 1901 et seq.**

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<sup>6</sup> Interim Final Rule, 40 CFR Part 8, Environmental Impact Assessment of Nongovernmental Activities in Antarctica.

<sup>7</sup> *Federal Register*/Vol. 63, No. 107/Thursday, June 4, 1998/Proposed Rules.

<sup>8</sup> *Federal Register*/Vol. 63, No. 107/Thursday, June 4, 1998/Proposed Rules.

<sup>9</sup> Joyner, Christopher C. "United States Legislation and the Polar Oceans." *Ocean Development & International Law*, 29:265-290, 1998.

Implements: International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

Responsible Agency: U.S. Coast Guard

Description: U.S. vessels are prohibited from: discharging oil or oily mixtures except as permitted under MARPOL 73/78; disposing of plastics, garbage as specifically defined within the Antarctic Treaty area; and must have sufficient capacity onboard to retain garbage within the Antarctic Treaty area and to have adequate facilities for reception of all sludge, dirty ballast, tank-washing water, oily residues, and garbage.<sup>10</sup>

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<sup>10</sup> Joyner, Christopher C. "United States Legislation and the Polar Oceans." *Ocean Development & International Law*, 29:265-290, 1998

*Appendix 28: Comments Received by EPA  
on the Draft EIS and EPA's Responses to  
Comments*

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**Appendix 28**  
**Comments Received By EPA on the Draft EIS**  
**and EPA's Responses to Comments**

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| United States Department of State         | Appendix 28-3      |
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| John Spletstoesser, IAATO Representative  | Appendix 28-44     |
| Werner Zehnder, Zegrahm Expeditions       | Appendix 28-47     |
| Ron Naveen, Oceanities, Inc.              | Appendix 28-49     |
| The Antarctica Project                    | Appendix 28-56     |
| Patrick Shaw, Marine Expeditions (Canada) | Appendix 28-73     |

NATIONAL SCIENCE FOUNDATION  
 4201 WILSON BOULEVARD  
 ARLINGTON, VIRGINIA 22230

March 29, 2001



OFFICE OF THE  
 GENERAL COUNSEL

Ms. Katie Biggs  
 Office of Federal Activities  
 Mail Code 2252A  
 U.S. Environmental Protection Agency  
 1200 Pennsylvania Avenue, N.W.  
 Washington, D.C 20460  
 Attention: Antarctic Draft EIS Comments

Dear Ms. Biggs:

The National Science Foundation (NSF) is submitting comments on the Draft Environmental Impact Statement (DEIS) for the Proposed Rule on Environmental Impact Assessment of NonGovernmental Activities In Antarctica. We appreciate the opportunity that we have had as a member of your interagency working group to contribute to the DEIS and to provide NSF's views on both the DEIS and the proposed rule.

NSF could support Alternatives 1, 2 or 5 set forth in the DEIS. NSF notes that Alternatives 3 and 4 are inconsistent with the Protocol on Environmental Protection to the Antarctic Treaty and the Antarctic Science, Tourism, and Conservation Act of 1996 (the Act). In addition, the Environmental Protection Agency lacks the statutory authority under the Act to issue regulations incorporating Alternatives 3 and 4. Consequently, NSF believes that neither Alternative 3 nor 4 can constitute the basis for the final rule.

Thank you for the tremendous effort and time that you have spent preparing the EIS and proposed rule. We look forward to the continued opportunity to work with you as these projects progress to completion.

Sincerely,

Anita Eisenstadt  
 Assistant General Counsel

RESPONSE TO COMMENTS

| Commentor: |   |
|------------|---|
| NSF-1      | EPA appreciates the assistance provided by the National Science Foundation and the other interested federal agencies with the preparation of the Draft EIS. EPA sought assistance from these agencies, including the National Science Foundation and the Department of State, because of their programmatic and legal interests and responsibilities under the Antarctic Treaty and its Environmental Protocol and the U.S. government's interests under the U.S. Antarctic Program. EPA will continue to coordinate with the National Science Foundation and other interested federal agencies in preparation of the Final EIS and throughout the rule-making process. |
| NSF-2      | EPA notes that the National Science Foundation could support Alternative 2, EPA's preferred alternative.  |
| NSF-3      | EPA notes that the National Science Foundation agrees with EPA's analysis of Alternatives 3 and 4.  |

— NSF-1  
 — NSF-2  
 — NSF-3





United States Department of State

Bureau of Oceans and International  
Environmental and Scientific Affairs

Washington, D.C. 20520

30 March 2001

Mr. Joseph Montgomery and  
Ms. Katherine Biggs  
Office of Federal Activities  
Environmental Protection Agency  
1200 Pennsylvania Avenue, NW (2252A)  
Washington DC 20460  
Attention: Antarctica Draft EIS Comments  
By facsimile 202-564-0072

Dear Mr. Montgomery and Ms. Biggs:

I am writing with respect to the U.S. Environmental Protection Agency's (EPA) Draft Environmental Impact Statement (EIS) for the Proposed Rule on Environmental Impact Assessment of Nongovernmental Activities in Antarctica, circulated under cover of a letter of 8 February 2001 from Ms. Anne Norton Miller, Acting Director, Office of Federal Activities. We note that alternatives 3 and 4 include elements that are inconsistent with U.S. Government treaty interpretations and for which there is no existing legislative authority. Alternative 5 may not allow for full implementation of U.S. obligations under the Protocol. With respect to the five alternatives, the Department can support alternatives 1 and 2.

] DOS-1  
] DOS-2  
] DOS-3

We appreciated the opportunity to work with EPA and other agencies in the preparation of the Draft EIS. Our understanding is that EPA will bear in mind comments provided by the Department of State in writing and otherwise on key issues related to the Antarctic Treaty and its Environmental Protocol, and that such comments will continue to be taken into account in preparation of the final EIS.

] DOS-4

In closing, we thank you very much for the hard work you have put in to the preparation for the proposed rule.

Sincerely yours,

Raymond V. Arnaudo  
Director  
Office of Oceans Affairs

RESPONSE TO COMMENTS

| Commentor: |  |
|------------|--|
| DOS-1      | EPA notes that the Department of State agrees with EPA's analysis of Alternatives 3 and 4.   |
| DOS-2      | EPA notes that the Department of State agrees with EPA's analysis of Alternative 5, particularly in that certain of the Alternative's modifications may not allow for full implementation of U.S. obligations under the Protocol.  |
| DOS-3      | EPA notes that the Department of State could support Alternative 2, EPA's preferred alternative.   |
| DOS-4      | EPA appreciates the assistance provided by the Department of State and the other interested federal agencies with the preparation of the Draft EIS. EPA sought assistance from these interested agencies, including the Department of State and the National Science Foundation, because of their legal and programmatic interests and responsibilities under the Antarctic Treaty and its Environmental Protocol, and the U.S. government's interests under the U.S. Antarctic Program. EPA will continue to coordinate with the Department of State and other interested federal agencies on key issues related to the Antarctic Treaty and its Environmental Protocol in preparation of the Final EIS and throughout the rule-making process. |



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Denise Landau  
 Executive Secretary

April 2, 2001

VIA FACSIMILE (202) 564-0070 AND MAIL

Mr. Joseph Montgomery  
 Ms. Katherine Biggs  
 Office of Federal Activities  
 U.S. Environmental Protection Agency  
 1200 Pennsylvania Avenue, N.W. (MC2252A)  
 Washington, D.C. 20460

Draft Environmental Impact Statement for the Proposed Rule on  
 Environmental Impact Assessment of Nongovernmental Activities in  
 Antarctica

Dear Mr. Montgomery and Ms. Biggs:

I am writing on behalf of the International Association of Antarctica Tour Operators ("IAATO"), the following U.S. member companies — Abercrombie and Kent/Explorer Shipping, Lindblad Expeditions (formerly Special Expeditions), Mountain Travel-Sobek, Clipper Cruise Line/New World Ship Management Company LLC, Quark Expeditions, Society Expeditions, Zegrahm Expeditions, Inc., Cheesemans' Ecology Safaris, Victor Emanuel Nature Tours, LifeLong Learning and Radisson Seven Seas Cruises — and two non-member companies — Orient Lines and Holland America Line Westours — to comment on the Draft Environmental Impact Statement for the Proposed Rule on Environmental Impact Assessment of Nongovernmental Activities in Antarctica, dated February 2001 (the "DEIS"). These comments also reflect the views of IAATO's non-U.S. members.

IAATO-1

As you know, IAATO is a membership organization founded in 1991 to advocate, promote and practice safe and environmentally responsible private sector travel to the Antarctic. IAATO currently has thirty-four members, including fourteen full members, six provisional members, thirteen associate members and one probationary member, from ten different countries. Fifteen IAATO members are based in the United States. A list of IAATO's current members is attached. In the 1999-2000 austral summer, IAATO members, together with Orient Lines and Holland America Line Westours, were responsible for one hundred percent of the organized, ship-based nongovernmental voyages to Antarctica, exclusive of private yacht trips. We thus have the strongest interest in the development and implementation of a sound, workable system for conducting environmental assessments of nongovernmental activities in Antarctica, consistent with the requirements of the Madrid Protocol on Environmental Protection (the "Protocol") and the Antarctic Conservation Act, 16 U.S.C. § 2401, *et seq.* (the "Act").

IAATO-2

On behalf of all the U.S. tour operators and IAATO members, I wish to express our thanks for the multi-year time frame between issuance of the interim final rule and the proposed rule outlined in the DEIS. This has helped to ensure that whatever final rule is adopted by the Environmental Protection

**RESPONSE TO COMMENTS**

| Commentor: |   |
|------------|---|
| IAATO-1    | EPA acknowledges that IAATO is commenting on behalf of its U.S. member companies (Abercrombie and Kent/Explorer Shipping, Lindblad Expeditions [formerly Special Expeditions], Mountain Travel•Sobek, Clipper Cruise Line/New World Ship Management Company LLC, Quark Expeditions, Society Expeditions, Zegrahm Expeditions, Inc., Cheesemans' Ecology Safaris, Victor Emanuel Nature Tours, LifeLong Learning and Radisson Seven Seas Cruises), two non-member companies (Orient Lines and Holland America Line Westours, Inc.), and IAATO's non-U.S. members. Thus, EPA's response to IAATO's comments indicates a response to all listed parties. |
| IAATO-2    | EPA acknowledges the appreciation expressed for the learning period between the Interim Final Rule and the proposed rule, and appreciates receipt of the information presented about IAATO, its membership, and the Antarctic tour industry for the 1999-2000 austral summer.   |

CREATING AMBASSADORS TO THE LAST GREAT CONTINENT

Dec. 03 2000 10:52AM PZ

FRX NO. :

FROM :

**RESPONSE TO COMMENTS**

Ms. Katherine Biggs  
 April 2, 2001  
 Page 2

Agency ("EPA") is practical and sensible and there has been an adequate learning period. Over the last four years IAATO has been very grateful for the professional and positive working relationship we've shared with both of you and EPA in general and appreciate your responsiveness, attention to detail and helpfulness on all relevant issues. We also thank you for the previous opportunities in EPA's scoping sessions to comment on various aspects of EPA's mandate under the Act.

Our comments on the DEIS are divided into five parts. First, we explain that, based upon our experience under EPA's interim final rule, we favor regulatory alternative no. 2 (EPA's "preferred alternative"), with several modifications drawn from regulatory alternative no. 5 to reduce paperwork burdens and costs of compliance. Second, we outline why IAATO is strongly opposed to alternatives nos. 3 and 4 which would dramatically expand the substantive reach of the rule and which, in IAATO's judgment, are inconsistent with the requirements of the Protocol and the Act. Third, we provide a brief history of our experience over the past four years and how it relates to the regulatory alternatives under consideration. Fourth, we set out some general comments on EPA's responsibilities under the Act. Fifth, we suggest a number of specific editorial and drafting changes and factual corrections to the DEIS.

**(1) EPA Should Adopt Alternative No. 2, with Modifications Drawn from Alternative No. 5.**

On the whole, IAATO supports regulatory alternative no. 2. While in general the interim final rule is working without major problem, we agree with the need to make technical modifications and edits. In addition, we appreciate EPA's willingness to allow multi-year documentation, as had previously been requested by IAATO. Where, as is often the case, operators have the same level of activity year-in and year-out and impacts remain constant, a single multi-year submission is plainly sufficient to meet the requirements of the law. Finally, we do not in principle object to establishing a threshold definition for the phrase "more than minor or transitory," referencing the language in Section 102(2)(C) of the National Environmental Policy Act, 42 U.S.C. § 4332(2)(C) ("NEPA"). Because there is a well-established jurisprudence under NEPA, this could help ensure that there is greater certainty and consistency in making judgments about the level of environmental documentation required under the Act. However, we question whether such a threshold definition is sensible or necessary at this time. The Antarctic Treaty Parties have not yet defined the phrase. As a result, IAATO believes that it makes the most sense to leave the definition open in the regulations. Proceeding in this fashion will ensure that EPA will retain the necessary flexibility to adopt the formulation that is ultimately agreed to by the Treaty Parties.

We recognize that EPA has decided not to include within its preferred alternative a number of provisions, supported by IAATO in the past, that are designed to ease administrative burdens. These provisions, which EPA sets out in regulatory alternative no. 5 (the "discretionary rule"), would:

- Eliminate EPA's ability to pass on the adequacy of environmental documentation;
- Eliminate the enforcement provision of the interim final rule;
- Eliminate Preliminary Environmental Review Memorandums ("PERMs");
- Provide for automatic reciprocity when environmental documentation is prepared for other Treaty Parties; and

(IAATO-2)

IAATO-3

IAATO-4

| Commentor: |  |
|------------|--|
| IAATO-3    | EPA notes that IAATO supports Alternative 2, EPA's preferred alternative, but with modifications from Alternative 5. With regard to IAATO's opinion on whether the proposed rule should establish a threshold definition (or other provision) for the term "more than a minor or transitory impact," EPA maintains that the Protocol does not define "minor or transitory." Until the Treaty Parties provide guidance or definition, EPA believes it is reasonable to provide such guidance to operators and that it is prudent to define the term "more than a minor or transitory impact" consistent with the threshold definition applied to the environmental impact assessment of governmental activities in Antarctica as delineated in 16 U.S.C. §2401 <i>et seq.</i> If a definition is provided under the Protocol or other appropriate means under the Treaty, EPA would amend its final rule, as appropriate, to ensure it is consistent with Annex I as required by the Act. |
| IAATO-4    | EPA acknowledges that IAATO recognizes that certain modifications from Alternative 5 were not included in Alternative 2, EPA's preferred alternative.  |

FROM :

FRM NO. :

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RESPONSE TO COMMENTS

Mr. Joseph Montgomery  
 Ms. Katherine Biggs  
 April 2, 2001  
 Page 3

Provide a "categorical exclusion" from the need to prepare environmental documentation for ship-based tourism on the "Lindblad model."

(IAATO-4)

For the reasons stated in our comments of August 25, 1997, June 22, 1998, and July 30, 1998, which we incorporate herein by reference, we continue to believe that, with some modification based upon IAATO's experience under the interim final rule, adoption of each of these provisions would be appropriate. Leaving aside the issue of enforcement, we would emphasize the following points:

IAATO-5

First, our position remains that EPA lacks authority under the Act, just as it lacks authority under NEPA, to require revision of environmental documentation submitted to the agency. EPA is given authority under Section 4A(c) of the Act solely to "promulgate regulations to provide for - (A) the environmental assessment of nongovernmental activities . . ." Nowhere does the Act give EPA authority to pass upon the adequacy of environmental assessments that have been prepared. Moreover, even assuming arguendo that EPA, for example, could review an Initial Environmental Examination ("IEE") for adequacy and provide comments to tour organizers, IAATO does not believe that EPA can compel revision and resubmission of such a document. In this regard, IAATO submits that at most EPA's authority under the Act is similar to the authority which it has under Section 309 of the Clean Air Act, 42 U.S.C. § 7609, to review and comment upon, but not require revision of, environmental impact statements prepared pursuant NEPA.

IAATO-6

Second, we believe it would be highly desirable to provide for automatic reciprocity when environmental documentation prepared for other parties is submitted by a U.S.-based operator. For example, if an U.S. company chartered a ship from a foreign operator (for example, a German company), the German company would file Advance Notification, an IEE and all other required documentation with the German Government. This is sufficient to satisfy all requirements under the Protocol. To duplicate paperwork and IEE submissions seems pointless.

IAATO-7

Third, we continue to see relatively little utility for PERMs, which do not differ substantially from the information provided in accordance with paragraph 5 of Article VII of the Treaty and as elaborated in Recommendation XVIII-1 of the Antarctic Treaty System. To date, we believe that no PERMs have been submitted for ship-based tourism of the sort that is carried out by IAATO members and that has been covered by IEEs. However, we recognize that there may be some, limited instances in which a PERM is warranted. We suggest that EPA may wish to make it clear that the PERM category is basically appropriate for "one-off", adventure activities, e.g., small scale aircraft-supported expeditions, where the level of documentation required in an IEE would not be necessary but some limited assessment of environmental impacts may be worth undertaking.

IAATO-8

Fourth, we are still convinced that there are good grounds for allowing a "categorical exclusion" from documentation requirements for ship-based tourism on the "Lindblad model." Based upon our experience, the model of ship-based tourism, accompanied by a thorough educational program and a qualified staff, and followed to date by Antarctic tour operators, has minimal impact on the Antarctic environment. Thus, EPA should actively consider developing a categorical exclusion for many, if not all, such activities.

IAATO-9

(2) EPA Should Reject Alternatives Nos. 3 and 4.

As we have noted in our past comments, the obligations created under the Protocol for environmental assessment are procedural in character, modeled on the requirements of NEPA which the U.S. Supreme Court has definitely stated do not impose substantive obligations on Federal agencies.

IAATO-10

| Commentor: |  |
|------------|--|
| IAATO-5    | EPA acknowledges that IAATO has incorporated three comment letters previously sent to EPA dated August 22, 1997 (note corrected date); June 22, 1998; and July 30, 1998, into its comment letter on the Draft EIS dated April 2, 2001. EPA further notes and acknowledges that IAATO sets aside the issue of enforcement.  |
| IAATO-6    | In order for the U.S. government to implement certain of its obligations under the Protocol, the Act requires EPA's to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Treaty. Thus, the procedures in the proposed rule would ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. In keeping with the U.S. government's obligations under the Protocol and EPA's obligations under the Act, under the proposed rule (as with the Interim Final Rule), EPA may make a finding that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. EPA believes that before such a finding is made, it is prudent to offer comments to the operator so that the operator may, at its discretion, make necessary revisions to the document. If the operator proceeded after EPA made a finding that the documentation does not meet the requirements of Article 8 and Annex I and the requirements of the proposed rule, the operator would be in violation of the regulations and would be subject to enforcement. |
| IAATO-7    | It is the responsibility of the U.S. government to comply with its obligations under the Protocol. The U.S. government would need to determine whether, in an appropriate case, it could rely on the regulatory procedures of another Party. However, EPA does not believe that a discretionary process should be a regulatory provision in the proposed rule.   |

## RESPONSE TO COMMENTS

| <b>Commentor:</b> |  |
|-------------------|--|
| IAATO-8           | <p>EPA acknowledges that IAATO recognizes there may be some instances in which a PERM is warranted and EPA agrees with this. However, EPA does not necessarily agree that a PERM is appropriate for "...one-off, adventure activities, e.g., small scale aircraft-supported expeditions..." without first reviewing the specific details in an environmental impact assessment for a proposed expedition such as this. Further, EPA believes that the preliminary environmental review process is significantly different from submitting basic information (as delineated in Section 8.4(a) of the Interim Final Rule, information similar to that submitted by operators for advance notification purposes) in that simply submitting this information does not constitute the preliminary environmental assessment process as delineated in Section 8.6 of the Interim Final Rule for PERMs.</p>  |
| IAATO-9           | <p>The National Environmental Policy Act (NEPA) defines 'categorical exclusion' as "a category of actions which do not individually or cumulatively have a significant effect on the human environment...and for which, therefore, neither an environmental assessment nor an environmental impact statement is required" (40 CFR §1508.4). Only narrow and specific classes of activities can be categorically excluded from environmental review. For example, EPA in its NEPA regulations at 40a CFR part 6.107(d) excludes "...actions which are solely directed toward minor rehabilitation of existing facilities..." and the National Science Foundation in its environmental assessment regulations at 45 CFR Part 641(c)(1) and (2) excludes certain scientific activities (e.g., use of weather/research balloons that are to be retrieved) and interior remodeling and renovation of existing facilities. The Draft EIS noted that IAATO's recommendation that Antarctic ship-based tourism organized under the "Lindblad Model" be categorically excluded. However, EPA does not have a specific definition for the "Lindblad Model." EPA also believes that a broad categorical exclusion covering ship-based tourism as now conducted does not fit well with the approach used by the U.S. government for categorical exclusions because it does not identify actions to be excluded in sufficient detail. Further, more needs to be known about potential cumulative impacts of nongovernmental activities undertaken by U.S.-based ship-based tour operators before deciding to exclude some or all of these specific activities. However, in the Preamble to the proposed rule, EPA has asked for comments on specific activities that the Agency should consider including as categorical exclusions in the final rule including the justification for this proposed designation. It should also be noted that even if EPA does not designate categorical exclusions in the final rule, these can be designated by amendment to the rule if categorical exclusion activities are identified in the future.</p> |

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Ms. Katherine Biggs  
 April 2, 2001  
 Page 4

*Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350-351 (1989). As the Supreme Court has stated, "NEPA merely prohibits uninformed — rather than unwise — agency action." *Id.* We think that, in elaborating rules under the Protocol and the Act, it is imperative that EPA be mindful that it is dealing with a similar regime and that it cannot require nongovernmental operators to choose an alternative that is the least environmentally harmful or otherwise to meet substantive environmental protection obligations.

Given its view of the Protocol and the Act, IAATO strongly agrees with EPA's proposed rejection of regulatory alternatives nos. 3 and 4. Both these alternatives, in our opinion, go well beyond what is authorized under the law. Regulatory alternative no. 4, in particular, would impose precisely the kind of substantive obligations, which we believe neither the Antarctic Treaty Parties nor the Congress intended. Indeed, because these alternatives are not authorized by, and are inconsistent with, the Protocol and the Act, it is questionable whether EPA should even have included them in the DEIS as "reasonable alternatives" within the meaning of Section 102(2)(C) of NEPA and 40 C.F.R. § 1502.14. In any event, they are unwarranted.

**A. Alternative No. 3.**

Regulatory alternative no. 3 would:

Broaden the definition of "operator" to include foreign operators doing business in the United States, or, alternatively, it would apply the rule to all U.S. citizens; and

Require that assessment documentation demonstrate compliance with the Protocol and U.S. environmental statutes.

We agree entirely with EPA that it would not be legally permissible to make foreign operators doing business in the United States subject to the final rule or to apply the final rule to all U.S. citizens going to Antarctica. Indeed, to proceed in this fashion would not only be inconsistent with the U.S. position at Antarctic Treaty Party meetings, but it would also be inconsistent with the provisions of the Protocol and without legal authority under the Act. Section 4A(c)(1)(A) of the Act calls for EPA to promulgate regulations "to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty." A focus on "operators," defined as a person subject to U.S. jurisdiction who "organizes" a nongovernmental expedition to Antarctica, is consistent with the interpretation of Advance Notification by the U.S. Department of State.

Moreover, in our judgment, there is no question that the environmental assessment requirements of the Act do not extend to the actions of individual U.S. citizens who simply participate in expeditions. We strongly believe that EPA has not been given oversight of international tourism to the Antarctic but rather the mandate to promulgate regulations for U.S. organizers only. In any event, with 4000-plus U.S. tourists going to Antarctica each year, it would be an impossible task for EPA and the tour operators to implement a requirement applicable to individual tourists.

At the same time, as is apparent from our discussion of NEPA at the outset of this section, IAATO concurs that assessment documentation need not demonstrate compliance with the Protocol and U.S. environmental statutes. In our view, EPA has not been given the mandate to promulgate a rule with substantive consequences, e.g., a rule, which could effectively require that certain environmental impacts

| Commentor: |  |
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| IAATO-10   | EPA notes that IAATO agrees with EPA's analysis of Alternatives 3 and 4. EPA disagrees, however, with the characterization of Alternatives 3 and 4 as not being "reasonable alternatives." In determining the scope of alternatives to be considered, reasonable alternatives may include those that are outside the jurisdiction of the agency or beyond what Congress has authorized. A potential conflict with federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. (46 <i>Federal Register</i> 18026, March 23, 1981, as amended.) |
| IAATO-11   | EPA acknowledges the opinions provided by IAATO as to why Alternative 3 should be rejected.  |

(IAATO-10)

IAATO-11

Dec. 03 2000 10:53AM PS

FRX NO. :

FROM :

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Ms. Katherine Biggs  
 April 2, 2001  
 Page 5

be avoided. Indeed, such an approach would be wholly inconsistent with the experience of the NEPA process, the intent of the Protocol and, therefore, the mandate of the Act. Yet to focus assessment documentation on precisely this issue is necessarily to imply a substantive obligation.

**B. Alternative No. 4.**

Regulatory alternative no. 4, which EPA characterizes as the “substantive rule”, would impose even further requirements on operators. It would:

- Require that compliance with Article 3 of the Protocol be demonstrated;
- Allow the Federal Government to prevent any activity whose impacts are determined to be unacceptable;
- Provide for public comment on IEEs; and
- Require a Comprehensive Environmental Evaluation (“CEE”) any time a new landing site is selected.

IAATO believes EPA is quite correct in proposing to reject such proposals.

It should go without saying from our discussion above of the procedural, as opposed to substantive, obligations of the Protocol and the Act, that requiring “compliance” with Article 3, or allowing the Federal Government to prevent “unacceptable” activities, is simply not permissible under the law. IAATO takes the position, along with the U.S. Department of State and other agencies, that Article 3 Principles are principles which inform the entire Protocol but which were not intended to create binding legal obligations and should not be treated as such. At the same time, as EPA points out, Article 8 “provides for an EIA process but does not impose substantive requirements” (DEIS at page vii, note 16). It seems to us that EPA’s conclusions set forth at page vii, note 16, and at pages 4-15—4-17 of the DEIS are correct. *Id.*

The two “procedural” elements of regulatory alternative no. 4 are equally objectionable. IAATO supports the approach taken in the interim final rule with respect to the public availability of IEEs. The Protocol does not mandate public comment on IEEs, and provision has already been made in the interim final rule for informal public access to any IEEs received. This is sufficient and consistent with NEPA practice. As for requiring a CEE when any new landing sites are selected, this proposal, as EPA correctly notes, is without scientific basis (DEIS at page vii, note 19). In addition, imposing such a requirement would be burdensome in the extreme and a prescription for substantial delay and added expense in expedition planning. Because of the time associated with scouting new landing sites, the current uncertainty about the ATCM and Committee for Environmental Protection (the “CEP”) meeting schedules and the requirements of Annex I, Article 3, to the Protocol for circulation to and consideration of draft CEEs by the Treaty Parties and the CEP, requiring a CEE could literally result in planning delays of several years.

**(3) IAATO’s Experience over the Last Four Years Counsels the Wisdom of a Limited, Procedural Rule.**

Over the last four years, we have been able to test the workings of the interim final rule. In general, it has worked well, and IAATO’s experience counsels against any substantial change.

(IAATO-11)

IAATO-12

IAATO-13

| Commentor: |   |
|------------|---|
| IAATO-12   | EPA acknowledges the opinions provided by IAATO as to why Alternative 4 should be rejected. |
| IAATO-13   | EPA agrees that, in general, the procedures under the Interim Final Rule have worked well.  |

**RESPONSE TO COMMENTS**

Mr. Joseph Montgomery  
 Ms. Katherine Biggs  
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 Page 6

The U.S. IAATO member tour operators have all appreciated the ability to file a joint Programmatic IEE, as we believe this is the most efficient and sensible way to work. We also believe it is one of the more effective ways of being able to begin looking at cumulative impact from both the U.S. tour operators and from the industry as a whole. We would like to be able to continue to provide programmatic IEEs, with yearly updates to reflect any significant changes as we have done these last few years.

IAATO-14

Filing the IEE 90 days before departure has worked fairly well. However, several companies have had to request changes up to or during the time of sailing. We would like to thank EPA for allowing those changes. Most of them have been in areas that have little or no impact. For example, Lindblad Expeditions has added the use of kayaks, underwater diving equipment and staff divers, etc. Quark Expeditions has submitted its IEE pending the finalization of the helicopter operations and exact use of helicopters. In some cases, all operational details aren't fully in place 90 days before sailing, and all operators appreciate the flexibility in being able to submit final plans within the 90-day time limit. The U.S. tour operators will endeavor to keep EPA and the U.S. Department of State (via the Advance Notification) up-to-date concerning any changes up to and/or during the season and through follow-up at the end of the season.

IAATO-15

IAATO would also note that EPA has sensibly not required re-filing of IEEs and other documentation when a company included in an IEE, e.g., Expeditions Inc. and Society Expeditions in 1999 and 2000, respectively, subsequently has decided not to operate vessels in a given year. We hope that EPA will continue to respond with this kind of flexibility when companies' plans change.

IAATO-16

On some submissions EPA has requested clarification and queried some inconsistencies. IAATO is happy to make these corrections. However, in several cases clarification has mainly related to drafting errors. We hope that, as EPA becomes more familiar with our operations, it will be able to recognize drafting, as opposed to substantive, issues, and so reduce the amount of time associated with minor corrections to environmental documentation.

IAATO-17

Finally, on the issue of "cumulative impact," IAATO has been troubled by continuing requests to provide actual data on cumulative impacts when in fact there is no real international agreement on how to do so. IAATO members are seeking ways to assess cumulative impacts, but to provide actual data in the short term is not feasible. For the last five years or so, IAATO members have been supporting Oceanites' work by offering Ron Naveen and his employees space on board tourist ships to collect data. For over 10 years or so Tour Operators have also been transporting close to 100 scientists per year to Antarctica in addition to Oceanites. We also in part supported the June 2000 cumulative impact workshop in San Diego. We believe that Oceanites' baseline information is an excellent start for finding out what is actually occurring at visited sites and some of the changes that have taken place over the years. We would also encourage future support from EPA and/or the National Science Foundation ("NSF") to Oceanites should Ron's group or other research groups decide to continue efforts on understanding the Antarctic ecosystem and the long-term and cumulative impacts of tourism, if any. IAATO members are committed to measuring cumulative impact and will work closely with the scientific community to do so.

IAATO-18

**(4) IAATO Has Several General Comments on the DEIS and EPA's Regulatory Responsibilities.**

IAATO continues to adhere to the positions set out in our comments of August 25, 1997, June 22, 1998, and July 30, 1998. Many of these comments are reflected in the discussion of regulatory

IAATO-19

| Commentor: |  |
|------------|--|
| IAATO-14   | Like the Interim Final Rule, the proposed rule would not have a specific provision for a "programmatic" environmental document. However, the paperwork reduction provisions from the Interim Final Rule would be carried forward into the proposed rule (see IAATO-20). Under these provisions, a "programmatic" IEE could be prepared in that more than one proposed expedition by an operator may be included within one environmental document and may, if appropriate, include a single discussion of components of the environmental analysis that are applicable to some or all of the proposed expeditions, and one environmental document may also be used to address expeditions being carried out by more than one operator, provided that the environmental documentation includes the names of each operator for which the environmental documentation is being submitted pursuant to obligations under the proposed regulations.  |
| IAATO-15   | EPA notes that IAATO agrees with the schedule in the Interim Final Rule for submitting IEEs and that flexibility may be needed to accommodate last minute modifications.   |
| IAATO-16   | EPA acknowledges that IAATO recommends flexibility regarding EIA documentation to address last minute modifications such as canceled expeditions. EPA appreciates the information IAATO has provided when such circumstances have occurred.  |
| IAATO-17   | Under the proposed rule, EPA would continue to comment on documents as discussed in IAATO-6 and may continue to note drafting errors along with these comments.  |
| IAATO-18   | EPA appreciates the information provided in the comment. However, consistent with Article 8 and Annex I and like the procedures in the Interim Final Rule, the procedures in the proposed rule would require that unless an operator determines and documents that a proposed activity would have less than a minor or transitory impact on the Antarctic environment, the operator would need to prepare an IEE or CEE. In making the determination what level of environmental document is appropriate, the operator would need to consider, amongst other things, whether and to what degree the proposed activity together with other activities, the effects of any one of which is individually insignificant, may have at least minor or transitory cumulative environmental effects. To date, U.S.-based operators have concluded that the potential impacts, including cumulative impacts, are no more than minor or transitory for their planned expeditions and EPA believes that their conclusions have been supported by the information currently available. However, as stated in the Draft EIS |

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RESPONSE TO COMMENTS

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alternatives in sections 1 and 2 above. To the extent they are not included in such comments, we would make three important points for the record:

(1) We continue to support full compliance with the Regulatory Flexibility Act, Executive Order 12866, and the Small Business Regulatory Enforcement Fairness Act of 1996 to ensure that the costs of regulation do not outweigh its benefits and to reduce burdens imposed on the regulated industry. We believe that EPA during the last four years has been supportive, and we would like to maintain the same working style.

(2) As noted above, EPA has not been given general oversight responsibilities for international tourism to the Antarctic, and, therefore, the environmental assessment requirements of the Act do not extend to the actions of individual U.S. citizens who simply participate in expeditions. However, there may be some gray areas of the rule that require clarification. We understand that there are U.S. citizens carrying out "private expeditions" on yachts who have not submitted the proper documentation to national authorities. We also understand that there have been U.S. citizens who planned to fly their private aircraft from Argentina to Marambio. Plainly an effort should be made to ensure that there is environmental impact assessment and Advance Notification submitted for such activities.

(3) We still believe, as expressed in our August 25, 1997, letter, that Annex I of the Protocol does not mandate mitigation, just as the NEPA process does not require mitigation. Similarly, it is still not possible to create any scientifically credible monitoring regime at this time. EPA's preferred alternative thus wisely steers away from imposing mitigation and/or monitoring requirements.

**(5) EPA Should Make a Number of Specific Revisions and Corrections to the DEIS.**

In the final document, IAATO would like to see a variety of drafting and some substantive changes made. In general, references should be updated to include the information, especially that relating to activities during the 1999-2000 austral summer season, set out in IAATO's reports submitted to the Special Antarctic Treaty Consultative Meeting ("SATCM") held in the Netherlands in September, 2000 (SATCM /Information Papers 32, 33). Specific suggestions, on a page-by-page basis, are as follows:

Page 2-7: Should say Ford "Ranges" on Figure 2.7. Source (Walton 1984) is not included in references.

Page 2-8, Figure 2.8: Source (Foster 1984) is not included in references.

Page 2-9, para. 3: Change spelling of "algae" to "alga"; "Palmissano" should have an "o" on the end.

Page 2-10, para. 3: Should read: "The Ellsworth Mountains in West Antarctica are the tallest, with Vinson Massif at 4897 m (16,067 feet above sea level). . . ."

Page 2-10, para. 3: SCAR Bulletin 1999 is not in references.

Page 2-11, para. 1: Source (Adventure Network International) is not in references.

Page 2-11, para 3: "Larsen" Ice Shelf; Larsen is spelled with an "o".

Page 2-12 , para. 3: Sentence should read "... from the Pole, and blue-green algae were observed in a frozen pond . . ."

| Commentor: |  |
|------------|--|
|            | (p. 5-8), the issue of cumulative impacts, particularly in the Peninsula area, remains a concern in light of several factors. EPA acknowledges that there is no international agreement on the process for determining cumulative impacts. For these reasons, EPA believes it prudent to move forward in partnership with interested parties, including IAATO and other interested government, nongovernmental research, industry and environmental interest group representatives to consider the research needed to assess whether any changes in the Antarctic fauna and flora are related to natural variation or to tourism activities.   |
| IAATO-19   | EPA acknowledges that IAATO continues to adhere to the positions set out in previous comment letters. EPA further notes that IAATO acknowledges that "[m]any of these comments are reflected in the discussion of regulatory alternatives in Sections 1 and 2 above." Also see IAATO-5.  |
| IAATO-20   | As required by law, EPA will comply with the Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996, Executive Order 12866, and other statutes and Executive Orders, as appropriate, in proposing and promulgating the rule to amend 40 CFR Part 8.  |
| IAATO-21   | The EIA provisions of EPA's proposed rule would apply to all operators for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty. Information about possible U.S.-based expeditions becomes available to the U.S. government through various sources. Upon receipt of such information, the Department of State considers whether advance notice is required, the National Science Foundation considers whether issues under the Antarctic Conservation Act need to be acted upon (e.g., need for permits), and EPA would inform the potential operator of the EIA regulatory requirements. EPA realizes the difficulty of getting information about its regulation to all those who may be subject to it. The U.S. government appreciates any information that may be provided by IAATO and its member operators in this regard. |
| IAATO-22   | EPA notes that IAATO agrees with the mitigation and monitoring provisions in the Interim Final Rule.   |
| IAATO-23   | Suggested edits and revisions will be incorporated into the Final EIS as appropriate.  |

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Page 2-13: In Table 2.1 under localities, it should say South "Orkney", not "Ornkey".

Page 2-14, para. 3: Llano 1965 is not in references.

Page 2-15, Figure 2.12: Should read ice "cored", not ice cord.

Page 2-15: Source (van der Maarel 1993) is not in references; note 15 should read "Exiflora", not "exliflora".

Page 2-16, para. 2: Change spelling to "Prymnesiophytes" (add a "t").

Page 2-17, para. 3: Second sentence should read "... of the species and accounts" (add "s" to "accounts"), and note 17 should say "... fish families that have secondarily adapted" (not "adopted")

Page 2-18, para. 2: Should read "polychaetes" (change spelling); in Table 3.3, change spelling to read "Pycnogonida".

Page 2-18, para. 4: Should read "None of the terrestrial invertebrates is designated as native ... and none is designated as a Specially Protected Species."

Page 2-19: The Ross Seal scientific name, "rossii", has two i's.

Page 2-20, para. 1: The laws cited are not in references; "rossii" has two i's; the total in Table 2.4 should be 18,270,000-33,700,000.

Page 2-20, para. 4: Some of the bird species listed live north of 60 S and so Table 2.5 should have a different name.

Page 2-21: Should read "Native Birds of Antarctica and the Sub-Antarctic ...". King Penguin are not native to the Antarctic but rather to the Sub-Antarctic; change name to "Gray-headed" (not "head"); "Fulmar" is spelled with an "a".

Page 2-22: Cape Pigeon is also called Cape Petrel or Painted Petrel; South Georgia Pipit is not listed. *Quaere* whether (and where) a Barn Swallow been seen?

Page 2-24, Table 2.6: Abundance Estimates and Status are not for Peninsula only but include the Sub-Antarctic; Figure 2.14 should actually read, "Timing of Breeding Seasons in Antarctic Penguins in Comparison with Antarctic Tourist Activity".

Page 2-26, Table 2.7: Should read "Antarctic", not "Arctic".

Page 2-27, para. 2: Should read "Whalers Bay".

Page 2-28, para. 2: Change Eastern to Western in first sentence.

Page 2-29: Change note to read "coarse" rather than "course"

Page 3-11, Table 3.3: There need to be several changes: (a) in 1991-92, First Russian tourist ship with ice-hardened hull enters Antarctic tourism market; (b) in 1992-93, First Russian icebreaker enters

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Antarctic tourism market; and (c) in 1996-97, Russian icebreaker, *Kapitan Khlebnikov*, makes first circumnavigation of Antarctica; also, in para. 3, Stonehouse should be "1995", not "1994".  
Page 3-13, para. 1: Should be updated to reflect the 1999-2000 season rather than the 1997 season (see SATCM/IP 33).

Page 3-13, para. 3: All the information is in SATCM/IP 32, 33. The last sentence is incorrect, as flights don't occur in the winter; Swinthinbank 1988 does not include 1989-90 season reference.

Page 3-14: Here and elsewhere (including Appendix 7) the DEIS refers to IAATO's "1991 Bylaws." Such references should be replaced with references to IAATO's current Bylaws. Our Bylaws have changed since 1991 and have been posted on our website for at least the last three years. We would note that IAATO's Bylaw changes should not affect the conclusions in the DEIS. If anything, our current Bylaws are more environmentally protective than the original 1991 Bylaws. We will continue to update EPA with regard to any future Bylaw changes.

Page 3-15: Currently the *Vista Mar* is also sailing and has a 280 passenger capacity (see SATCM/IP 33).

Page 3-16: Guidance for Visitors and Tour Operators was created by IAATO and in 1994 was slightly modified and adopted as Recommendation XVIII-1.

Pages 3-16, note 29, 3-18 and 3-20, para. 2, and note 40: These all deal with minimum staff/passenger ratios. The staff-to-passenger ratio is listed differently in different sections of Chapter 3, and this inconsistency should be corrected. Page 3-16, note 29, states that the "tourist/guide ratio is a self-imposed limitation for IAATO members. See Section 3.8." This is correct. In the middle paragraph of page 3-18 (starting with "The JEFs..."), there is a sentence, which states IAATO members "maintain a minimum 1:20 ratio of staff to passengers." Page 3-20, para. 2, states "1:15-20", yet the accompanying footnote (No. 40) states "1:20," which agrees with page 3-18. In addition, this is not an IAATO Bylaw issue as the DEIS states. Rather, the staff-to-passenger ratio is an IAATO standard. (This was correctly noted on page 3-18, but not on 3-20.) The ratio should be consistently set forth throughout as "at least 1:20" or a "minimum of 1:20", and EPA should clarify that this is an operating standard.

Page 3-19, para. 2: The written version of Guidance for Antarctic Visitors and Tour Operators has been translated into English, Russian, German, Spanish, French, Chinese, Japanese and Italian. Briefings are held in Russian and German, whenever possible.

Page 3-20: The minimum staff/passenger ratio is 1:20, though some ships do better than that.

Page 3-21: Sections 3.9 and 3.91 need to be consistent. Orient Lines began operating in 1993-94 season.

Page 3-24, para. 1: Wording is redundant after Terra Nova Bay; delete "In the Ross Sea area".

Page 3-25, note 48: Change spelling to read "Colombia".

Page 3-27, Table 3.8: Change spelling to read "Neumayer".

Page 3-28, para 3: Should read "from the southern tip of Chile and is accessible only by air and over land."

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Page 3-29, para. 4: In the name, Sor Rondane, Sor needs a line through the "o".

Page 3-30, Table 3.9: Maps and Photo documentation should probably not be in italics.

Page 3-33: There is no Table listed as 3.10. In Table 3.11, 1994-95 should read total 8,210 tourists instead of 8,120, and in 1997-98, the total should be 9,644.

Pages 3-34-3-41, Section 3.13.2: The charts that list the most visited sites never explain why certain sites were highly visited. For example, Port Lockroy has been more frequently visited because it is a great shopping spot now that the base has been restored and reopened with a post office, museum, shop, etc. Half Moon Island was frequently visited when Bernard Stonehouse had his research team there. Similarly, tour operators visited Cuverville Island at the request of the researchers who were doing human/wildlife studies. Projects such as these raise the numbers at certain sites, and this factor should be acknowledged in the DEIS.

Page 38: As noted above, it would be worth explaining that the reason why Port Lockroy became the most heavily visited site was because of the establishment and renovation of the old base.

Page 3-39: The DEIS states that Palmer Station is one of the five sites now getting more than 10,000 visitors a year. However, there is no explanation why the numbers have increased. It is due to the fact that NSF has increased the number of visits it will allow.

Page 3-42, para. 1: The ANAN newsletter report was incorrect. In addition, the Lyubov Orlova never went to the Ross Sea, as this voyage was canceled.

Page 3-43, paras. 2-4: Again, ANAN is referenced, but this is not a reliable reference; it would be more accurate to refer to IAATO's 2000 annual report (SATCM/IP 32). In addition, 1,300 passengers is an incorrect number. The total number of passengers was 1801 for a total of four voyages on two vessels, the Aegean 1 and the Ocean Explorer (SATCM/IP 33). In note 77, "Poncet" should read "Poncet".

Page 3-44: Reference to the ANAN newsletter is again incorrect. Croydon travel carried 3412 passengers on 9 flights from November 1999-February 2000. Croydon has operated a total of 52 flights carrying nearly 17,000 tourists since the 1994-1995 season (SATCM/IP 33). See page 4 of SATCM/IP 33 for further flight information.

Page 3-45, note 84: This isn't correct, as more now landings took place in the early to mid 90's but not as many since and also not all in the Peninsula.

Page 3-46, note 89: "effect" should be changed to read "affect".

Page 3-47, note 95: Note that Special Expeditions has changed its name to Lindblad Expeditions (2000).

Page 3-48, para. 1: Again ANAN is referenced and the information needs to be changed. See SATCM/IP 32, Appendix A. In note 102, EPA should be aware that Marine Expeditions has never operated in the Ross Sea and the Lyubov Orlova has never been there.

Page 3-50, paras. 3-5: Karlisen Shipping, in conjunction with the Norwegian-based company, Polar Star Expeditions, plans to initiate Peninsula area tourism with the Polar Star with 90 passengers maximum and 40 staff/crew beginning with the 2001-02 season. They plan to operate 9 voyages. (Again the

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ANAN information is incorrect.) SASCO did not operate in the 2000-01 season and is no longer in business as far as IAATO is aware. Also, in the paragraph that begins "McIntyre Marine", that information is incorrect (from the ANAN newsletter). Ocean Frontiers operated two voyages on board the Sir Hubert Wilkins, a 20 (not 32) passenger vessel.

Page 3-51, note 110: Should state approximately 16 yachts carrying an average of 9 passengers on 22 voyages (SATCM/IP 33).

Page 3-52, para 2.: We would suggest checking these facts with ANI in light of the number of changes required in other sections due to reliance on the ANAN newsletters. In note 112, "Cuverville" should be "Cuverville", and "Weinke" should be "Weincke".

Page 3-53, para. 3: The hut at Commonwealth Bay may have been removed this season. Also, we believe the two-woman team had to be evacuated as well. EPA should verify this with ANI.

Page 3-54: Croydon Travel is spelled wrong.

Page 3-55, para. 3: Should read "though none is anticipated", not "are".

Page 3-56, para. 3: "Yacht" should be singular, and should read and "Though none is", not "are".

Page 4-5, note 10: The IAATO slide show is also used to brief passengers on IAATO vessels.

Page 4-12: The Antarctic Treaty Parties have yet to agree on a definition of "more than minor or transitory."

Page 4-16: IAATO also agrees with EPA's conclusions that substantive provisions and insurance bonding requirements would go well beyond the Protocol.

Page 4-17: (Scully 1993) in second paragraph is not in the references.

Page 4-20: The DEIS states, "It has been EPA's experience over the past four years in carrying out reviews in consultation with other interested federal agencies, that the initial draft of the environmental documentation provided by the U.S.-based operators did not always support a conclusion consistent with the level of impact for the proposed activities described." IAATO questions this statement. For the most part, queries have had nothing to do with the level of impacts but rather have related to points of clarification or drafting issues. To the extent this comment relates to the issue of cumulative impacts, we believe the IAATO U.S. tour operators assessments stand, and the ability to measure and determine cumulative impact is evolving. The tour operators have been using and will always endeavor to use the most accurate methodology available to make observations of human-related impacts. Finally, it is our understanding that no PERMS have been filed by U.S. operators.

Page 5-5, para. 1: In actual fact, both governmental and nongovernmental expeditions by their nature involve the transport of persons to Antarctica, which *could* result in physical impacts. The word "will" is too strong, as none of this has actually been proven, and the same holds true for science and non-science programs. Furthermore, even if there may be impacts, this does not mean that such impacts are significant. Indeed, to date, the impacts have not been demonstrated to be significant.

Page 5-11, para. 2: Cohen 1999 is not in references, and, in footnote 21, "Papua" is spelled wrong

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Page 5-12, para. 3: Should read initiatives that have "led", not "lead" to the conclusions.

Page 5-23, para. 4, and page 5-24, para. 5: Should read "criterion", not "criteria".

Page 5-25, para. 1, and page 5-29, para. 1: Should read "include", not "included".

Page 5-31, note 61: Should read "interference" not "interfere".

Page 5-33, para. 6: Should read "ensure", not "assure".

Page 5-35, para. 3: Should read "modifications".

Page 5-39, para. 4: Should read that alternative 5 would "include", not "included".

Pages 9-1 — 9-15 (References): A number of references need to be added, including, but not limited to, Cohen 1999, Foster 1984, Lanos 1984, Llamo 1965, Scully 1993, Walton 1984, etc.

*Distribution List:*

Please note that Deborah Natansohn is no longer at Orient Lines; she should be replaced by Erland Fogelberg.

*Appendix 3:*

Pages 3-2, 3-3, 3-5 and 3-7: Totals should be for 1989-1997.

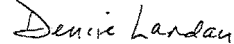
*Appendix 14:*

Page 14-1: As noted above, the Lynbov Orlova did not cruise in the Ross Sea during the 1999-2000 austral summer season. Rather, its planned voyage was canceled that season.

\* \* \* \*

Thank you for your consideration of these comments. We look forward to a continuing, productive and cordial working relationship in the future. Please don't hesitate to contact me if you have any questions or wish further information.

Sincerely,



Denise Landau  
Executive Secretary

Attachment (IAATO Membership List)

cc: U.S. IAATO Members  
Orient Lines  
Holland America Line Westours

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Darrel Schoeling  
 Executive Secretary

August 22, 1997

Richard E. Sanderson  
 Director  
 Office of Federal Activities  
 U.S. Environmental Protection Agency  
 401 M Street, S.W.  
 Washington, DC 20460

Antarctic Conservation Act DEIS/Scoping Comments

Dear Mr. Sanderson:

I am writing to provide these preliminary comments on behalf of the International Association of Antarctica Tour Operators (IAATO) in response to the "Notice of Intent to Prepare an Environmental Impact Statement for the Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica", as published in the May 9, 1997 *Federal Register* (62 Fed. Reg. 25611) (NOI). The Environmental Protection Agency (EPA) is soliciting such comments according to the requirements of the National Environmental Policy Act (NEPA) and its implementing regulations (40 CFR Part 6, Subpart D; 40 CFR Part 1501). Also please find enclosed an annotated copy of the "Environmental Assessment of Proposed Interim Rules for Non-Governmental Activity in Antarctica" (EA), prepared by Science Applications International Corporation (SAIC), where John Spletstoeser has provided comments.

IAATO-24

**Timing of Rule**

As previously outlined in the letter by Eldon V.C. Greenberg on June 27, 1997, IAATO is deeply troubled by the procedures utilized to date by EPA to carry out its responsibilities under Section 4A(c) of the Antarctic Conservation Act (the Act). We believe that the novel legal and policy issues arising out of the legal mandate of the Act, and the unusual circumstances of the promulgation of the Interim Final Rule, compel EPA to pay more attention to the timing and scope of the Rule than it has shown to date. We look forward to your full response to the questions posed by Mr. Greenberg's letter, particularly regarding EPA's interpretation of the statutory mandate of the Act and self-imposed sunset clause for the Interim Final Rule.

IAATO-25

**RESPONSE TO COMMENTS**

| Commentor: |  |
|------------|--|
| IAATO-24   | EPA appreciates the scoping comments provided by IAATO. All the information in this letter was considered by EPA in the preparation of the Draft EIS. EPA also notes that IAATO's letter of August 22, 1997, is incorporated by reference into its comment letter on the Draft EIS dated April 2, 2001; see IAATO-5 and IAATO-19.  |
| IAATO-25   | Full public disclosure about the need for and timing of the Interim Final Rule, including its sunset provision, is available in the Preamble to the Interim Final Rule in <i>Federal Register</i> , Vol. 62, No. 83, Wednesday, April 30, 1997, Rules and Regulations. The rule to amend 40 CFR Part 8 will be proposed and promulgated in accordance with the Administrative Procedure Act. |

**RESPONSE TO COMMENTS**

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**Nature of the Regulated Industry**

IAATO is a membership organization founded in 1991 to advocate, promote and practice safe and environmentally responsible private sector travel to the Antarctic. As such, IAATO and its members have gained experience operating under the requirements of the Antarctic Treaty System, including the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol) and implementing legislation. This experience unfortunately was not reflected in the EA, which was intended to fulfill NEPA requirements in connection with promulgation of the Interim Final Rule.

IAATO looks forward to a thorough elaboration and analysis of current national and international requirements and self-imposed good practices by current Antarctic tour operators in the Environmental Impact Statement (EIS) on the Final Rule currently in preparation by SAIC. We find the "no action" alternative (2.2) and analysis of the environmental consequences of the no action alternative (4.1) in the EA to be deeply flawed and incomplete.

Section 4A(c)(1)(A) of the Act calls for EPA to promulgate regulations "to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty." Given the small number of U.S. private operators and record of self-regulation by the Antarctic tour industry, IAATO sees a broad interpretation of this mandate as misguided with potentially serious consequences to the Antarctic environment. An unnecessarily burdensome, prescriptive rule could drive experienced Antarctic tour operators off-shore or out of business and dismantle the current flexible and proven approach to limiting impacts.

IAATO supports the interpretation of "persons required to carry out an Environmental Impact Assessment" set out in Section II.D.1 of the preamble to the Interim Final Rule. This focus on "operators," defined as a person subject to U.S. jurisdiction who "organizes" a nongovernmental expedition to Antarctica, is consistent with the interpretation of Advance Notification by the U.S. Department of State. We strongly believe that EPA has not been given oversight of international tourism to the Antarctic but rather the mandate to promulgate regulations for U.S. organizers only. Moreover, in our judgment, there is no question that the environmental assessment requirements of the Act do not extend to the actions of individual U.S. citizens who simply participate in expeditions.

IAATO-26

IAATO-27

IAATO-28

| <b>Commentor:</b> |   |
|-------------------|---|
| IAATO-26          | This information was considered by EPA in the preparation of the Draft EIS. EPA believes the Draft EIS presents appropriate and adequate information about IAATO and the Antarctic expeditions and activities of its members within the context of the purpose and need for the document. |
| IAATO-27          | This information was considered by EPA in the preparation of the Draft EIS.   |
| IAATO-28          | This information was considered by EPA in the preparation of the Draft EIS.   |



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EPA has already devoted considerable resources to promulgating regulations which impact a handful of small private businesses representing a fraction of Antarctic tourism. The Interim Final Rule appears at present to impact just six mostly small and experienced companies doing business in the United States, representing 28% of the 103 commercially organized Antarctic expeditions planned in 1997-1998. IAATO asks that EPA take seriously its responsibilities under the Regulatory Flexibility Act, Executive Order 12866, and the Small Business Regulatory Enforcement Fairness Act of 1996 to ensure that the costs of regulation do not outweigh its benefits and to reduce burdens imposed on the regulated industry.

**Environmental Assessment: A Procedural Requirement**

IAATO looks forward to providing a transparent analysis of the potential impacts of its activities, which is our understanding of the requirements of the Protocol, Act and Interim Final Rule. In our view, EPA has not been given the mandate to promulgate a rule with substantive consequences, e.g., a rule which could effectively require that certain environmental impacts be avoided. Indeed, such an approach would be wholly inconsistent with the experience of the NEPA process, the intent of the Protocol and, therefore, the mandate of the Act. Nor do we believe that EPA has authority under the Act to pass on the adequacy of environmental documentation prepared by private parties. Rather, EPA's role is limited simply to the promulgation of rules governing environmental assessment. By the same token, contrary to the approach taken in the Interim Final Rule, we submit that EPA lacks authority under the Act, just as it lacks authority under NEPA, to require revision of environmental documentation submitted to the agency.

The further elaboration by EPA in the Final Rule of specific factors to consider in reviewing potential impacts is not warranted. The Interim Final Rule already incorporates the detailed factors contained in Article 2 and Article 3 of Annex I of the Protocol. IAATO takes the position, along with the U.S. Department of State and other agencies, that Article 3 Principles are principles which inform the entire Protocol but which were not intended to create binding legal obligations and should not be treated as such. IAATO is deeply concerned that the inclusion of this item as an issue in the NOI is an effort to turn a procedural requirement into a substantive review of potential impacts.

IAATO is deeply troubled by the ongoing focus by EPA and its contractor, SAIC, on issues that appear to be inconsistent with the substantial body of experience surrounding NEPA, as well as

| <b>Commentor:</b> |   |
|-------------------|---|
| IAATO-29          | This information was considered by EPA in the preparation of the Draft EIS. EPA appreciates receipt of the 1997 information about the U.S.-based IAATO-member operators subject to the Interim Final Rule. Also see IAATO-20. |
| IAATO-30          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-12.                                    |
| IAATO-31          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-6.                                     |
| IAATO-32          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-12.                                    |
| IAATO-33          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-10.                                    |

IAATO-29  
 IAATO-30  
 IAATO-31  
 IAATO-32  
 IAATO-33

**RESPONSE TO COMMENTS**

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the Protocol and Act. While the purpose of the EIS is to elaborate reasonable alternatives, IAATO is puzzled by the attention to questions of substantive review, mitigation, monitoring, certification, required education and training and other issues that clearly do not pertain directly to the environmental assessment process.

(IAATO-33)

IAATO believes that the potential impacts of Antarctic tourism activities can be most effectively managed through aggressive self-regulation, self-certification and guidance provided by the Scientific Committee on Antarctic Research (SCAR), Council of Managers of National Antarctic Programs (COMNAP) and other components of the Antarctic Treaty System. IAATO does not believe the environmental assessment process is intended, in and of itself, as a broad tool for maximum environmental protection. Rather, it is a planning tool that requires disclosure of environmental impacts of activities but does not dictate substantive results.

IAATO-34

**Streamlining Documentation**

IAATO asks that serious consideration be given to the development of a provision parallel to the provisions of NEPA regulations allowing a categorical exclusion for certain kinds of carefully defined activities. The National Science Foundation has already established a categorical exclusion for a number of governmental activities. In particular, the model of ship-based tourism, accompanied by a thorough educational program and a qualified staff, followed to date by Antarctic tour operators, has been demonstrated in other environmentally sensitive parts of the world (e.g., the Galapagos Islands, Baja California), as well as in Antarctica itself, to have limited impact. Certainly, EPA should explore whether a categorical exclusion should be appropriate for many, if not all, such activities.

IAATO-35

Given the international nature of Antarctic tourism and overlapping national jurisdiction, IAATO asks that EPA also give serious consideration to accepting the determination on environmental assessments by other appropriate national authorities. Domestic implementation of the Protocol by other countries includes provision for document reciprocity, thereby significantly streamlining paperwork and the regulatory burden on a small industry. It would serve no practical purpose for U.S. regulations to go beyond what is required by other national authorities. Indeed, such a rule could have serious environmental consequences, putting U.S. operators at a competitive disadvantage and encouraging operators to move their operations offshore.

IAATO-36

| <b>Commentor:</b> |   |
|-------------------|---|
| IAATO-34          | This information was considered by EPA in the preparation of the Draft EIS. However, it is the responsibility of the U.S. government to implement its obligations under the Protocol. As provided in the Act, EPA is required to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Treaty. Thus, under the proposed rule it would be EPA's responsibility to ensure that nongovernmental operators identify and assess the potential impacts of their proposed activities, including tourism, on the Antarctic environment; that operators consider these impacts in deciding whether or how to proceed with proposed activities; and that operators provide environmental documentation pursuant to the Act and Annex I of the Protocol. Also see IAATO-6. |
| IAATO-35          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-9.   |
| IAATO-36          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-7.   |

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IAATO does not see the need to automatically require that operators file an environmental assessment with EPA on an annual basis. In some cases, companies have been operating at the same level of activity aboard the same vessels with the same staff for decades and, arguably, could be considered an existing activity. IAATO sees no value in asking for a resubmission of documentation annually for these operators. A provision should be made in the Final Rule for a multi-year submission based on a projection of future activities.

IAATO-37

The Interim Final Rule includes an additional category of documentation called a Preliminary Environmental Review Memorandum (PERM), which does not differ substantially from the information provided in accordance with paragraph 5 of Article VII of the Treaty and as elaborated in Recommendation XVIII-1 of the Antarctic Treaty System. IAATO sees no need for this category and asks that it be abandoned in the Final Rule. Detailed information on planned activities is already being provided to the State Department, which has the responsibility for distributing the information.

IAATO-38

**Mitigation and Monitoring**

Annex I of the Protocol does not mandate mitigation nor does the NEPA process require mitigation. The Final Rule should not require mitigation for any activity. As provided in the Interim Final Rule, operators who choose to mitigate their activities will assess and verify the adequacy of proposed voluntary measures. The Interim Final Rule needs no further modification on this subject.

The information required by the Antarctic Treaty System and as incorporated in the Interim Final Rule regarding the scope, frequency and intensity of tourism and other nongovernmental activities in the Antarctic is sufficient to allow for a retrospective analysis of potential impact. IAATO notes that the standard Post Season Report (Final Report of the XXI ATCM, Resolution 3 (1997)) requires more information than reports filed on governmental activities. The standard report will greatly facilitate future work on the potential impact of tourism activities.

IAATO-39

The Interim Final Rule needs no further modification in regard to monitoring. SCAR has not yet developed clear guidelines and recommendations on monitoring programs. It is not possible to create any scientifically credible monitoring regime at this time, and such a regime must be created with the advice of scientists familiar with the Antarctic. To mandate any further monitoring now would create an expensive additional

| <b>Commentor:</b> |   |
|-------------------|---|
| IAATO-37          | This information was considered by EPA in the preparation of the Draft EIS. Under Alternative 2, EPA's preferred alternative, the proposed rule would add a provision allowing operators to submit multi-year EIA documentation to address proposed expeditions for a period of up to five consecutive austral summer seasons. Also see IAATO-20. |
| IAATO-38          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-8.   |
| IAATO-39          | This information was considered by EPA in the preparation of the Draft EIS. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-22.  |

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Richard E. Sanderson  
August 25, 1997  
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burden on the tourism industry without any demonstrated scientific value to the results obtained.

-(IAATO-39)

**Public Comment on Environmental Documentation**

IAATO supports the approach taken in the Interim Final Rule with respect to the public availability of Initial Environmental Evaluations (IEEs), which should be retained without modification. The Protocol does not mandate public comment on IEEs, and provision has already been made in the Interim Final Rule for informal public access to any IEEs received. This seems sufficient and consistent with NEPA practice.

-(IAATO-40)

\* \* \*

Please do not hesitate to contact me if you have any questions about these comments or if you would like any additional information. We look forward to working closely with you as the NEPA process proceeds and participating in a second scoping session this fall.

Sincerely,

Darrel Schoeling  
Executive Secretary

Enclosure

**Commentor:**

IAATO-40

This information was considered by EPA in the preparation of the Draft EIS. Under Alternative 2, EPA's preferred alternative, the proposed rule would carry forward the public availability process for IEEs that is in the Interim Final Rule.

RESPONSE TO COMMENTS

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PLEASE REPLY TO WASHINGTON, D.C. OFFICE

June 22, 1998

VIA FACSIMILE (202) 564-0070 AND MAIL

Mr. Joseph Montgomery  
Ms. Katherine Biggs  
Office of Federal Activities  
U.S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, D.C. 20460

Implementation of Antarctic Conservation Act

Dear Mr. Montgomery and Ms. Biggs:

In accordance with the *Federal Register* notice of April 22, 1998 (63 *Fed. Reg.* 19912), I am writing on behalf of the International Association of Antarctica Tour Operators ("IAATO") and its members to comment upon the Information Collection Request (the "ICR") and accompanying Supporting Statement related to implementation of the interim final rule governing environmental impact assessment of nongovernmental activities in Antarctica.

As you know, IAATO is a membership organization founded in 1991 to advocate, promote and practice safe and environmentally responsible private sector travel to the Antarctic. IAATO currently has twenty-eight members, including twelve associate members, from ten different countries. Eight IAATO tour-organizer members are based in the United States. In the 1997-1998 austral summer, IAATO members were responsible for ninety percent of the organized land and ship-based private voyages to Antarctica, carrying about eighty percent of all travelers to the continent. IAATO thus has the strongest interest in the development of a sound, workable system for conducting environmental assessments of nongovernmental activities in Antarctica, consistent with the requirements of the Protocol on Environmental Protection (the "Protocol") and the Antarctic Conservation Act (the "Act"), and IAATO and its members are directly and immediately affected by the information collection

IAATO-41

Commentor:

IAATO-41

EPA notes that IAATO's letter of June 22, 1998, is incorporated by reference into its comment letter on the Draft EIS dated April 2, 2001 (see responses to comment, IAATO-5 and IAATO-19). EPA notes that the June 22<sup>nd</sup> letter represents IAATO's comments to EPA on the Information Collection Request (ICR) and the Supporting Statement for the Interim Final Rule. These comments were addressed at that time by EPA in Part C of the Supporting Statement, Response to Public Comments on the Proposed ICR. A copy of the Supporting Statement for the Interim Final Rule, including Part C, is available upon request from EPA's Office of Federal Activities. These comments were also considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule.

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Mr. Joseph Montgomery  
 Ms. Katherine Biggs  
 June 22, 1998  
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requirements under the interim final rule.

As set out in detail below, IAATO has comments of four sorts concerning the ICR and Supporting Statement. First, IAATO believes that in two important respects the Environmental Protection Agency ("EPA") has misstated its own authorities and IAATO members' obligations under current law. Second, IAATO believes that EPA can and should reduce unnecessary paperwork burdens in a number of significant ways. Third, with one or two exceptions, IAATO wishes to concur with most of EPA's assumptions about the nature of the information collection and submission process as currently structured under the interim final rule. Fourth, while, based upon its experience in 1997, IAATO essentially agrees with EPA's estimates of the burden (time and out-of-pocket costs) associated with preparation of Initial Environmental Evaluations ("IEEs"), it believes EPA's burden estimates should be adjusted to eliminate time and costs associated with activities which are either unnecessary or are not and should not be required under the interim final rule.

-(IAATO-41)

(1) Authorities and Obligations under the Protocol, the Act and the Interim Final Rule

IAATO's most fundamental concern with the ICR and Supporting Statement relates to certain statements and assumptions made by EPA concerning the submission and review of "information on measures to assess and verify environmental impacts." E.g., Statement, pp. 4, 11, 15, 23, 25. IAATO strongly believes that EPA has no authority to demand the submission or to conduct a review of such information, nor is there any legal basis for EPA to maintain records of such information in its files.

IAATO-42

The regime established under the Protocol, the Act and the interim final rule contemplates that information collected by the operator shall be for the use of the operator. Indeed, even Section 8.9(b) of EPA's own interim final rule, consistent with the Protocol, only states that operators must "include procedures designed to provide a regular and verifiable record of the impacts of these activities," and notably does not require that these records be made available in any fashion to EPA. Any requirement that the information gathered be submitted

Commentor:

IAATO-42

This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. Because the proposed rule would be patterned after the Interim Final Rule and because of the mandates of the Paperwork Reduction Act, EPA believes it is appropriate to pattern the ICR and Supporting Statement for the proposed rule after the ICR and Supporting Statement for the Interim Final Rule including calculation of burden and cost for such elements as review and revision of environmental documentation and preparation and submission of assessment and verification information. EPA notes that with regard to assessment and verification information, the Protocol, and thus the Act, requires that operators have procedures designed to provide a regular and verifiable record of the impacts of their activities; such a provision would be incorporated into the proposed rule. EPA believes that this establishes a requirement that the information be available to EPA. Otherwise there would be no way to know if an operator was in compliance with this procedural requirement in the regulation. Operators are currently voluntarily providing this information to the government, thus it is available to EPA. EPA intends to review the information voluntarily submitted, and to maintain files. Because of this, the burden and cost of review of this information was included in the burden and costs for the ICR and Supporting Statement for the Interim Final Rule and will also be included in the ICR and Supporting Statement for the proposed rule.

Mr. Joseph Montgomery  
Ms. Katherine Biggs  
June 22, 1998  
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to and reviewed by EPA carries with it the implication that EPA may somehow use that information to dictate that operators take particular action to mitigate or remediate impacts. Such an implication is entirely unwarranted.

The obligation imposed under the Antarctic Treaty system is to document environmental impact; the system does not mandate that particular, substantive action be taken to avoid or ameliorate impacts which are documented; and such a mandate cannot be imposed upon operators by EPA in the guise of "environmental assessment". Stated succinctly, any and all decisions to minimize and/or mitigate impacts rest with the operators, and it is solely within their discretion, for example, to decide whether to suspend, cancel or modify any activity. Information which they collect to assess and verify impacts does not and should not be considered to compel any particular actions to be taken. It necessarily follows that EPA not only has no authority in law to require submission of such information, but also that it has no authority in law to determine whether operator plans are consistent with the Protocol and/or prescribe any operator action.

(IAATO-42)

The requirement to conduct an environmental assessment is, in sum, a procedural rather than a substantive one. Consequently, IAATO submits that all references in the ICR and Supporting Statement which suggest to the contrary are inappropriate and should be stricken.

IAATO also has a somewhat related concern regarding EPA's authority under the Act with respect to environmental documentation which is prepared by operators under the interim final rule. The ICR and Supporting Statement (at pp. 9, 11, 25, 29-33) seem to contemplate that EPA will not only, for example review IEEs, but also that it will assess their adequacy and require revision and resubmission of documentation that it deems inadequate. As IAATO stated in its August 25, 1997 "scoping comments", it is our position that EPA has no such authority under the Act. Rather, its basic role is to promulgate rules governing environmental assessment. Consequently, references in the Supporting Statement to such operator activities as revision of documentation in response to EPA comments (e.g., Statement, p. 9), at least to the extent they imply that such revision is mandatory, should be eliminated.

**RESPONSE TO COMMENTS**

Mr. Joseph Montgomery  
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**(2) Reducing Unnecessary Paperwork Burdens**

There are several ways in which unnecessary paperwork burdens can be reduced under the interim final rule.

First, where operators have the same level of activity year-in and year-out and impacts remain constant, a single, multi-year submission should be sufficient to meet the requirements of the law. There should be no need for operators even to provide "updates" to EPA (see Statement, pp. 5-6, 7, 9, 30) in such circumstances.

Second, to the extent any updating is appropriate, submission of a separate, "update" document to EPA should be unnecessary. Rather, the Advance Notification which the operators are currently required under the Act to provide to the Department of State, and which they also now provide on a voluntary basis to NSF, can and should be able to substitute for such a document. The Advance Notification includes details on the organizer and planned activities. Indeed, it includes essentially all the information mentioned as part of an "update" and much of the information in the IEE overall. Contrary to EPA's suggestion (Statement, p. 5) that it will be obtaining information in "updates" which it will then provide to NSF and the State Department, IAATO submits that the Advance Notification itself, absent significant changes in planned activities or environmental conditions from one year to the next, should, if provided to EPA, be adequate to meet all requirements of the Act and the interim final rule.

Third, IAATO wishes to underscore the importance from the perspective of reducing paperwork burdens of EPA accepting and relying upon documentation submitted to other Treaty Parties. The Supporting Statement, in IAATO's judgment, properly recognizes that the interim final rule does "not require a specific format", that this "allows flexibility for operators who have multiple international documentation requirements," and that it would be permissible for "an operator . . . to submit environmental documentation prepared for another country as long as all the elements required by the rule are addressed" (Statement, p. 5 and note 8). This flexibility should be

IAATO-43

IAATO-44

IAATO-45

| <b>Commentor:</b> |  |
|-------------------|--|
| IAATO-43          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule.   |
| IAATO-44          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. EPA notes this comment is similar to those presented in IAATO's August 22, 1997 comment letter; see IAATO-37. |
| IAATO-45          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule.   |



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retained, and, in such circumstances, the actual time and expense of complying with the interim final rule in particular, as opposed to the Protocol's environmental assessment requirements as they apply to all Treaty Parties in general, should be reduced.

(IAATO-45)

Fourth, IAATO agrees with EPA's statement that organizers only, not individuals, are subject to obligations under the Act and the interim final rule (Statement, p. 8). This statement is consistent with the notion that, because of the international nature of Antarctic tourism, EPA must be sensitive to imposing regulatory burdens which would be infeasible or which would be so onerous as to effectively deter U.S. citizens from traveling to Antarctica at all. The same sensitivity, IAATO suggests, should guide EPA in elaborating rules for operators, most of which already charter vessels, hire staff, solicit business and otherwise carry out many of their functions overseas. The interim final rule only covers about one-half of the companies engaged in Antarctic travel, which is a truly international business. If U.S. requirements were too onerous and duplicative, the end result would not be to produce better environmental assessment or more responsible stewardship of the Antarctic environment but instead just to drive U.S. companies to set up entirely offshore operations.

IAATO-46

**(3) The Nature of the Information Collection Process**

On the whole, IAATO thinks most of EPA's assumptions about the information collection process under the interim final rule are correct. Thus, even though in 1997 operators needed more time to prepare IEEs than contemplated by the regulations and therefore sought extensions, IAATO believes that the timeframes for submission and review of environmental documentation are workable and should be met in the 1998-1999 and 2000-2001 austral summer seasons (Statement, p. 14). Likewise, EPA's statements concerning operator activities associated with environmental documentation (Statement, pp. 9-10) correspond with IAATO's experience.

IAATO-47

EPA's description of the model IEE (Statement, p. 18-19) is accurate up to a point, but needs to be modified in light of the concerns expressed above by IAATO. In particular,

IAATO-48

| <b>Commentor:</b> |   |
|-------------------|---|
| IAATO-46          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. Further, as required by the Act, the EIA provisions of EPA's proposed rule would apply to all operators for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty. Also see IAATO-21.   |
| IAATO-47          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule.  |
| IAATO-48          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. EPA acknowledges that IAATO agrees that the description of the model IEE is accurate up to a point. EPA disagrees, however, that certain of the model IEE's elements should be stricken. "Supplemental information" is information that may be provided to supplement an EIA document such as a travel brochure or an annual Advance Notification. (EPA notes that the basic information requirements in Section 8.4(a) of the Interim Final Rule provide for generally the same information that operators submit to the Department of State for Advance Notification; operators may provide a copy of or incorporate by reference the Advance Notification for Section 8.4(a) purposes.) The burden and cost estimates in the Information Collection Request (ICR) and Supporting Statement include only time for compiling and submitting such types of information and do not include any time for their preparation because EPA assumes they were prepared for other purposes and provided as reference or updated information for purposes of the EIA document. Also see IAATO-42 with regard to documentation for "assessment and verification procedures." |

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references to time being needed to "prepare and compile supplemental information", to documentation of "assessment and verification (A/V) procedures", and to preparation of "updates" should be stricken.

(IAATO-48)

IAATO wishes to underscore that several of the elements which underlie EPA's assessment of burden are also critical to the workability of the regulations. In particular, it is important for EPA to permit one document to cover more than one expedition and/or multiple operators (Statement, pp. 3, 6). This allows needed and appropriate consolidation of assessment work and substantially alleviates IEE costs for each individual operator. IAATO has further found that allowing information to be incorporated by reference (Statement, pp. 3, 6) facilitates the preparation of IEEs.

IAATO-49

In one respect, EPA's projection of future assessment activities needs to be modified. EPA states that it expects that there will be 9 operators and 4 IEEs in the future years (Statement, pp. 17, 19, 30). Two additional U.S. operators (Clipper Cruise Line and Special Expeditions) are planning Antarctic expeditions in the 1998-1999 austral summer season. While this should not result in another IEE being prepared, it still should be accounted for in EPA's estimates of time and costs.

IAATO-50

(4) Estimates of Burden (Costs and Time)

IAATO believes that EPA's estimates of burden (costs and time) are essentially accurate as far as preparation of the core IEE is concerned (Statement, p. 19). It likewise expects that any future IEEs would require the amount of time in total and per operator estimated by EPA (*id.*). However, for the reasons stated above, EPA's burden estimates should be adjusted by excluding time and costs associated with preparation of "supplemental information", "updates" and "A/V procedures". EPA's total burden estimates (2020 hours and 224 hour per operator, or \$126,746 for all operators combined and \$14083 per operator) (Statement, p. 34) should be adjusted in similar fashion.

IAATO-51

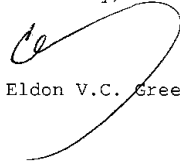
| <b>Commentor:</b> |  |
|-------------------|--|
| IAATO-49          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. EPA notes this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; see IAATO-20.  |
| IAATO-50          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. EPA appreciates receiving updated information regarding the anticipated number of operators.  |
| IAATO-51          | This comment was considered by EPA in the preparation of the Draft EIS and the ICR and Supporting Statement for the proposed rule. EPA acknowledges that the burden and cost estimates for the Interim Final Rule are essentially accurate. However, EPA disagrees that certain elements should be stricken; see IAATO-48. |

Mr. Joseph Montgomery  
Ms. Katherine Biggs  
June 22, 1998  
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\* \* \*

Thank you for your consideration of these comments. Please don't hesitate to contact either Darrel Schoeling at IAATO (212-460-8715) or myself if you have any questions or wish further information.

Sincerely,



Eldon V.C. Greenberg

cc: U.S. IAATO Members  
Darrel Schoeling



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Darrel Schoeling  
 Executive Secretary

RESPONSE TO COMMENTS

| Commentor: |   |
|------------|---|
| IAATO-52   | EPA appreciates the scoping comments provided by IAATO. All the information in this letter was considered by EPA in the preparation of the Draft EIS. EPA also notes that IAATO's letter of July 30, 1998, is incorporated by reference into its comment letter on the Draft EIS dated April 2, 2001; see IAATO-5 and IAATO-19. |

July 30, 1998

Ms Katherine Biggs  
 Mr Joseph Montgomery  
 Office of Federal Activities (2252A)  
 U.S. Environmental Protection Agency  
 401 M Street SW  
 Washington D.C. 20460  
 (202) 564 7157

Implementation of the Antarctic Conservation Act

Dear Ms. Biggs and Mr. Montgomery,

IAATO is pleased to provide written comment, following the second public scoping meeting on July 14, 1998. Presentations were made by eight individuals representing IAATO and U.S. Antarctic operators: Abercrombie & Kent, Clipper Cruise Line, Orient Lines, Quark Expeditions, Society Expeditions, Special Expeditions, and Zegrahm Expeditions.

Much of the comment was aimed at streamlining of documentation requirements, which Beth Clark Marks, representing the Antarctic Project, supported in her response at the end of the meeting. Many speakers emphasized the international, cooperative nature of Antarctic tourism. Our counsel Buzz Bailey (Garvey, Schubert & Barer), underscored that reciprocity was a foundation of international treaties and that it would not be unusual for the EPA to recognize authorization by other appropriate national authorities in the promulgation of the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica. This was a significant concern expressed by many at the scoping meeting.

IAATO-52



Ms Katherine Biggs  
Mr Joseph Montgomery  
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Page Two

After I introduced a number of issues, Denise Landau (Quark Expeditions, Zegrahm) spoke of some of the difficulties in providing advance notification and environmental documentation on activities sponsored by several operators. She gave specific examples of difficulties already encountered. Deborah Natansohn (Orient Line) in her capacity as an executive of the Cruise Line Association of America spoke of the basic rights of Freedom of Travel and Freedom of the Seas and the danger that EPA may in its zeal infringe on these fundamental rights. Victoria Underwood (Abercrombie & Kent) documented the nature of Antarctic tourism, where many of the same activities by the same operators continue year-after-year at approximately the same level with the same ships and same staff, arguing for multi-year documents. Naomi Morse (Clipper) emphasized that the EPA should use the flexibility granted it by Congress to put into place the most cost-effective and efficient rule that avoids duplication of efforts and paperwork. John Tillotson (Society Expeditions) described the model for choosing and managing Antarctic visitor sites, emphasizing current good practices that include systematic data collection and regular exchange of environmental information. He pointed out the value of cooperation and aggressive self-regulation in protecting the Antarctic environment as demonstrated by the work of IAATO. Tom Ritchie (Special Expeditions) noted the great opportunity presented by IAATO members as a group of committed, environmentally responsible and self-governing companies that are organized and responsive.

(IAATO-52)

Thank you for your careful consideration of these comments and other concerns expressed by Antarctic tour operators. As secretary of IAATO, I continue to be struck by the dedication and experience of members and their commitment to safe and environmentally responsible private sector travel to Antarctica.

Sincerely,

*David Schoeling*

## RESPONSE TO COMMENTS

EPA Scoping Meeting  
Final Rule  
July 18, 1998  
Statement by Darrel Schoeling  
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| Commentor: |   |
|------------|---|
| IAATO-53   | This information was considered by EPA in the preparation of the Draft EIS. |

My name is Darrel Schoeling, secretary of the International Association of Antarctica Tour Operators, and I am speaking today on behalf of the Association. IAATO is encouraged by some recent actions of the EPA, particularly the extension of the Interim Final Rule (as published in the Federal Register April 15, 1998) and the scheduling of this second opportunity to provide public comment.

Represented today are all U.S. Antarctic tour operators with the exception of IAATO charter member, Mountain Travel Sobek, whose president Richard Weiss sends his regrets. He had planned to be here but had to cancel at the last moment. We appreciate the scheduling of this meeting in conjunction with the 10<sup>th</sup> annual meeting of the National Science Foundation and Antarctic tour operators.

IAATO suggested in its letter of June 27, 1997 to Richard Sanderson that comments "would be more meaningful if they reflect the real, practical issues encountered in the assessment process." That is what we will report today. Many of the comments you will hear echo our letter of August 25, 1997, provided in response to the "Notice of Intent to Prepare an Environmental Impact Assessment for the Final Rule for Environmental Impact Assessment of Nongovernmental Activities in Antarctica." We encourage the EPA to refer to this letter and to take it seriously in the elaboration of the Final Rule.

It has been repeatedly suggested to us that the primary value of the EIA process is as an effective planning tool and, in fact, that turned out to be true. It has led us to think systematically about our Antarctic activities and to document potential impacts. The process has also made it clear what EIA is NOT. It:

- Does NOT provide for comprehensive protection of the Antarctic Environment;
- CANNOT cover all Antarctic tourism, just that of US organizers; and
- Is NOT a management plan or guide to management for individual sites.

IAATO-53

## RESPONSE TO COMMENTS

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As indicated in our letter of August 25, 1997 -- and also in the June 22, 1998 letter by Eldon Greenberg in response to the "Information Collection Request" -- we see a number of areas where EPA can improve upon the Interim Rule. We support, in general, the approach of the Interim Rule -- and our comments today are in the interest of improving upon it, especially with regard to streamlining of documentation and recognition of voluntary measures.

These issues include:

- Provision for multi-year filing. There is no automatic need for annual documentation;
- Allowance for a "categorical exclusion" of certain types of activities such as Antarctic activities organized along a carefully defined "Lindblad Model;"
- Elimination of the category "PERM" and requirement for "updates" since it duplicates "Advance Notification;"

And, most significantly:

- the allowance for reciprocity with other appropriate national authorities so that the same activity by the same operator will not require redundant and time-consuming engagement with multiple authorities.

US-based Antarctic tour operators are a small group of well-organized and responsive companies that are in the business of environmental education. We take our responsibilities in the Antarctic seriously -- and trust that the EPA will take advantage of the opportunity to work with private industry to protect the Antarctic environment in promulgation of the Final Rule. Thank you for consideration of these comments.

IAATO-54

### Commentor:

IAATO-54

This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; also see the following:

- IAATO-37 regarding the issue of multi-year environmental documentation;
- IAATO-9 regarding the issue of categorical exclusions;
- IAATO-8 regarding the issue of PERMs;
- IAATO-48 regarding the issue of updates duplicating Advance Notification; and
- IAATO-7 regarding the issue of reciprocity.

## RESPONSE TO COMMENTS

EPA Scoping  
July 18, 1998  
Statement by Denise Landau  
Page 1

### EPA Scoping Meeting on the Final Rule, July 1998

#### Implementation of the Antarctic Conservation Act

Good Afternoon, My name is Denise Landau and I'm here representing and speaking for US based tour operators: Quark Expeditions, Clipper Cruise Line and Zegrahm Expeditions. I would like to discuss the international nature of Antarctic Tourism relative to ship operating companies and the submission of EIAs.

#### Overview of Antarctic Tourism

IAATO consists of:

- 28 membered companies from 10 countries.
- 15 out of the 15 ships are operated by IAATO member companies
- One Land Based operator ANI, 1 Yacht Operator and the rest are ship operators
- 9 of the 28 are Full or Provisional Members of IAATO are the primary ship operators.
- Of that 9, there are 5 members (representing 8 out of the 14 vessels who are US
- In addition there are two full member companies who charter vessels from one of the nine ship operators.

#### Who is the Organizer?

IAATO members subcharter ships from each other, which can often cause confusion as to who the actual "organizer" is of the voyage. This is an important consideration should any one nation put into place unusually stringent laws and obligations. For example

- Quark Expeditions will operate the Kapitan Khlebnikov, Vavilov, Multanovskiy, and Molchanov. In addition Quark will subcharter 3 departures from Clipper Cruise Line on board the Clipper Adventurer.
- Zegrahm Expeditions also will subcharter this upcoming season the Clipper Adventurer.
- Clipper Cruise Line operates the vessel the Clipper Adventurer.
- Australian based Aurora Expeditions subcharters from Quark Expeditions the Kapitan Khlebnikov and the Molchanov.
- Quark and Zegrahm subcharter from Clipper Cruise Line

These examples demonstrate that tour operators have a choice of which national authority to provide Advance Notification – and it is not always clear who would be the most appropriate. The "organizer" of any particular voyages can be confusing. Subcharterers

#### Commentor:

IAATO-55

This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; also see response to IAATO-7 regarding the issue of reciprocity.

IAATO-55



can and do sometimes provide their own staff and are responsible for adherence to IAATO guidelines, relevant national legislation, Treaty Recommendation XV111-1 etc.

As you can see from the above interrelationships, Antarctic tourism is a complicated industry which has succeeded due to the voluntary spirit within the industry and the willingness to self regulate.

On behalf of Zegrahm Expeditions, Werner Zehnder would like to emphasize the point he made last year that he could become Zimbabwe company and charter a ship with Pakistani Crew and Egyptian staff. None of these countries are currently either Consultative or Non-Consultative parties to the Antarctica or Treaty or perhaps interested in ratifying the protocol.

At present, tour operators find themselves in the arduous position of having to submit multiple environmental impact assessment documents for the same activity to comply with varied format requirements of the treaty parties. Duplication should be minimized wherever possible and reciprocal agreements put into place.

#### Reciprocity

Even if an authority will accept the same document, the schedule for submission may be different and regardless it still requires understanding and following the procedures of more than one government office. The comments received from the various national authorities can also be conflicting.

- NZ based Heritage Cruise Lines submits IEE's to New Zealand. If a US company subcharters the Shokalski and the Shokalski's IEE and operation meets the obligations of NZ it would be optimal that EPA would accept the IEE written by a NZ company for the US subcharter. This would both reduce unnecessary paper work and duplication of effort
- Hapag Lloyd is required to submit an EIA to the German government. If a US company subcharters from Hapag Lloyd, the US company would have to rewrite the environmental assessment to German standards.
- Australian companies submit Environmental Impact Assessments, however under Australian legislation, the PEA's are acceptable for most tourism activities.
- Australian based company Aurora Expeditions and two US companies, Quark and Zegrahm Expeditions submitted a JOINT IEE to both the US and to Australia during the 1997/98 operating season.
- Currently Canada has no EIA requirements. Two companies operating trips to Antarctica are not required to submit EIA's. Marine Expeditions present today, however has participated fully in the writing and planning process of the US based

(IAATO-55)

Programmatic IEE and voluntarily. operates their business as if Canada has ratified the Protocol.

- Canadian based Adventure Network International, land based tourism works closely with the UK Foreign Office and this year will submit their IEE to the U.K and apply for a permit to operate in Antarctica through the U.K. Again, this is voluntary on behalf of MEI and ANI and proves how responsible these operators can be despite being located in a country that has not ratified the protocol.

#### Various National Obligations

##### **Sweden**

Legislation in Sweden requires that each citizen be issued a permit when traveling to Antarctica, however Sweden has agreed that if a Swedish citizen is traveling to Antarctica with a company who has fulfilled the obligations of the country of which the operator is established the citizen will not be required to apply for a permit. Until last year all US companies carrying Swedish citizens, pax, crew had to submit to Sweden an IEE "Form" which covered the ship operation. Quark, MEI, A&K/ESC all had submitted this on file with the Swedish government. *Fortunately Sweden has within their legislation that now individual citizens don't have to apply for a permit if the ship company has fulfilled their own national requirements.* This is an example of how a treaty party can flexible to minimize the paper work requirements of the operator.

(IAATO-55)

##### **United Kingdom**

The United Kingdom permits companies and private expeditions. Their actual law as it relates to tourism is "an expedition is defined in the Act as any tour or other journey, whatever its purpose, made by one or more person. It is a British expedition if: 1) it was organized in the U.K. and if the place of final departure for Antarctica of the expedition was in the UK (ie Falkland Islands) of the extension of the Act to UK. A permit must be applied for and an EIA submitted. UK nationals are prohibited from activities in Antarctica *unless they have a permit, or written authorization from another contracting party.* Again, another example of a reciprocal agreement.

Norway requires that an EIA be produced anytime Norwegian Territory is entered. That means that technically if the Kapitan Khlebnikov lands passengers in Droning Maud Land, then an EIA will have to be submitted to the US because Quark as a US company operates the ship and to the Norwegians. It would be of particular interest to Quark that Norway and the US agree on the content of an IEE and that there would be reciprocity between countries. I'm not even going to bring up the issue of Sovereignty.

Japan's recent implementation of the Environmental Protocol states that: Japanese law is applied to Japanese Nationals and aliens residing in Japan or to Japanese nationals who are not currently living in Japan, Japanese employees engaging in Antarctic Activities or are involved in the supervision of Antarctic Activities in connection with the business. *Like the U.K, Japan will accept written authorization from a contracting party.*

**Netherlands:** a permit is required for an "organizer but does not require an individual citizen to have permit. An organizer is required to submit an ELA and if the ELA meets with the Netherlands approval, than a permit is issued. Currently a Dutch company owns one of the Russian Registered ships. The ship is operated by American and Australian companies.

**Finland:** Requires a permit for most activities in Antarctica including science and tourism. The law applies to Finnish citizens, Finnish legal person, vessels, foreign citizens permanently resident in Finland and vessels which take part in expeditions origination or arranged from Finland. Organizers are required to submit and ELA.

Conclusion

As you can see by the complexities of various legislation and the fact that Organizers or companies charter ships from one another its an international challenge. Although the Environmental Protocol serves to protect Antarctica it has created a paper work challenge for tour operators who are conscientious and want to make sure we are following the correct procedures.

We appreciate the flexibility that EPA has shown in working with U.S.-based tour operators thus far. As responsible tour operators with a long term interest in visiting and protecting Antarctica we look towards international cooperation, acceptance of multiple year IEE's, reciprocity between nations regarding the production and writing of ELA's. We commend EPA for extending the final rule for 2 years in light of the time period required to test the practical feasibility and how it relates to the International nature of Antarctic tourism.

Thank you or listening to our concerns.

Denise Landau  
Environmental Officer, Quark Expeditions  
Representative of Zegrahm Expeditions  
Representative of Clipper Cruise Line

(IAATO-55)

**EPA's 2nd Scoping Meeting for EPA's Environmental Impact Statement  
for the final rule for environmental impact assessment of  
nongovernmental activities in Antarctica**

**July 14, 1998**

**Statement by Victoria Underwood**

Good afternoon and thank you for allowing me to speak before you today about EPA's Environmental Impact Statement for the final rule for environmental impact assessment of nongovernmental activities in Antarctica.

My name is Victoria Underwood and I am Antarctic Environmental Officer for Abercrombie & Kent and Explorer Shipping Corporation who own and operate the expedition ship, m/s Explorer. I am joined today by Charlie Scarlett, president of Explorer Shipping Corp.

My career in the travel industry dates back to 1982, however I have been involved with the Explorer since 1986 and have participated in over forty voyages to the Antarctic, primarily to the Peninsula region, but also to the Ross Sea. I am one of the co-authors of the IAATO visitor and tour operator guidelines that served as a foundation for Recommendation XVIII-1, adopted by the Antarctic Treaty Party system. For the last three years I have served on the Executive Committee of IAATO and recently attended the XXII Antarctic Treaty Consultative Meeting in Tromsø, Norway, along with other industry representatives.

For your background information, Explorer Shipping Corporation is an off-shore company chartered in the British Virgin Islands. Abercrombie & Kent, our parent company, was founded as a safari company in 1962 in Nairobi, Kenya and is today an international group of companies, with offices in 27 countries world-wide. A&K provides upscale adventures in more than 100 countries and on all seven continents. Headquartered in Oak Brook, Illinois, A&K also has offices in England, Egypt, Kenya, South Africa, Tanzania, Uganda, Zimbabwe, China, India, Japan, Thailand, Australia, New Zealand, Denmark, France, Germany, Italy and Spain. A&K employs more than 3,000 travel professionals around the world and has served more than 500,000 clients. My reasoning for mentioning the organization structure of our company, as have other speakers to the organization of their company's, is to point out the complexity of our industry.

The Explorer, registered in Monrovia, Liberia, is a small expedition cruise ship, carrying 96 passengers, and was the first ship purposely built for polar expedition cruising. She has operated in the Antarctic continuously since 1970 -- first as the Lindblad Explorer (from 1970 until 1984), then as the Society Explorer (from 1984 until 1992) and since

**RESPONSE TO COMMENTS**

**Commentor:**

IAATO-56

This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; also see the following:  
IAATO-20 regarding streamlining documentation and paperwork reduction provisions;  
IAATO-8 regarding the issue of PERMs; and  
IAATO-42 regarding the issue of assessment and verification information.

IAATO-56

1992 as the Explorer, the flagship of A&K. It is a noteworthy achievement within this industry to see the same ship, operate with many of the same staff, offering essentially the same itineraries to the same number of travelers for twenty-eight years now.

Before addressing two specific issues, we would like to commend EPA on extending the Interim Final Rule through the 2000-2001 austral summer. This allows the tour operators to gain experience with the Rule itself and to ensure that the industry is more informed and better able to comment on EPA's environmental impact statement. We have been watching the development of the rule-making process with great interest and thank you for the opportunity to comment today.

In my comments, I would like to address two specific issues: 1) The need to streamline documentation, and 2) Support for one document for multiple operators covering multiple expeditions over several seasons. The reasoning behind this is as follows:

- Activities by the tour industry have been substantially similar from year-to-year. For example, the Explorer is about to begin her twenty-ninth season of operation in the Antarctic. Many of the officers, crew and expedition staff have been aboard for years. Our staff, in fact, average nine years of experience in the Antarctic. Nearly all of the places we visit are the same, and the same type of activity is being carried out. The same can also be said for many of the other ships presently being operated in the Antarctic by IAATO member companies. The World Discoverer, for example, operated by Society Expeditions, has been conducting voyages to Antarctica since 1977. The Bremen (formerly the Frontier Spirit), operated by Hapag-Lloyd, has been there since 1989. Several of the Russian ships operated by Mountain Travel / Sobek, Quark Expeditions, and Marine Expeditions, among others, have been employed since the early 1990s.
- This model of ship-based tourism, as developed by Lars-Eric Lindblad in the late 1960s, has been the same model that has been replicated by all of the Antarctic tour operators represented here today. The "Lindblad" model of responsible tourism has also been adopted by some of the larger ships, for example the Marco Polo. Lars-Eric Lindblad designed the Antarctic program for Orient Lines and led the voyages for the first few seasons. In addition, Orient Lines has hired some of the same expedition staff and crew who were trained by Lindblad himself or had worked for other companies operating under this same model.
- Many industry representatives have also been trained under the "Lindblad" model, including:

Werner Zehnder, who first started working for Lindblad as a chef aboard the Explorer in 1969 (aboard her maiden voyage) and later as an Expedition Leader for Society Expeditions for 7 years before becoming Sr. V.P. of Planning and Operations. In

1990, he and a group of expedition leaders and naturalists founded Zegrahm Expeditions. Werner continues to charter vessels from several of the IAATO member companies to operate his own voyages to the Antarctic.

Mike McDowell, who began working aboard the Explorer with Lindblad in 1977 as a staff assistant and Zodiac driver, and worked as an expedition leader until 1984. Since 1985, Mike has been one of the co-owners of Quark Expeditions and, along with Werner Zehnder, is considered to be one of the visionaries in the expedition tourism industry. Continuing in the Lindblad tradition of opening up new areas to tourism, Quark offered the first complete circumnavigation of Antarctica during the 1996-97 season, and has offered pioneering voyages to the Weddell Sea.

Baerbel Kraemer, head of ship operations and environmental affairs with Hapag Lloyd, responsible for the operations of the Hanseatic and Bremen, began her career as purser, cruise director and later as hotel manager aboard the Explorer, from 1978 to 1991. (Baerbel also has many years of experience working aboard the World Discoverer -- as do I.)

Nigel Sitwell worked aboard many voyages of the Lindblad Explorer in the 1970s and 1980s as a lecturer. Since then he has been employed as an Antarctic expedition leader or lecturer aboard the Illiria, Alla Tarasova (now the Clipper Adventurer), Ocean Princess, Khromov and Marco Polo.

Finally, Lindblad's son, Sven-Olaf Lindblad, president of Special Expeditions, will continue the Lindblad tradition of trips to the Antarctic this season aboard the Caledonian Star. Special Expeditions has employed Tom Ritchie, a very experienced expedition leader who worked aboard the Explorer from 1977 - 1984 and Captain Leif Skog as master. Leif was affiliated with the Explorer for many years in the late 1970s and early 1980s and again for several years during the mid-1990s with A&K / Explorer Shipping Corp. He now oversees the marine operations for Special Expeditions.

These individuals are but a few of the many, many people who are still working in the Antarctic industry today, carrying on the tradition started in the 1960s by Lars-Eric Lindblad. All of this is very important not only for experience within the industry, but also for the cooperative and voluntary spirit that exists today between competing companies.

- To comply with regulations under the Interim Final Regulations for Environmental Impact Assessment of Nongovernmental Activities in Antarctica [40 CFR Par 8.2.], five U.S. based companies submitted environmental documentation regarding its planned activities during the 1997-1998 austral season to EPA for its review. Documentation included the following:

(IAATO-56)

(IAATO-56)

- a) transmittal letter;
  - b) "Notice of Intent to Travel";
  - c) consolidated document entitled "Initial Environmental Assessment: Ship Based Tourism by Five U.S. Organizers"
- The "Notice of Intent to Travel" is the same as the "Advance Notification of Intent to Travel" as submitted to the U.S. Department of State in fulfillment of obligations under Section 7 of the Antarctic Conservation Act implementing paragraph 5 of Article 7 of the Antarctic Treaty, and as further amplified by Recommendation XVIII-1 of the Antarctic Treaty System.
  - Information submitted to the State Department by tour operators under "Advance Notification" includes the following, which is contained in Attachment A "Information to be Provided in Advance Notice" under ATCM Recommendation XVIII-1 "Guidance for Those Organising and Conducting Tourism and Non-governmental Activities in the Antarctic":
    - a) Activities to be undertaken and purpose and intended itinerary, including the date of departure of and places to be visited in the Antarctic Treaty Area;
    - b) Registered name and national registration of the vessel to be used;
    - c) Name, nationality and contact details of organiser;
    - d) Number and qualifications of crew and accompanying guides and expedition staff;
    - e) Estimated number of visitors to be carried;
    - f) Intended use of vessel (or aircraft if applicable);
    - g) Number and type of other vessels, including small boats, to be used in the Antarctic Treaty Area;
    - h) Information about insurance coverage;
    - i) Details of equipment to be used, including for safety purposes, and arrangements for self-sufficiency;
    - j) Other matters required by national laws
  - As the "Advance Notification" mandated by the Antarctic Treaty system, especially as elaborated in Recommendation XVIII-1 includes much -- if not all -- of the information required in an IEE, IAATO's position is that the request for a Preliminary Environmental Review Memorandum (PERM) be omitted from the Final Rule as it duplicates the information already required by the Treaty. Secondly there is no need for an "update" as mentioned in the Information Collection Request (ICR) by EPA (section 3d) as this again duplicates notification.

This follows the line of thinking as echoed in the "Summary of Questions / Answers on the Interim Final Rule" (dated 08 July 1997, signed by Mr. William Dickerson, EPA),

(IAATO-56)

whereby EPA has stated that..."some of the general requirements for environmental documentation are the same as for the information provided to the Department of State for notification purposes (see 40 CFR Part 8.4(a))."

- IAATO proposes that the Preliminary Environmental Review Memorandum, as a category, be deleted from the Final Rule as this is again a duplication of effort and defeats the goal of reducing paperwork. The filing of annual documentation to the Department of State under Treaty obligations and also to the EPA as a PERM is burdensome and unnecessary.
- Tour operators have the strongest interest in the development of a sound, workable system for conducting environmental assessments of nongovernmental activities in the Antarctic which are consistent with the requirements of the Protocol and the various national regulations which apply.
- As the old adage goes, "If it ain't broke, don't fix it." This reasoning is echoed in the following quote by Mr. Richard Sanderson, of EPA, in the "Summary of Questions / Answers on the Interim Final Rule," dated July 8th, 1997:

"The tour industry has had a long-standing tradition of voluntary compliance with the establishment of industry-established guidelines. Some of these guidelines are being adopted by the Antarctic Treaty Consultative Meeting on a trial basis and tour operators provide post-season reports to the National Science Foundation. EPA needs to factor these voluntary programs into its final rule; e.g. if the system now used is good and works, base the rule on its continued use."
- With this in mind, tour operators recognize that certain elements of this voluntary process are present in the Interim Final Rule, for example notification and post-trip verification reporting. Tour operators therefore strongly recommend that the EPA consider the voluntary process in developing the Final Rule.
- IAATO therefore does not see the need to automatically require that operators file an environmental assessment with EPA on an annual basis. In some cases, companies have been operating at the same level of activity aboard the same vessels with the same staff for decades and, arguably, could be considered an existing activity. IAATO sees no value in asking for resubmission of documentation annually for these operators. A provision should be made in the Final Rule for a multi-year submission based on a projection of future activities.
- EPA's mandate is to promulgate regulations "to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty." Given the small number of U.S. private operators and the record of self-

(IAATO-56)

regulation by the Antarctic tour industry, IAATO sees a broad interpretation of this mandate as misguided with potentially serious consequences to the Antarctic environment. An unnecessary burdensome, prescriptive rule could drive experienced Antarctic tour operators off-shore -- potentially to a country that is not a party to the Treaty -- or out of business and dismantle the current flexible and proven approach to limiting impacts.

(IAATO-56)

Thank you once again for the opportunity to raise these issues.

Clipper Cruise Line comments to EPA on July 14, 1998

Although this is our first season in the Antarctic with the *Clipper Adventurer*, Clipper Cruise Line operated in Antarctic for 3 years with the *World Discover* and we a similar level of activity and educational programming for our new ship.

Our preparations for the 1998/99 Antarctic season continued when we officially rejoined IAATO last summer. IAATO has been instrumental in sharing with Clipper the procedures and concerns we need to be aware of before our ship enters the Antarctic area.

We have provided advance notification to the U.S. Department of State, with copies to IAATO. Our ship is in compliance with all MARPOL, ISM and ISO requirements. We have hired qualified experienced staff and have put together a wealth of information to be sent to our passengers before they even board the vessel.

Like many other US tour operators operating cruises in Antarctica, we are small, US based and involved in many other areas of the globe besides Antarctica.

We can only ask that the EPA take its mandate to streamline documentation and obligations seriously and make the IEE process as efficient as possible. The purpose and scope of the Final Rule should be to report potential environmental impacts. An IEE that would cover several years would be most helpful. In addition, the advance notification we send to the State Department could serve as a yearly update to the IEE.

We are encouraged that we will be able to submit an IEE that has already been prepared by other US tour operators. IAATO members voluntarily work together on so many issues that cumbersome reports year after year seem costly, redundant and wasteful.

IAATO-57

RESPONSE TO COMMENTS

Commentor:

IAATO-57

This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in IAATO's April 2, 2001 letter; also see the following:

IAATO-20 regarding paperwork reduction; and  
IAATO-37 regarding multi-year environmental documentation.

RESPONSE TO COMMENTS

EPA Scoping Meeting of July 14, 1998.

**Special Expeditions Conservation and Management Experience in Relation to IAATO  
Presented by Tom Ritchie, Expedition Leader, Special Expeditions.**

Special Expeditions (SPEX) is proud to be the newest member of IAATO. In order to explain the significance of this new relationship, it is important first to establish a degree of credibility for those people not familiar with SPEX. The company was established in 1979, as a division of Lindblad Travel, and became independent the following year. Its president is Sven Olof Lindblad, son of the late Lars-Eric Lindblad who pioneered adventure travel. As expected, SPEX operates on the Lindblad Model of tourism. Our field personnel are largely composed of biologists, naturalists, and wildlife photographers who believe that you can turn people on to the wonders of nature, and they will care and participate in its preservation. The company has built a business on environmental education and client experience, and has earned a reputation in the conservation community as an innovative leader in environmentally responsible travel.

In 1993, SPEX received the ASTA/Smithsonian award for environmental achievement, primarily for the floating symposiums that we hosted to foster participatory management strategies for destinations like Baja California, Mexico, and Central America. The SPEX clientele, like that of other IAATO members, are generally well-educated, well-traveled people, many of whom already have a strong conservation ethic and support environmental protection through international NGOs. The staff of naturalist guides also have a strong environmental ethic, and environmental responsibility and stewardship is part of their interpretive framework. The company has a handbook of internal environmental policies for the field, including necessary briefing to passengers before landings, and how to conduct groups around seabird colonies, marine mammals, etc.

We design a conservation strategy by asking ourselves "How can we be a positive force in our destinations?" It is important to establish communication and credibility with the management or leadership of various destinations, and with the local conservation organizations. Sometimes this is difficult because management bodies do not exist, or there may be no interest in communicating with the private sector. One must also learn the conservation needs (management objectives) of the destination. Next, we examine our abilities, which vary greatly in each area and try to best match our abilities with the defined conservation needs of an area. In places where we have been able to integrate ourselves into the regional conservation community and management process, we have achieved things such as the initiation of local guide-training programs, whalewatching standards, and safety criteria, as well as the introduction of conservation organizations (NGOs) and internship programs into certain areas, and most importantly, establish forums for dialogue between management, NGOs, private sector, and local communities.

Among the case studies in the aforementioned management relationships is Baja California, Mexico. When we first operated in Baja in 1981, there was literally no management of an incredibly rich and fragile desert and marine environment. There was also no competition, which enabled us to operate freely. These conditions were perfect in that we had a very strong environmental ethic and communicated environmental messages to our passengers. As time went on and the Sea of Cortez and the Pacific gray whale lagoons became more popular, we realized that there had to be some kind of management, so we started to actively engage government authorities, NGOs, researchers, local communities, and tour operators into active dialogue about the importance of managing the area for

**Commentor:**

IAATO-58

This information was considered by EPA in the preparation of the Draft EIS.

IAATO-58



the future. Much of the success in this endeavor was achieved through the use of our ships as symposia platforms. Today, most major international conservation NGOs are actively working in Baja, and the Mexican government has established management policies and is now working with NGOs and the private sector on a long-term management strategy for the Sea of Cortez.

This mentality is likewise to be found among the members of IAATO. The fact that a like-minded body of environmentally concerned tour operators like IAATO exists is an incredible opportunity for anyone concerned with environmental protection to work with and through those people who are already engaged in environmental education and management of visitor impact and experience, and who have a vested interest in the long-term integrity of that environment.

It is an honor for Special Expeditions to be welcomed as a new member into the community of IAATO. The fact that a self-governing body of environmentally concerned tour operators is already in place is a monumental achievement and opportunity. Special Expeditions would encourage the EPA, and anyone trying to establish management or conservation policies in Antarctica, to appreciate the great opportunity in environmental protection that IAATO provides. The IAATO members are the kind of tour operators that you WANT to have in Antarctica. They serve the function of environmental education to visitors, and they provide an opportunity for any management body to communicate desired messages to visitors. IAATO members can provide an important monitoring function in that they are on site, and have a vested interest in the health and integrity of landing sites and flora and fauna. No management body is going to have the funds to provide the monitoring or presence that IAATO members can provide. IAATO members can provide any management body valuable feedback and realistic analysis of field conditions and visitor impacts that would be virtually impossible to understand otherwise.

We encourage the EPA to listen closely to the members of IAATO because they have more than simple experience in Antarctica, but have a soulful concern for the maintenance of its future. The mere fact that these tour operators organized together to set guidelines and standards for operation and establish a forum for communication should show the EPA that the ambassadors for environmental protection in Antarctica are already in place.

(IAATO-58)



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Denise Landau  
 Executive Secretary


Joseph Montgomery  
 and  
 B. Katherine Biggs  
 Office of Federal Activities  
 Mail Code 2252A  
 U.S. Environmental Protection Agency  
 1200 Pennsylvania Ave. N.W.  
 Washington, D.C. 20460

Dear Joe and Katy,

I reviewed the Draft EIS that applies to tourism vessels in Antarctica, and comments were incorporated in a version that Denise Landau co-ordinated. I noticed that reference to the Antarctic circumnavigation by tour vessel in 1996-97 was the Quark document. For further information in a published source, I have enclosed here a reprint of an article for each of you that was published in Polar Record following the event.

The map was not published with the article, but is included here for further information.

Sincerely,

  
 John Splettscoesser  
 IAATO Representative  
 P.O. Box 88  
 Spruce Head, ME 04859  
 email: jspletts@midcoast.com  
 tel/fax: 207 - 594 - 7594

cc: Denise Landau

} IAATO  
 Rep-1  
 }  
 } IAATO  
 Rep-2

## RESPONSE TO COMMENTS

| Commentor:  |  |
|-------------|--|
| IAATO Rep-1 | EPA acknowledges that comments by the IAATO Representative were incorporated into IAATO's comment letter.  |
| IAATO Rep-2 | EPA appreciates receipt of the article, "First circumnavigation of Antarctica by tourist ship" ( <i>Polar Record</i> , vol. 33, no. 186, p. 244-245, July 1997), and the additional information it provides on the first circumnavigation of Antarctica by a tourist ship. |

**First circumnavigation of Antarctica by tourist ship**

**John F. Spletstoesser**

235 Camden Street, Suite 32-132, Rockland, Maine 04841, USA

**Robert K. Headland**

Scott Polar Research Institute, University of Cambridge, Lensfield Road, Cambridge CB2 1ER

**Frank Todd**

8958 Kobe Way, San Diego, CA 92123, USA

Received February 1997

The Russian icebreaker *Kapitan Khlebnikov* completed the tenth circumnavigation of Antarctica during the 1996-1997 austral summer, starting in Port Stanley, Falkland Islands, on 24 November 1996 and travelling eastward around the continent before returning to the same port on 27 January 1997. The cruise encompassed some 12,565 nautical miles (23,270 km) south of 60°S, spent nearly 59

days south of that latitude, crossed the Antarctic Circle eight times, and reached a farthest south in McMurdo Sound of 77° 51.45'S, 166° 39'E. The ship carried 66 passengers and 27 staff for the first adventure travel voyage of its type, and visited several scientific research stations that had never received tourist visits previously. Announced passenger fares ranged from \$US29,900 to \$US55,000. There were 13 nationalities included in the passenger and staff list, and the Russian officers and crew numbered 61. The cruise was chartered and organised by Quark Expeditions of Darien, Connecticut.

The first recorded circumnavigation of Antarctica was accomplished by Captain James Cook during his second voyage aboard HMS *Resolution* and accompanied by HMS *Adventure* in 1772-1775, crossing the Antarctic Circle for the first time on 17 January 1773. Other voyages of circumnavigation are listed in Table 1. Shipborne tourism in Antarctica has been active continuously since 1965 (Headland 1994), with some 80,000 tourists having visited the continent to date. A much smaller number have been to Antarctica via commercial flights to the interior.

*Kapitan Khlebnikov* completed her fifth season of tourism travel in Antarctica in 1996/97. In 1992, prior to her first Antarctic cruise, she had become the first Russian icebreaker to complete the Northwest Passage (Spletstoesser and Spletstoesser 1993), a cruise captained by Peter Golikov, who was also the master during the circumnavigation.

The ship initially travelled south, stopping in the South Orkney Islands before heading into the Weddell Sea. As the ship

Table 1. History of Antarctic circumnavigations.

| Years   | Captain                                | Ship(s)                                       |
|---------|--|---|
| 1772-75 | James Cook                             | HMS <i>Resolution</i><br>HMS <i>Adventure</i> |
| 1819-21 | Thaddeus Bellingshausen                | <i>Vostok</i>                                 |
| 1830-33 | John Biscoe                            | <i>Tula</i>                                   |
| 1930-31 | Hjalmar Riiser-Larsen/<br>Niis Larsen  | <i>Norvegia</i>                               |
| 1931-33 | David John/William Carey               | <i>Discovery II</i>                           |
| 1933-34 | Lars Christensen/<br>Klarius Mikkelsen | <i>Thorshavn</i>                              |
| 1937-39 | Leonard Hill                           | <i>Discovery II</i>                           |
| 1982-83 | Nikolay Elin                           | <i>Faddey Bellingshausen</i>                  |
| 1982-83 | Roman Panchenko                        | <i>Admiral Vladimirovsky</i>                  |
| 1982-83 | Joseph Smith                           | USCG <i>Polar Star</i>                        |
| 1996-97 | Peter Golikov                          | <i>Kapitan Khlebnikov</i>                     |

Table 2. Shore stops and sites visited.

| Date      | Site visited   |
|-----------|--|
| 24 Nov 96 | Port Stanley, Falkland Islands (start)                   |
| 27 Nov    | Shingle Cove, Coronation Island, South Orkney Islands    |
| 2 Dec     | Riiser-Larsen emperor penguin colony                     |
| 4 Dec     | Ekströmisen, Atka Bay emperor penguin colony             |
| 5 Dec     | Neumayer Station (Germany)                               |
| 6 Dec     | Sanae Station III (South Africa)                         |
| 8 Dec     | Lazarev Ice Shelf  |
| 12 Dec    | Syowa Station (Japan)                                    |
| 14 Dec    | Molodezhnaya Station (Russia)                            |
| 15 Dec    | Proclamation Island                                      |
| 16 Dec    | Kioa Point emperor penguin colony; King Edward VIII Gull |
| 17 Dec    | Mawson Station (Australia)                               |
| 18 Dec    | Murray Monolith, Scullin Monolith                        |
| 19 Dec    | Cape Darley (Flutter) emperor penguin colony             |
| 21 Dec    | Zhong Shan Station (China), Larsemann Hills              |

| Date     | Site visited   |
|----------|--|
| 22 Dec   | Davis Station (Australia); Gardner Island                              |
| 27 Dec   | Peterson Island; Casey Station (Australia)                             |
| 31 Dec   | Dumont d'Urville (France)  |
| 5 Jan 97 | Cape Adare   |
| 6 Jan    | Possession Islands; Cape Hallett                                       |
| 7 Jan    | Campbell Glacier Tongue; Mt Melbourne                                  |
| 8 Jan    | Franklin Island  |
| 9 Jan    | Cape Evans; Cape Royds   |
| 10 Jan   | Scott Base (New Zealand); McMurdo (USA); Hut Point; Taylor Valley      |
| 11 Jan   | Ross Ice Shelf   |
| 19 Jan   | Peter I Øy   |
| 21 Jan   | Petermann Island; Cuverville Island                                    |
| 22 Jan   | Deception Island; Halfmoon Island; Teniente Camara Station (Argentina) |
| 23 Jan   | Aitcho Islands; Penguin Island; Turret Point                           |
| 24 Jan   | Elephant Island  |
| 27 Jan   | Port Stanley, Falkland Islands (end)                                   |

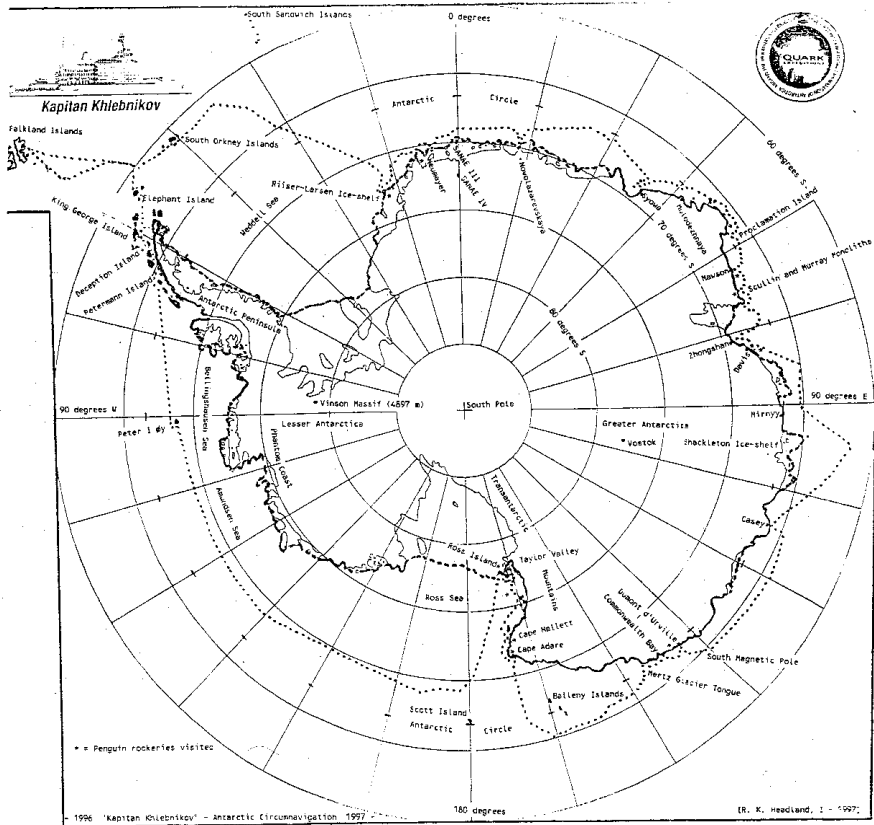
continued eastward, it stopped at numerous little-visited emperor penguin colonies as well as at 12 national research stations, beginning with the German Neumayer Station, which is adjacent to the Atka Bay penguin colony (see Spletstoesser 1997 for a report on earlier observations made at that site). Some of the stations had not had any visits since their wintering period began. A complete list of stops is given in Table 2.

**References**

Headland, R.K. 1994. Historical development of Antarctic

tourism. *Annals of Tourism Research* 21 (2): 269-280.  
Spletstoesser, J. 1997. Mortality among chicks in the emperor penguin (*Aptenodytes forsteri*) colony at Riiser-Larsen Ice Shelf, Antarctica. *Polar Record* 33 (184): 63-64.  
Spletstoesser, J., and B.D. Spletstoesser. 1993. The first transit of the Northwest Passage by Russian icebreaker. *Polar Record* 29 (169): 148.

*The accuracy of references in the text and in this list is the responsibility of the authors, to whom queries should be addressed.*



RESPONSE TO COMMENTS



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April 2, 2001

VIA FACSIMILE (202) 564-0070 AND MAIL

Mr. Joe Montgomery  
Ms. Katherine Biggs  
Environmental Protection Agency  
Office of Federal Activities  
1200 Pennsylvania Ave. N.W.  
Washington, D.C. 20460

Dear Mr. Montgomery and Ms. Biggs,

Thank you for sending the Draft Environmental Impact Statement for review and comment. We at Zegrahm Expeditions are appreciative of the comprehensive document and the respective task required to review the industry as a whole and formulate the "Final Rule." We appreciate the establishment of the "Interim Final Rule" and the willingness of EPA to allow a transition period, which we all could learn by, before initiating the Final Rule. We also appreciate the help and assistance given by EPA during the last several years to work with the tour operators and assure a "rule" that is practical.

]-ZE-1

Zegrahm Expeditions was formed in 1990, although many of our founders and expedition staff have been traveling to the Antarctic on tourist ships or as part of scientific expeditions for over 30 years. If we added up the cumulative experience of our management, leaders and guides we have over 500 trips to the Antarctic. We have jointly submitted IEE's as part of the US Tour Operators Peninsula IEE (1997, 1998, 1999, 2000 seasons) and the joint Quark Expeditions and Aurora Expeditions IEE (1997, 1998, 1999 seasons). We have chartered and organized numerous Peninsula, South Georgia and Falkland Islands voyages, have chartered and organized the icebreakers to the Weddell Sea, participated in the Circumnavigation of Antarctica with Quark Expeditions, have organized voyages to the Ross Sea, East Antarctica and to most of the Sub Antarctic Islands. We are one of the most experienced companies operating in Antarctica.

We support EPA's conclusion of Alternative number 2, however, we would like to see some modifications drawn from Alternative 5 as noted in the IAATO comments. In addition, we hope that EPA would remain flexible with the definition of "less than minor or transitory." We do not agree with Alternatives 3, 4 as noted in the IAATO comments and agree with the conclusions that EPA has made with regard to these alternatives not being feasible. We appreciate the thoroughness involved and explanations set forth in all the alternatives.

]-ZE-2  
]-ZE-3  
]-ZE-4

.../2

| Commentor: |  |
|------------|--|
| ZE-1       | EPA acknowledges the appreciation expressed for the learning period between the Interim Final Rule and the proposed rule, and appreciates receipt of the information presented about Zegrahm Expeditions.  |
| ZE-2       | EPA notes that Zegrahm Expeditions supports Alternative 2, EPA's preferred alternative, but with modifications from Alternative 5. As noted by the Commentor, IAATO made this same comment (see IAATO-3). With regard to the specific modifications referenced in IAATO's comments, see the following:<br>IAATO-6 regarding the issue of EPA's review role and responsibilities;<br>IAATO-7 regarding the issue of reciprocity;<br>IAATO-8 regarding the issue of PERMs; and<br>IAATO-9 regarding the issue of categorical exclusions.   |
| ZE-3       | The Protocol does not define "minor or transitory." Until the Treaty Parties provide guidance or definition, EPA believes it is reasonable to provide such guidance to operators and that it is prudent to define the term "more than a minor or transitory impact" consistent with the threshold definition applied to the environmental impact assessment of governmental activities in Antarctica as delineated in 16 U.S.C. §2401 <i>et seq.</i> At such time definition is provided under the Protocol or other appropriate means under the Treaty, EPA would amend its final rule, as appropriate, to ensure it is consistent with Annex I as required by the Act. (Also see IAATO-3.) |
| ZE-4       | EPA notes that Zegrahm Expeditions agrees with EPA's analysis of Alternatives 3 and 4.   |

RESPONSE TO COMMENTS

- 2 -

| Commentor: |   |
|------------|---|
| ZE-5       | Suggested edits will be incorporated into the Final EIS as appropriate. |

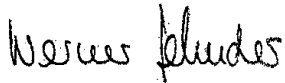
In the final document, however, we would like to see some drafting changes made. IAATO as an organization has suggested specific changes to the text in order to produce the highest quality work. Throughout the document reference is made to the "Quark IEE for the Kapitan Khlebnikov." Zegrahm co-authored this document for the 1997/98, 1998/99 and 1999/2000 seasons and would like to see it reflected as such.

ZE-5

We would also suggest updating the IAATO Bylaws versus using the out-of date 1991 Bylaws in this document. IAATO's Bylaws can also be found on the IAATO website at [www.iaato.org](http://www.iaato.org).

If you have any questions please let me know. We appreciate the efforts put forth by EPA in this document and look forward to working with EPA in the future to assure the ultimate protection of Antarctica.

With kind regards,



Werner Zehnder  
Chief Executive Officer

**RESPONSE TO COMMENTS**

2 April 2001

Ms. Katherine Biggs  
 Mr. Joseph Montgomery  
 EPA Office of Federal Activities  
 1200 Pennsylvania Ave. NW (Mail Code 2252A)  
 Washington, DC 20460

Re: **Draft EIS Comments**

Dear Ms. Biggs and Mr. Montgomery:

On behalf of Oceanites, Inc., I am grateful for the opportunity to submit comments on EPA's Draft EIS for the Proposed Rule on Environmental Impact Assessment of Nongovernmental Activities in Antarctica (published February 2001).

In respect of conducting the Antarctic Site Inventory project, Oceanites has submitted IEEs to EPA under 40 CFR Part 8 since 1997. Quite obviously, Oceanites and the Inventory are very much concerned with any potential changes to these requirements.

Further, appreciating that EPA/OFA considered and utilized a substantial amount of Inventory-generated data in fashioning this DEIS, Oceanites and I wish to ensure that the record for this rulemaking is as complete and up-to-date as possible, and that it reflects the project's most recent, peer-reviewed papers.

Our comments:

1. **Support for Alternative 2.**

Oceanites and I strongly support Alternative 2, the agency's preferred alternative, which greatly streamlines the 40 CFR Part 8 process and offers a very sensible, practical way forward with respect to future, EIA submissions by Oceanites.

As a nongovernmental research organization covered by these regulations, Oceanites particularly welcomes the opportunity to submit multi-year EIA documentation and to incorporate therein any relevant aspects of previous years' submissions. I agree with the DEIS analysis stating that this streamlining could reduce the paperwork burden for all who must comply with 40 CFR Part 8.

I also agree with the *threshold* the proposed rule establishes for "more than a minor

| <b>Commentor:</b> |   |
|-------------------|---|
| O-1               | EPA appreciates the information provided and acknowledges the appreciation expressed for referencing Oceanites' documents in the Draft EIS.   |
| O-2               | EPA notes that Oceanites supports Alternative 2, EPA's preferred alternative.   |
| O-3               | EPA notes that Oceanites supports a multi-year environmental document provision and agrees with EPA's analysis that this streamlining could reduce the paperwork burden for operators.  |
| O-4               | EPA notes that Oceanites supports a definition (or other provision) for the term "more than minor or transitory" and that this should be the same as applied to governmental activities under the Antarctic Conservation Act. |

O-1

O-2

O-3

O-4

**RESPONSE TO COMMENTS**

or transitory impact.” It is sensible to utilize the same threshold that applies in the assessment of governmental activities under the Antarctic Conservation Act (16 USC §2401 *et seq.*)

(O-4)

**2. Non-support for Alternatives 1, 3, 4, and 5.**

I do not support any of the four suggested alternatives, having thoroughly reviewed the discussion/analyses/scoping comments contained in the DEIS.

O-5

Alternative 1 maintains the status quo and the extant paperwork burden Oceanites now faces prior to each Antarctic research season. As noted above, Alternative 2 sensibly streamlines this process, and in a fashion that does not diminish the analyses required by EPA after these submissions.

O-6

Alternative 3 would impose obligations not required by Annex 1 of the Protocol on Environmental Protection to the Antarctic Treaty (the “Protocol”), thus placing nongovernmental “operators” (as defined by 40 CFR Part 8) under a greater burden of documentation than that faced by the US government for its Antarctic activities. As noted above, I support the notion of a consistent EIA approach for both governmental and nongovernmental activities.

O-7

I have serious difficulty with the substantive modifications that would be added under Alternative 4, and agree with the statement/analysis in the DEIS that these changes are inconsistent with both the Protocol and the Antarctic Conservation Act (16 USC §2401 *et seq.*). The hortatory/nonimplementable aspects of Articles 3 and 8 of the Protocol are initially described/analyzed on p. 4-17 of the DEIS. While agreeing with the analysis, however, I would recommend that the stated authority (“Scully 1993”) be added to the reference list found in Chapter 9 of the DEIS.

O-8

O-9

And I have very serious difficulty with Alternative 4’s requirement that CEEs be required before new sites are visited. I am aware of no scientific authority or other analysis concluding that a visit to a new location in the Antarctic is, *per se*, an environmental disruption tantamount to crossing the threshold of what constitutes “more than a minor or transitory impact.” I therefore agree with the DEIS that a visit to a new site does not automatically trigger a CEE.

O-10

The Antarctic Treaty essentially allows *anyone* to visit Antarctica, (assuming he or she can get there safely) and does not proscribe where they may visit, provided there is compliance with the Treaty, its related authorities, and national laws and regulations. Under 40 CFR Part 8, US nongovernmental operators are required to analyze the potential environmental consequences of their activities, and to identify appropriate measures to mitigate (if not eliminate) these potential consequences.<sup>1</sup>

<sup>1</sup> Among other things, this requires a look at which fauna and flora are found at various sites and whether there have been changes in their distribution, abundance, or breeding biology. An integral question under the Protocol is whether any observed changes may be linked to human activities, or whether they are natural variations caused by non-human factors like weather and climate, the extent of winter sea ice, the distribution and abundance of prey species and food sources, or changes in ocean currents.

| Commentor: |   |
|------------|---|
| O-5        | EPA acknowledges that Oceanites does not support any of the other alternatives.   |
| O-6        | EPA notes that Oceanites supports Alternative 2, EPA’s preferred alternative, rather than continuing with the status quo under Alternative 1, the no action alternative.  |
| O-7        | EPA notes that Oceanites agrees with EPA’s position that the proposed rule should ensure consistency between the governmental and nongovernmental EIA requirements and processes.   |
| O-8        | EPA notes that Oceanites agrees with EPA’s analysis of Alternative 4.   |
| O-9        | The suggested reference will be incorporated into the Final EIS as appropriate.   |
| O-10       | EPA acknowledges the opinions provided by Oceanites as to why a CEE should not automatically be required when any new sites are proposed as possible landing sites. EPA also appreciates the information provided about the Site Inventory project. |



**RESPONSE TO COMMENTS**

From the standpoint of the Antarctic Site Inventory, I note that our project collects data at both previously *visited* and previously *unvisited* sites. As noted/referenced in the environmental documentation Oceanites has submitted since 1977, the project has adopted a suite of mitigation measures to ensure that any potential environmental consequences stemming from data collection by Inventory researchers are minimized, if not avoided altogether — wherever we happen to visit.

As will be repeated below, I take the strong view that Annex I of the Protocol requires an assessment of changes to a site's "initial environmental reference state." The Antarctic Site Inventory project seeks to collect baseline data at key Peninsula sites, hopefully ensuring that environmental changes may be detected in the future. If a change is detected, there arises, then, the more difficult question of analyzing why the change has occurred. Regarding previously *unvisited* sites, I respectfully submit that Annex I cannot operate as intended — and that proper analyses of potential direct and cumulative effects at these sites cannot occur — if researchers' initial site visits are considered to be disruptive *per se* <sup>(2)</sup>

Further, I agree with the DEIS comments/analysis regarding the difficulties presented by Alternative 5. The proposed rule would be meaningless if EPA did not have the authority to judge the sufficiency of the environmental documentation it receives. The environmental documentation process would become a useless exercise if EPA could not require modifications when conclusions in environmental documentation are inconsistent with, or unsupported by, proposed activities of the nongovernmental operator. From the standpoint of Oceanites and the Antarctic Site Inventory, the IEEs submitted to EPA since 1977 have enabled a useful interchange resulting in the project's adopting appropriate mitigation measures to assess potential environmental impacts.

**3. Visitor analyses and census data.**

Again, I appreciate EPA's use of various data/information generated by the Antarctic Site Inventory in this rulemaking. In recent months, I and Inventory colleagues have published two peer-reviewed papers, which update some of the analyses and discussions found in the DEIS:

- Naveen, R., et al., 2000. "Censuses of penguin, blue-eyed shag, and southern giant petrel populations in the Antarctic Peninsula region, 1994-2000" (*Polar Record* 36 (199): 323-334, 2000); and
- Naveen, R., et al., 2001. "Zodiac Landings by tourist ships in the Antarctic Peninsula, 1989-99" (*Polar Record* 37 (201): 121-132, 2001)

<sup>2</sup> In a similar vein, I disagree with the view that specified increases in actual or predicted numbers of visitors is sufficient, standing alone, to trigger a CEE. Again, Annex I of the Protocol, as with other EIA regimes, focuses on population changes (i.e. changes to a site's "initial environmental reference state"), irrespective of whether these changes are caused by a greater or lesser amount of nongovernmental activity. It is the responsibility of an activity's proponent to determine, in light of all extant circumstances, which potential effects the activity may cause, and which measures are appropriate to mitigate (if not eliminate) such potential consequences.

| Commentor: |   |
|------------|---|
| O-11       | EPA acknowledges the opinions provided by Oceanites as to why a CEE should not automatically be required on the basis of specified increases in actual or predicted numbers of visitors.  |
| O-12       | EPA notes that Oceanites agrees with EPA's analysis of Alternative 5.   |
| O-13       | EPA acknowledges and appreciates receipt of the references to the articles which updates some of the analyses and discussions in the Draft EIS and also appreciates the summary of the information presented in these papers. These references may be incorporated into the Final EIS as appropriate. |

(O-10)

(O-11)

O-12

O-13

O-11

The "Census" paper presents penguin, blue-eyed shag, and southern giant petrel census data collected from 21 Antarctic Peninsula locations between 1994-2000. The project has obtained nest counts sufficient to establish a trend in blue-eyed shag nesting populations at five of thirteen sites where the Antarctic Site Inventory has identified nesting shags: the cliffside colonies near Almirante Brown Station, Paradise Bay (NW); Hannah Point, Livingston Island (SH); Jougla Point, Port Lockroy, Wiencke Is. (NW); Petermann Island (SW); and the Orne Islands (NW).

Our analysis indicates declines at all of these sites for the period January 1994 to January 2000. However, we could not reject the null hypothesis that the negative slopes of the log-transformed data were the result of chance alone for Petermann Island and Jougla Point. Declines at the other sites were either highly significant (Almirante Brown,  $P < 0.01$ ,  $r = .9786$ , 5 df; Orne Islands,  $P < 0.01$ ,  $r = .9765$ , 4 df) or significant (Hannah Point,  $P < 0.05$ ,  $r = .7422$ , 6 df). Collectively, nest counts at the Almirante Brown shag colony declined 50%, from 100 to 49, in the 1994-2000 period. Nest counts at the Orne Islands colony went from fifteen nests in November 1994 to zero in December 1999.

The Almirante Brown and Orne Islands colonies are either inaccessible to tourists or receive few tourist visits, suggesting that human disturbance is an unlikely cause of the decline at these sites. In December 1999 at the Orne Islands site, we noted one-meter-deep snow on the shags' nesting ledges. At the other three sites (Petermann Island, Jougla Point, Hannah Point), the shag population now may have stabilized or slightly increased since the decline from 1994-1995 levels.

Collectively, the declines we observed over seven seasons at different sites throughout the Peninsula suggest that blue-eyed shag numbers should be further monitored. These declines may be indicative of some underlying environmental change affecting shag nest success.

The "Zodiac Landings" paper examines the location, intensity, and frequency of zodiac landings by expedition tour ship passengers in the Antarctic Peninsula over ten seasons, 1989-90 through 1998-99.

Between November 1994 and February 2000, at 59 Peninsula locations, we collected data regarding the presence or absence of nesting species of penguins and flying birds, wallows of southern elephant seals, and large patches or beds of lichens and mosses.

These 59 locations include the most heavily visited Peninsula sites, whether by zodiac landings or visitors, in the ten expedition tour seasons between 1989-90 and 1998-99. We used these presence/absence data to rank Peninsula zodiac landing sites according to the number of faunal species and major floral groups recorded, irrespective of whether nests, wallows, and floral groups may be easily accessed by tour ship visitors during a regular zodiac landing.

Five *high diversity* sites were identified: Hannah Point (SH), Penguin Island (SH), the Aitcho Islands (SH), Cuverville Island (NW), and Fort Point (SH). [Note: as

(O-13)

RESPONSE TO COMMENTS

described in the DEIS, the abbreviations SH, NW, NE, and SW refer to subregional designations used by the Antarctic site inventory project.]

Fifteen *medium diversity* sites were identified: Arctowski Station (SH), Astrolabe Island (NW), Baily Head (SH), Brown Bluff (NE), Half Moon Island (SH), Heroine Island (NE), Port Lockroy (NW), Point Lookout (EI), Orne Island (NW), Paulet Island (NE), Petermann Island (SW), Pléneau Island (SW), Turret Point (SH), Whaler's Bay (SH), and Yankee Harbor (SH).

The remaining 39 sites were determined to be sites with "low" species diversity.

Because of the physical variation in landing sites, species diversity does not equate necessarily to visitors' attaining relatively close views of resident fauna and flora. Using our presence/absence data as a base, we next examined whether disproportionate numbers of zodiac landings occur where visitors may attain this close proximity. For this purpose, we ranked sites in terms of visitors' accessibility to nests, wallows, and floral groups. We assumed that, in the course of a regular tourist landing, sites are more or less sensitive to potential disturbance according to the number of penguin and flying bird species whose nests visitors may access easily, whether or not visitors may access southern elephant seal wallows easily, and whether or not visitors may access easily and possibly trample large patches or beds of lichens and mosses.

(O-13)

Four *highly sensitive* sites were identified: Hannah Point (SH), Penguin Island (SH), the Aitcho Islands (SH), and Turret Point (SH).

Nine *moderately sensitive* sites were identified: Brown Bluff (NE), Fort Point (SH), Gourdin Island (NW), Orne Island (NW), Paulet Island (NE), Petermann Island (SW), Pléneau Island (SW), Georges Point, Rongé Island (NW), and Waterboat Point (NW).

The remaining 46 sites visited by the inventory were determined to be sites with "low" sensitivity to potential disturbances.

Based on data for the 1998-99 season, we found that visitation is attracted disproportionately to sites with high/medium species diversity or with high/moderate sensitivity to potential environmental disturbance. If this visitation trend continues, the question of whether the frequency and intensity of human visitation translates to actual disturbance of resident fauna and flora needs to be explored fully.<sup>3</sup>

(O-14)

**4. Affected environment in the Antarctic Peninsula.**

This last point raises a particular concern about the discussion of the "affected environment" found on pp. 2-23 to 2-25 of the DEIS.

O-15

The DEIS, particularly Figure 2.15, notes the *general* overlap in the timing of Peninsula tourist activity vis-à-vis the timing of the breeding seasons of Antarctic seabirds. From the broad perspective of the Antarctic Site Inventory, which has

<sup>3</sup> Consistent with previous text and footnotes, my view is that visits to *high/medium diversity* sites *highly/moderately sensitive* sites are *not* sufficient, *per se*, to trigger a CEE.

O-14

| Commentor: |  |
|------------|--|
| O-14       | EPA acknowledges the opinions provided by Oceanites as to why a CEE should not automatically be required on the basis of diversity or sensitivity factors.   |
| O-15       | In keeping with the purpose and need for the proposed rule-making action, EPA's objective in preparing the Draft EIS was to evaluate the environmental impacts of the alternatives for the final rule to be proposed and promulgated by EPA. Thus, EPA intended only to present a general overview of the timing of the breeding season for Antarctic seabirds; it was not EPA's objective to prepare a detailed analysis of the breeding chronologies, locations or site-to-site variations with regard to the timing of Antarctic tourists. EPA does, however, appreciate the information presented. |

RESPONSE TO COMMENTS

examined a plethora of Peninsula tourist locations, I therefore would suggest further emphasis in the DEIS noting that breeding chronologies vary rather widely from site-to-site, north-to-south through the Peninsula. The peaks of egg-laying and chick-crèching are not the same through this greater-than-250-mile swath of territory. Further, there may be seasonal variations in breeding chronologies expected at each particular site.

At the end of the day, because environmental documentation requires operators to be concerned with all potential environmental impacts — whether direct or cumulative, short-term or long-term — these variations in breeding chronologies may require operators (and EPA in review of operators' documentation) to make site-specific analyses.

For example, if "Site A" is heavily visited as well as species-diverse and, further, is potentially sensitive to environmental disruptions, these questions may be appropriate: What are the exact timings, intensity, and frequency of tourism visits to "Site A"? How does the site's visitation chronology compare to the expected breeding chronologies of resident fauna? Which times in the breeding regime of each species are considered the most sensitive — whether to nests or nesting adults, or to chicks-of-the-year? The ongoing effort by the Antarctic Site Inventory to collect relevant biological data and information is intended to assist these site-specific analyses at key sites of interest.

**5. Description of the Antarctic Site Inventory project.**

Data collected by the Antarctic Site Inventory are intended to be used for a variety of assessment and monitoring purposes, including the detection of environmental changes at sites that tourists happen to visit. But, contrary to the suggestion at the top of p. 3-9 of the DEIS, it is not a tourism study *per se*.

I respectfully request this wording be changed to state that: "... one U.S.-based foundation conducts ongoing research in the Peninsula, collecting relevant biological data from season-to-season at a number of sites."

**6. Potential environmental impacts at Peninsula visitor sites.**

The discussion of potential impacts beginning on p. 5-4 of the DEIS (and mentioned further in footnote 16 on p. 5-8 and DEIS Appendix 25) highlights, once more, the requirements of Annex I of the Protocol. To repeat, my strong view is that Annex I requires an assessment of changes to a site's "initial environmental reference state."

The recent, San Diego workshop on cumulative effects (referenced in Appendix 25) noted that a number of research projects, including the Antarctic Site Inventory, were providing the types of information needed to detect possible long-term cumulative impacts in Antarctica. The data and information produced by these projects will be crucial both to proponents of nongovernmental activities, which must assess potential environmental consequences of such activities, as well as to EPA, which must review the environmental documentation submitted by proponents pursuant to 40 CFR Part 8.

| Commentor: |  |
|------------|--|
| O-16       | EPA notes the recommended text modification and will edit the Final EIS as appropriate.                                      |
| O-17       | EPA acknowledges the opinions provided by Oceanites regarding cumulative effects and the need for various research projects. |

(O-15)

O-16

O-17

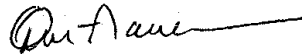
In this regard, the workshop concluded that these various research projects, if continued indefinitely, should detect region-wide changes in potentially affected penguin, seabird, and seal populations, and provide the kinds of information needed to determine whether any changes detected at tourist visitor sites are due to natural processes, fisheries, scientific research, or tourist activities.

(O-17)

\* \* \*

Once again, I appreciate the opportunity to present these comments. Please do not hesitate to call if any questions arise.

Sincerely,



Ron Naveen, President  
Oceanites, Inc.



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**Comments on**

**Draft Environmental Impact Statement  
 Proposed Rule on Environmental Impact Assessment of  
 Nongovernmental Activities in Antarctica**

**Environmental Protection Agency**

April 2, 2001

Comments by The Antarctica Project  
 on behalf of the Antarctic and Southern Ocean Coalition

The Antarctica Project (TAP) and Antarctic and Southern Ocean Coalition (ASOC) are profoundly disappointed with the Draft Environmental Impact Statement (EIS) on the Proposed Rule on Environmental Impact Assessment of Nongovernmental Activities in Antarctica, issued by the Environmental Protection Agency (EPA), in February 2001. TAP's fundamental complaint is that the EIS proceeds on a number of erroneous legal conclusions that color the remainder of the analysis. Indeed, it appears that the EPA's object in preparing the EIS was in justifying certain legal conclusions about its authority under the 1991 Protocol on Environmental Protection to the Antarctic Treaty (1991 Protocol) and 1996 Antarctic Science, Tourism and Conservation Act (1996 Act), rather than a detailed analysis of the scope and impact of nongovernmental activities affecting Antarctica, most notably tourism.

For purposes of brevity, TAP incorporates by reference its comments during the scoping process for the EIS, submitted on July 30, 1997 and August 14, 1998, and attached as an appendix to this communication. Additionally, TAP would observe that it concurs with some aspects of the EIS, most notably its conclusion that the "No Action" Alternative (adopting the Interim Final Rule) is not optimal, as well as its conclusion that Alternative 5 (modifying the Interim Final Rule to eliminate the EPA/NSF concurrence process, enforcement provisions, and PERM requirement) would unacceptably weaken environmental regulation in Antarctica.

- US ASOC Members:
- American Cetacean Society
  - American Littoral Society
  - Animal Welfare Institute
  - The Antarctica Project
  - The Atmosphere Alliance
  - Cetacean Society International
  - Defenders of Wildlife
  - Earth Island Institute
  - EarthKind
  - Friends of the Earth - USA
  - Friends of Whales
  - Greenpeace - USA
  - The Humane Society of the United States
  - International Fund for Animal Welfare
  - Monitor Consortium
  - Monitor International
  - National Audubon Society
  - National Parks and Conservation Association
  - National Wildlife Federation
  - Natural Resources Defense Council
  - Ocean Alliance
  - Sierra Club
  - Sierra Club Legal Defense Fund
  - The Wilderness Society
  - World Society for Protection of Animals
  - World Wildlife Fund - USA

TAP-1

TAP-2

TAP-3

TAP-4

TAP-5

**RESPONSE TO COMMENTS**

| <b>Commentor:</b> |  |
|-------------------|--|
| TAP-1             | EPA notes that comments were provided by The Antarctica Project (TAP) on behalf of the Antarctic and Southern Ocean Coalition (ASOC) and acknowledges that TAP/ASOC are disappointed with the Draft EIS.   |
| TAP-2             | EPA notes that TAP's opinion is that the Draft EIS proceeds on a number of erroneous legal conclusions. However, EPA disagrees with this opinion. EPA sought assistance from the Department of State, the Department of Justice and the National Science Foundation on legal, and programmatic, issues.  |
| TAP-3             | The purpose of the Antarctic Science, Tourism, and Conservation Act of 1996 is to implement the provisions of the Protocol. The Act provides that EPA promulgate regulations to provide for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty and for coordination of the review of information regarding environmental impact assessments received from other Parties under the Protocol. In keeping with the purpose and need for the proposed rule-making action, EPA's objective in preparing the Draft EIS was to evaluate the environmental impacts of the alternatives for the final rule to be proposed and promulgated by EPA. It was not EPA's objective to prepare a detailed analysis of the scope and impact of nongovernmental activities affecting Antarctica, including tourism. |
| TAP-4             | EPA acknowledges that TAP/ASOC has incorporated two comment letters previously sent to EPA, an undated letter sent in July 1997, and a letter dated August 14, 1998, into its comment letter on the Draft EIS dated April 2, 2001.   |
| TAP-5             | EPA notes that TAP generally agrees with EPA's analysis of Alternative 5.  |

**RESPONSE TO COMMENTS**

However, TAP is somewhat mystified as to the process that was used to assign modifications to each alternative, and the rationale behind accepting or dismissing a group of modifications, rather than judging each modification on its merits. This process prevents inclusion of a modification from one of the non-preferred alternatives in the preferred alternative, and makes each set of modifications mutually exclusive from the other sets.

TAP-6

**I. Preliminary Issues**

TAP is concerned that the narrative incorporated into chapter 3 of the EIS, on the intensity of Antarctic tourism, relies too heavily on data provided by the Antarctic tour operators' association, IAATO, and individual Antarctic tour operators. It appears to be insufficiently critical and searching of the magnitude and impact of tourism on certain Antarctic environments. Given the direct interest of that sector in predicting that the impacts of their activities on the environment will be minimal, and the significance of this narrative in setting the tone for the rest of the EIS, we believe EPA should have sought to balance these sources with objective data from independent sources without a pecuniary interest in the outcome.

TAP-7

TAP believes that the projections for increases in Antarctic tourism have been deliberately understated, and there is a substantial risk of quantum increases in those numbers and impacts. If such quantum increases materialize within the next 5-10 years it will necessarily cast in doubt the underlying assumptions of the EIS, and perhaps require a new round of regulatory review. At a minimum, and despite the suggestions of the EIS (see at 3-39), a Comprehensive Environmental Evaluation (CEE) may need to be conducted in the near future.

TAP-8

Additionally, TAP is concerned with the suggestion made (EIS at 5-16) that the types of nongovernmental activities that are currently being carried out will typically be unlikely to have impacts that are more than minor or transitory assuming that the activities will be carried out in accordance with the guidelines in Recommendation 18-1. Neither the Protocol nor the 1996 Act assumes that Recommendation 18-1 is the standard, and that compliance with it will ensure minimal impact. Recommendation 18-1 is hortatory not mandatory, and the language is general enough to give operators a great deal of latitude for acting in compliance. Given the current limited Antarctic case history on impacts from any source, it is premature to make *a priori* assumptions about the likely level of environment impact from nongovernmental activities, and unreasonable to minimize them. To presume that these activities will likely have no more than minor or transitory impact is to second-guess what EIA has been established to determine. Its consequences include the corruption of the integrity of the EIA process.

TAP-9

In the following paragraph reference is made to EPA being persuaded that the operators have considered cumulative impacts when making a determination that their activities will not contribute to cumulative impacts, despite the operators admitting in their Initial Environmental Evaluations (IEEs) that they are unable to consider the contributions of their activities to cumulative impacts because there isn't sufficient information -- and the EIS reaches the conclusion that current activities are having no more than minor or transitory consequences. Yet, the EIS (at 5-8) observes that the issue of cumulative impacts remains a concern. There thus appears to be cognitive dissonance in the EIS's handling of this issue.

TAP-10

| Commentor: |   |
|------------|---|
| TAP-6      | EPA believes that Section 4.3 of the Draft EIS adequately describes the process EPA used for delineating the alternatives for the rule to be proposed and promulgated by EPA. This process included EPA's experience with the Interim Final Rule and consideration of the comments and information received during scoping. The Draft EIS individually analyzes the modifications under the alternatives. EPA acknowledges that selection of Alternative 2, EPA's preferred alternative, includes only those modifications associated with Alternative 2. However, EPA believes that, if appropriate, issues considered in modifications not part of Alternative 2 can be further considered within the rule-making process. For example, EPA could consider whether a categorical exclusion provision should be included in the final rule if specific activities can be identified and justified. |
| TAP-7      | In keeping with the purpose and need for the proposed rule-making action, EPA's objective in preparing the Draft EIS was to evaluate the environmental impacts of the alternatives for the final rule to be proposed and promulgated by EPA; it was not EPA's objective to analyze the magnitude and impact of tourism on the Antarctic environment. In the context of the Draft EIS, the purpose of Chapter 3 is to provide an overview of past and present human activity in Antarctica.  |
| TAP-8      | EPA notes TAP's opinion regarding the projections for increases in Antarctic tourism. However, EPA disagrees that the projections have been deliberately understated. The projections are based on the available data and information in referenced sources. EPA notes the comment that a CEE may need to be conducted in the near future. As with the Interim Final Rule, the proposed rule would delineate the requirements for the preparation of a CEE.   |
| TAP-9      | The statement made in the Draft EIS, and the Preamble to the Interim Final Rule, includes reference to ATCM Recommendation XV/III-1, <u>the relevant provisions of other U.S. statutes, and Annexes II-V to the Protocol</u> (underline added for emphasis). The information in the Preamble is not regulatory, rather it is a guideline for operators. The regulations state the mandatory requirements that must be met by operators and include the criteria for the level of EIA documentation. EPA believes that providing a level of guidance to those subject to regulation does not corrupt the integrity of the EIA regulatory process.  |

RESPONSE TO COMMENTS

II. The EIS's Incorrect Legal Conclusions

Our primary objections to the legal conclusions propounded in the EIS fall into a few categories:

1. *Broadened Definition of "Operator"*. During the scoping process, TAP raised concerns that as currently drafted the Interim Final Rule fails to effectuate Congress' command that EPA regulations extend to cover nongovernmental activities that can be construed as "doing business in the United States." The Interim Final Rule refers to "operators" as "any person or persons organizing a nongovernmental expedition to or within Antarctica". IFR §§ 8.2(b), 8.3(11). The EIS has narrowly construed this to mean that EPA can only regulate nongovernmental activities "where the relevant expedition is organized in or proceeding from the United States." EIS at 4-14. The EIS specifically rejects the idea that operators that are doing business in the United States, by "mere[ly]" selling tickets to U.S. tourists would be covered by the regulations. The EIS somewhat mysteriously suggests that "a non-U.S. based operator could conduct such a level of activity in the United States that it could be deemed to be organizing an activity in the United States, and thus the United States would have jurisdiction in such a circumstance." EIS at 4-14 & 5-26.

TAP would observe that this conclusion is fatally contradicted by the terms of the 1996 Act. Under section 4(a)(6) of the 1996 Act, Congress extended application of the statutory and regulatory scheme to "any person who organizes, sponsor, operates or promotes a non-governmental expedition to the United States, and who does business in the United States." The EIS, in reaching the conclusion it does, simply reads the just-quoted legislative language out of the statute. Under the 1996 Act's clear language, "promot[ing]" an expedition — including public advertisements and sale of tickets — is manifestly covered. Indeed, the additional Congressional extension of coverage to enterprises that "do[] business in the United States," confirms this textual command.

Shockingly, the EIS makes no mention of section 4(a)(6) of the 1996 Act in reaching its legal conclusion. Any Final Regulation made pursuant to the EIS will be manifestly vulnerable to legal challenge as clearly departing from Congress' textual command that EPA regulations extend to "person[s] who organizes, sponsor, operates or promotes a non-governmental expedition to the United States, and who does business in the United States." No amount of *Chevron* deference will save the Final Regulations in this respect.

2. *The Requirement that EIA Documentation Demonstrate Compliance with Applicable Protocol and Statutory Provisions*. The EIA is dismissive of TAP's suggestion that requiring that IEEs or CEEs prepared under the regulations demonstrate compliance with applicable provisions of the 1991 Protocol and 1996 Act. Rather contradictorily, the EIS concludes that such a requirement would not necessarily reduce environmental impacts, EIS 4-15, 5-27, but nowhere explains why.

Additionally, the EIS raises the concern that requiring such documentation would place onerous burdens on non-governmental operators and activities, in excess of those required for governmental activities. EIS at 4-15, 5-28. But nowhere in the 1996 Act is it required that

TAP-11

TAP-12

TAP-13

| Commentor: |  |
|------------|--|
| TAP-10     | EPA is on record that the issue of cumulative impacts, particularly in the Peninsula area, remains a concern. This is why EPA co-sponsored a workshop to better address the issue of possible cumulative impacts associated with ship-based Antarctic tourism. However, EPA also believes that, to date, the conclusions in the IEEs prepared by the U.S.-based operators, including the conclusions for cumulative impacts, have been supported by the information currently available. Further, EPA is unaware of any determinations by the operators that their activities "will not contribute to cumulative impacts." Based on information available to date, EPA believes that the IEEs submitted by the operators have assessed their proposed activities in sufficient detail to determine that they will not have more than a minor or transitory impact on the Antarctic environment, including consideration of cumulative impacts. |
| TAP-11     | This information was considered by EPA in the preparation of the Draft EIS. The authority for EPA's rule-making is 16 U.S.C. 2401 <i>et seq.</i> , as amended, 16 U.S.C. 2403a. EPA does not believe that section 2403(a)(6) (e.g., 4(a)(6) of the Act) is germane to this rule-making. EPA also sought legal, and programmatic, assistance from the Department of State, the Department of Justice and the National Science Foundation on this issue in preparing the analysis in the Draft EIS; EPA stands by this analysis.   |
| TAP-12     | EPA acknowledges that TAP/ASOC provided information and opinions during scoping regarding the issue of requiring that the EIA documentation demonstrate compliance with applicable provisions of the Protocol and relevant U.S. statutes. This information was considered by EPA in the preparation of the Draft EIS. EPA's rationale for not accepting this proposed modification as a provision in the proposed rule is based on several considerations as discussed in the Draft EIS including the fact that certain provisions of the Act are the responsibility of other federal agencies. Further, rather than imposing a blanket requirement that may add unnecessary burden on the operator, EPA maintains that the EIA documentation provides the mechanism to identify whether a proposed activity raises issues under other obligations of the Protocol or domestic law which need further review by the responsible authority.     |



RESPONSE TO COMMENTS

governmental and non-governmental activities be treated at parity in this regard. Despite these irrelevant or unsubstantiated concerns, the EIS somewhat contradictorily notes that the provision of documentation to demonstrate compliance with Protocol and statutory requirements may, in fact, be "a useful mechanism."

(TAP-13)

The most serious defect with the EIS's treatment of this subject is its cavalier interpretation of Protocol Article 3. As stated elsewhere in the EIS, Article 3 is regarded as a dead-letter by the EIS Drafters, with no independent effect. See EIS 4-17 ("Article 3 of the Protocol is implemented through the Annexes to the Protocol and is not capable of direct implementation. Thus, it in and of itself does not impose mandatory requirements."). The EIS's treatment of Protocol Article 3 is consistent with its interpretation of section 4(a)(6) of the 1996 Act. The EIS Drafters have apparently chosen to read-out provisions of the Protocol and Act that are inconvenient or problematic.

TAP-14

The up-shot of all this is that under the EIS and suggested form of the Final Regulations, non-governmental operators will be at liberty to file IEEs or CEEs that disclose substantial risks to the Antarctic environment or associated and dependent ecosystems, and still those activities could be approved. While the EIS is correct to note that the environmental assessment procedures under the Protocol are, at a minimum, intended to emulate those under NEPA, Article 3 of the Protocol and related language in the 1996 Act, intend that such procedures go much further in a substantive manner to regulate non-governmental activities in the Antarctic.

The EIS's insistence on harmonizing the Protocol with NEPA (as reflected at EIS 4-12) thus proceeds from a false assumption. NEPA's starting point is impacts affecting the human environment, while the Protocol's (Article 3 and Annex I) is impacts affecting the natural environment. This difference is nowhere taken into account in the EIS, which proceeds on the blithe assumption that the 1996 Act incorporates into U.S. law an exclusively procedural vision of NEPA, without taking into account the substantive obligations and principles of the Protocol. Nothing in the 1996 Act suggests such a cramped result.

TAP-15

**III. Improper Arguments Advanced in the EIS**

The Antarctica Project is also troubled with a number of arguments advanced in the EIS that have the effect of impermissibly narrowing the scope of this regulatory exercise:

3. *Supposed harmonization between regulation of governmental and non-governmental actors.* Constant reference is made in the EIS to consistency between governmental and nongovernmental ELAs, as regards to real (or perceived) regulatory burdens. Nowhere in the 1996 Act is there a requirement that the obligations placed on both entities be the same, or that there be "consistency" between the way the EIA provisions are applied to governmental and nongovernmental operators. See EIS, at 4-17. Nothing in the law requires "consistency." The intent of the 1996 Act is to ensure compliance with the Protocol. Indeed, it is not entirely clear that the EIS takes a consistent view on this. In Section 4.4.2, at page 4-9, it is stated that "the preference is to ensure consistency," while in other places the EIS drops the preference and indicates that this is the intention.

TAP-16

| Commentor: |   |
|------------|---|
| TAP-13     | EPA acknowledges that the Act does not require consistency between the governmental and nongovernmental EIA processes and regulations (see TAP-16). Operators may, and do, reference compliance with appropriate Protocol provisions and U.S. regulations as planned mitigation measures for their activities, measures which support the level of EIA documentation for the planned activities. Based on experience to date, EPA believes that a mandatory blanket requirement to demonstrate compliance would impose obligations not required under Annex I or the Act, and that it would place unnecessary burden on the operator without necessarily reducing environmental impacts (i.e., requiring consideration of a provision that has no relevance to the activity and, thus, no effect in reducing environmental impacts). Also see TAP-12. |
| TAP-14     | EPA sought legal, and programmatic, assistance from the Department of State, the Department of Justice and the National Science Foundation on the Article 3 issue in preparing the analysis in the Draft EIS; EPA stands by this analysis. Further, as with the Interim Final Rule, under the proposed rule EPA would not "approve" activities. EPA would, in consultation with other interested federal agencies, review the EIA document to determine whether it meets the requirements of Article 8 and Annex I and the regulations.   |
| TAP-15     | It is the U.S. government's position that Article 3 of the Protocol does not impose substantive obligations. The analyses in the Draft EIS are consistent with this position. Further, as with the Protocol, NEPA's starting point is the environment. As stated in Title II, Environmental Quality, of the Environmental Quality Improvement Act of 1970 (Pub. L. 91-224, 42 U.S.C. 4371-4374, April 3, 1970), the purposes of this title are to "assure that each Federal department and agency conducting or supporting public works activities which affect the <u>environment</u> shall implement the policies established under existing laws;" and, as further stated in 40 CFR 1500.1, NEPA "is our basic national charter for protection of the <u>environment</u> " (underline added for emphasis).   |

**RESPONSE TO COMMENTS**

Elsewhere in the EIS, language is offered which is redolent of a suggestion that cost/benefit analysis should be applied to the environmental assessment procedures contemplated under the Madrid Protocol and 1996 Act. But nothing in those instruments dictates such a cost-benefit requirement, and it should be categorically rejected.

TAP-17

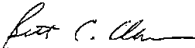
4. *Sanctioned Evasion of Regulatory Requirements.* TAP is concerned with a repeated argument made in the EIS that if enhanced regulation and enforcement is adopted, U.S. operators will simply move to another country to evade such regulation or enforcement. See EIS 5-29, 5-35. TAP regards such an argument as legally illegitimate. As already observed, Congress contemplated such a possibility of evasion when it provided that regulations would apply to "any person who organizes, sponsor, operates or promotes a non-governmental expedition to the United States, and who does business in the United States." 1996 Act, § 4(a)(6). Additionally, it has never been regarded as a legitimate excuse to withhold needed regulation just because of the risk that lawless entities will seek to evade it.

TAP-18

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We trust that these comments will be of assistance to the EPA as it proceeds with the development of the Final Rule on Environmental Impact Assessment of Nongovernmental Activities in Antarctica.

Respectfully submitted,

  
Beth C. Clark  
Director

David J. Bederman  
TAP Counsel

Alan Hemmings  
ASOC Senior Advisor

James N. Barnes  
ASOC Counsel

Randall D. Snodgrass  
Director, Government Relations  
World Wildlife Fund

Stephen Mills  
Director, International  
Program  
Sierra Club

| Commentor: |   |
|------------|---|
| TAP-16     | EPA acknowledges that the Act does not require consistency between the governmental and nongovernmental EIA processes and regulations. However, regardless of whether the activities are governmental or nongovernmental, it is the U.S. government that has the responsibility to ensure that the U.S. is able to comply with its obligations under the Protocol. Two separate federal agencies have been charged with this responsibility, the National Science Foundation for purposes of governmental activities and EPA for purposes of nongovernmental activities. Based on experience to date, EPA believes it is reasonable that the governmental and nongovernmental EIA processes be consistent with regard to the requirements of Article 8 and Annex I to the Protocol. |
| TAP-17     | EPA acknowledges that neither the Protocol nor the Act dictates a cost-benefit requirement.   |
| TAP-18     | EPA acknowledges that it gave consideration to, amongst other things, the concern that U.S.-based operators continue to do business as U.S. operators and not move their Antarctic business operations to a non-Party country because of any undue burden imposed by the final rule. However, this was one of several considerations that EPA believed was reasonable in the analysis of the alternatives; EPA stands by this analysis.   |

**RESPONSE TO COMMENTS**



**ANTARCTIC AND SOUTHERN OCEAN COALITION**

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**ISSUES TO BE ADDRESSED IN THE FINAL RULE FOR EIA OF NONGOVERNMENTAL ACTIVITIES IN ANTARCTICA, PROMULGATED UNDER P.L. 104-227, THE ANTARCTIC SCIENCE, TOURISM, AND CONSERVATION ACT OF 1996**

**US ASOC Members:**

- American Cetacean Society
- American Littoral Society
- Animal Welfare Institute
- The Antarctica Project
- The Atmosphere Alliance
- Cetacean Society International
- Defenders of Wildlife
- Earth Island Institute
- EarthKind
- Friends of the Earth - USA
- Friends of Whales
- Greenpeace - USA
- The Humane Society of the United States
- International Fund for Animal Welfare
- Monitor Consortium
- Monitor International
- National Audubon Society
- National Parks and Conservation Association
- National Wildlife Federation
- Natural Resources Defense Council
- Ocean Alliance
- Sierra Club
- Sierra Club Legal Defense Fund
- The Wilderness Society
- World Society for Protection of Animals
- World Wildlife Fund - USA

The Antarctica Project, Greenpeace, Sierra Club, and World Wildlife Fund, on behalf of the Antarctic and Southern Ocean Coalition, welcomes the opportunity to provide comments on issues to be addressed in the EIS for the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica.

The Protocol on Environmental Protection to the Antarctic Treaty represents a significant shift within the Antarctic Treaty System away from seeing Antarctica as a resource to be plundered and towards its preservation in its pristine state. The Protocol designates Antarctica as a "natural reserve, devoted to peace and science," and sets strict standards for the conduct of all activities in Antarctica. The Protocol is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. The EIA process is designed to ensure that the spirit of the Protocol is considered by identifying possible environmental impacts and mitigation methods. To ensure that the EIA process for tourism and non-governmental activities faithfully implements the Protocol, the following issues must be considered in promulgation of the Final Rule:

**1. Article 3:** Compliance with the Environmental Principles of Article 3 must be demonstrated in EIA, and should be incorporated into the Final Rule as a requirement.

The heart of the Protocol is Article 3. It articulates a series of environmental principles; which "shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area." The Article requires that activities take place in a manner consistent with these principles. The principles are expected to guide and shape environmental planning and decision-making for all activities in Antarctica, regardless of whether or not they are covered explicitly by the Annexes. ASOC has always held that these principles are an integral and legally-binding element of the Protocol, and should constitute a binding set of obligations for the conduct of all activities, and must be taken into account in implementing the Protocol.

In particular, Article 3 states that "the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, shall be fundamental considerations in the planning and conduct of all

| <b>Commentor:</b> |  |
|-------------------|--|
| TAP-19            | EPA appreciates the scoping comments provided by TAP, Greenpeace, Sierra Club, and the World Wildlife Fund. All of the information in this letter was considered by EPA in the preparation of the Draft EIS. EPA also notes that TAP/ASOC's undated letter sent in July 1997 is incorporated by reference into its comment letter on the Draft EIS dated April 2, 2001; see TAP-4. |
| TAP-20            | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter; see TAP-14.  |

TAP-19

TAP-20

RESPONSE TO COMMENTS

activities in the Antarctic Treaty area. To this end activities shall be planned and conducted so as to limit adverse impacts on the Antarctic environment... [including] degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance."

Further, Article 3 requires activities to be "planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment," taking full account of the cumulative impacts of the activity, whether the activity will detrimentally affect any other activity in the area, whether technology and procedures are available to provide for environmentally safe operations, whether monitoring can be put in place to provide early detection of potential impact, and whether there exists the capacity to respond promptly to accidents. If there is insufficient information upon which to make an informed judgment about a proposed activity, ASOC believes that the precautionary principle must apply.

Finally, Article 3 requires that activities be modified, suspended or cancelled if they result or threaten to result in impacts upon the environment or associated ecosystems inconsistent with Article 3.

The incorporation of the Article 3 principles into the review criteria will allow an understanding of the extent to which the activity will conform with Article 3.

2. Procedural vs. Substantive regulation: The Final Rule should provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity. Since the Protocol and its Annexes list prohibited activities, and environmental impacts that are to be avoided, in most cases preventing an activity from proceeding should not be an issue. However, there may be occasion when a permitted activity threatens to result in unacceptable impact, and there must be flexibility to require the modification, suspension or cancellation of the activity.

The purpose of EIA is to identify and mitigate as far as possible environmental impacts. This is backed up by a reading of Protocol Article 3, paragraph 2, which states that activities should be planned and conducted to LIMIT adverse impacts, the first paragraph of that Article states "the protection of the Antarctic environment...shall be fundamental considerations in the planning and conduct of all activities....," and paragraph 4 states that "activities...shall take place in a manner CONSISTENT WITH THE PRINCIPLES in this Article; and be modified, suspended or cancelled if they result or threaten to result in impacts upon the Antarctic environment."

The Protocol is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. Further, the EIA process is designed to ensure that the spirit of the Protocol is considered.

The Protocol's EIA procedures are based on our NEPA procedures. However, whereas domestic caselaw indicates that NEPA is procedural, in the sense that it does not impose

(TAP-20)

TAP-21

| Commentor: |   |
|------------|---|
| TAP-21     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter; see TAP-15. |

RESPONSE TO COMMENTS

(by itself) substantive environmental requirements, the Protocol is both procedural and substantive. It is substantive in two ways: (1) by explicitly prohibiting certain activities and requiring permits for others, and (2) by providing in Article 3 basic principles to guide environmental planning. In addition, the NEPA process is "intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore and enhance the environment" (NEPA Regulations, CEQ, July 1, 1986, p. 3). Accordingly, "the primary purpose of an EIS is to...insure that the policies and goals defined in the Act [i.e., to protect, restore and enhance the environment] are infused into the ongoing programs and actions of the Federal Government (p. 10)." Therefore, implementation of NEPA is supposed to ensure that, when activities are undertaken, its (NEPA's) intent to protect the environment is upheld.

(TAP-21)

There is international precedent for basing modification, suspension or cancellation of an activity on the conclusions of ELA. Cf the implementing legislation of Australia (s. 12N)2, and Norway (s. 12). The Netherlands (s. 19 & 20), Sweden (s. 19 & 20) and UK (Regulations s.10(4)(d)) have a similar requirement; however, a permit is also required for all Antarctic activities. In some countries which require a permit for all Antarctic activities, issuance of a permit is dependant on the conclusions of ELA (e.g., Germany, Finland).

**3. Definition of Operator:** The current draft Final Rule applies only to "nongovernmental expeditions to and within Antarctica organized in or proceeding from" the United States. s 8.2(b). An "operator" is defined as "any person or persons organizing a nongovernmental expedition to or within Antarctica." s 8.3(11). It has been suggested that the Final Rule should be applied only to tour operators incorporated in the United States.

Such an interpretation would be directly contrary to the language of the Antarctic Science, Tourism, and Conservation Act of 1996 (ASTCA). Congress specifically directed that it was unlawful for "any person who organizes, sponsors, operates or promotes a non-governmental expedition to Antarctica, and who does business in the United States" to fail to take steps to ensure compliance with the Protocol. ASTCA, s 4(a)(6). At a minimum, this means that the EIA provisions of section 4a of the Act should be applied to nongovernmental expeditions which, even though based outside of the United States, advertize and promote participation by U.S. citizens, accept booking here, and otherwise "do business in the United States."

TAP-22

"Doing business in the United States" is a legal term-of-art used elsewhere in the U.S. code. See, e.g., 8 USC 1375(e)(1)(A) (mail order brides); 15 USC 16a (antitrust laws); 26 USC 842 & 4371 (taxation of foreign insurance premiums); 31 USC 5314(a) (reporting foreign financial transactions). Courts have construed this language to mean that if a person or entity is doing business in the United States to justify the exercise of personal jurisdiction, then it is covered. A number of courts have held that continuous and systematic advertizing and promotion of foreign tours and cruises, as well as the acceptance of booking through U.S. travel agents, constitutes "doing business in the United States."

| Commentor: |   |
|------------|---|
| TAP-22     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter; see TAP-11. |

RESPONSE TO COMMENTS

This interpretation is the only permissible one allowed by Congress in the ASTCA. Indeed, the draft Final rule seems to acknowledge this when it defines "person" as any individual or entity "subject to the jurisdiction of the United States." See s 8.3(12).

Any other interpretation would open a cavernous loophole in the application of the Final Rule. An entity, despite doing substantial business in the U.S. (and recall that at least one-third of all Antarctic tourists are Americans), could avoid regulation simply by incorporating elsewhere, perhaps even in a non-ATCP country. If this occurred, it would be impossible to enforce the explicit provisions of section 4(a)(6) of the ASTCA.

In such a case, the only alternative would be to require every U.S. citizen to acquire a permit before travelling to the Antarctic, and thus certifying directly that the provisions of section 4(a)(6) have been satisfied. ASOC asserts that EPA has the authority, like the National Park Service, to regulate entry by any U.S. citizen into Antarctica to ensure compliance with the Protocol's ELA provisions (see *National Park Service Organic Act, 16 U.S.C. 1 et seq* (1988) which states the purpose of the National Park Service is to conserve national parks [and etc.] "...by such means as will leave them unimpaired for the enjoyment of future generations."; *Wilderness Act of 1964, 16 U.S.C. 1131 et seq* (1988) which states that Wilderness Areas are to be administered "...in such manner as will leave them unimpaired for future use and enjoyment as wilderness, so as to provide for the...preservation of their wilderness character....")

(TAP-22)

There is also some international precedent for this in view of the Swedish legislation that became effective on April 1, 1994. This law required all Swedish tourists to have permits (see section 16). Indeed, every such permit application by every tourist was required to contain an environmental impact assessment (section 18(1)). Germany and Finland have similar permit requirements.

This alternative would be unnecessary if the Final Rule were applied to all tour operators who did substantial business in the United States. The regulations could provide a threshold for such a status, perhaps if (in any one year) U.S. citizens constituted a quarter or more of the participants for a particular tour.

**4. Notice and reporting:** Protocol Annex I Article 2 requires that an IEE or CEE contain sufficient detail to assess whether a proposed activity could have an impact. Notification should include, at a minimum, details on passenger numbers, vessel type, all locations and sites to be visited and planned dates of visits. It is necessary to include as much detail as possible about an expedition for the following reasons: it is only in the details that outright violations of the Protocol would be disclosed and potential impacts can get teased out, and alternative actions or mitigation proposed, it is the only way to allow consideration of cumulative impacts, and it provides a record of activity which can be used in the future to determine possible causes of (e.g., environmental, biological) change. The point of EIA is to identify potential impact, predict their likelihood and magnitude, identify alternative actions and mitigation measures, and ultimately to make an informed decision about whether and how to proceed. Although this may be arduous at first, it will become simpler and routine as experience is gained.

TAP-23

Commentor:

TAP-23

This information was considered by EPA in the preparation of the Draft EIS.

RESPONSE TO COMMENTS

5. **Environmental thresholds and impact characterization, mitigation and monitoring:** Impact thresholds need to be decided on a case by case basis (at least until a body of knowledge is built up). Disclosing all possible impacts/risks is the only way to determine if an activity needs to be altered, or if a potential impact can be mitigated. The Protocol requires that monitoring be put in place to assess and verify impacts, regardless of impact threshold, and to assess the success of mitigative measures.

Thus, the Final Rule should include a requirement to identify mitigation measures, as required by Protocol Annex I, Article 3(2)(g) which requires that a CEE include "identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity...". Mitigation measures could include: control areas and "no-go" areas (e.g., prohibition of visits to colonies during sensitive times in the breeding cycle); limits on group size per expedition leader and on the number of groups at a site at a single time; limits on total number of visits to a site in a single day; avoiding having more than one ship at a site at one time; prohibition of visits to new sites; and education of expedition leaders, passengers and staff.

The Final Rule should also require identification and, as appropriate, implementation, of monitoring programs, as required by Protocol Article 3(d), and Annex I Article 2(2), Article 3(2)(g) and Article 5.

Monitoring to allow assessment of impacts, verify predicted impacts and to facilitate early detection of unforeseen effects of activities both within and outside of Antarctica is required by the Protocol and should be required in the Final Rule. With respect to appropriate monitoring regimes: the Treaty Parties are working to identify monitoring approaches that can best support the Protocol's implementation. At present, the Interim Rule requires that operators report on their present and future activities as well as provide a description of mitigative actions undertaken. Given that there is no monitoring protocol in place within the ATS, we agree that the Final Rule should continue the requirements of the Interim Rule with the proviso that once additional information becomes available, it can be incorporated into the Final Rule.

6. **Timing and distribution of documents:** EIA needs to be done sufficiently ahead of a planned expedition to allow for agency and public comment. The Protocol requires circulation of CEEs to Parties and the CEP 120 days prior to an ATCM, at which meeting it may be discussed. Although the Protocol does not require the circulation of IEEs, if the goal is to produce the best possible document, there is utility in having it reviewed widely. Given the years of experience of most Antarctic tour operators, it is reasonable to expect that they can make assumptions based on past experience concerning passenger numbers, vessels, sites, timing of visits. If the EIA is based on the broadest assumptions--e.g., maximum possible passengers, probable timing of visits, and lists all potential sites, then deviations in actual itineraries would be covered without too much difficulty.

7. **Enforcement and penalties:** Penalties are appropriate only where there is the intent to violate the regulations, especially if an operator has a history of infractions. The most important aspect at present is that an operator complies with the EIA

TAP-24

TAP-25

TAP-26

| Commentor: |   |
|------------|---|
| TAP-24     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that TAP agrees with the monitoring requirements in the Interim Final Rule. EPA acknowledges that as monitoring protocols might be developed within the Antarctic Treaty System, the need for revision of the final rule will need to be reviewed by EPA. |
| TAP-25     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that TAP agrees with the time frames for environmental documentation submission and review in the Interim Final Rule.   |
| TAP-26     | This information was considered by EPA in the preparation of the Draft EIS.   |

RESPONSE TO COMMENTS

procedures, attempts to identify possible impacts, and puts in place mitigation and response actions. If an accident occurs despite this planning, the operator should have the capacity to respond (mitigation measures, insurance), but should not necessarily be penalized.

(TAP-26)

8. **Parity vs. non-parity regarding international regulations:** Although there is the concern that if the US regulations are too strict or burdensome the tour operators will move their business to a country that is less strict or has no regulations, this is not a reason to legislate weak requirements. (In fact, cf. implementing legislation and regulations of Australia and New Zealand, which require authorization of activities before they may proceed; s. 12F, J, L and N(3), and s. 10(3) and 12(3) respectively, and of UK which requires a permit for British expeditions to Antarctica; a British expedition includes all expeditions which depart from British territory; s. 3(3) and which requires a permit for activities requiring completion of a CEE; Regulations s.6(6).) We believe that the best way to ensure that this does not happen is to ensure that US citizens are regulated even if the operators are not (cf 3. above).

TAP-27

9. **Simple vs. cumulative impacts/scientific knowledge:** At present, the understanding of cumulative impacts is minimal both inside and outside the Antarctic Treaty System. Nations are beginning to design programs which will give a better understanding of what cumulative impacts mean in terms of environmental management in the Antarctic. IUCN's workshop on Cumulative Impacts in the Antarctic produced recommendations that should help Antarctic operators include consideration of cumulative impacts in their ELAs. For the present, operators should attempt to assess cumulative impacts as far as they are able. As the body of knowledge grows, this additional information should be included in ELAs. This holds as well for other areas of impact assessment where understanding of impacts is minimal, especially as there is not much baseline data with which to compare present states.

TAP-28

10. **Heuristic vs. deterministic evaluation criteria and assessment methods:** Impacts must be assessed on a case by case or site by site basis. For all potential impacts, the key factors usually are where the site (rookery etc) is located, who the visitors are and how they are behaving, the environmental conditions, biological conditions (chicks/eggs present), and if there are or recently were other activities taking place at or near the site. The determination of an impact threshold (e.g., the "acceptable" number of annual visitors to a rookery), must be based on rigorous research, which is subjected to broad scientific review up to the standard of peer reviewed scientific journals. Until such determination is made, the precautionary principle must apply, i.e., visitation should not be increased unless and until there is sufficient information to determine acceptable visitation levels. Impact thresholds should be regularly reviewed as new information becomes available.

TAP-29

11. **Streamlining documentation:** We are supportive of minimizing the paperwork burden on tour operators; however, we believe it would be risky to automatically assume that satisfactory completion of ELA for another country would be sufficient to meet the ELA requirements of this Rule. Thus, operators should be encouraged to provide copies of ELA submissions made to other governments (with translations, if need be) and

TAP-30

| Commentor: |  |
|------------|--|
| TAP-27     | This information was considered by EPA in the preparation of the Draft EIS. However, individual U.S. citizens traveling to Antarctica would not be subject to the proposed rule unless they are organizing an expedition such that advance notice is required under Article VII(5) of the Treaty. EPA also sought legal, and programmatic, assistance from the Department of State, the Department of Justice and the National Science Foundation on this issue in preparing the analysis in the Draft EIS; EPA stands by this analysis. |
| TAP-28     | This information was considered by EPA in the preparation of the Draft EIS. (Also see TAP-10.)   |
| TAP-29     | This information was considered by EPA in the preparation of the Draft EIS.  |
| TAP-30     | This information was considered by EPA in the preparation of the Draft EIS.  |



RESPONSE TO COMMENTS

incorporate them by reference. But completion of these documents should not prejudice consideration by EPA. In addition, ASOC supports the undertaking of a "programmatic EIA" to be conducted for similar activities within a specified region. This will decrease the paperwork burden and, more importantly, will allow an assessment of cumulative impacts. In order to be truly useful, this "programmatic EIA" must take account of all other activities occurring in the area.

(TAP-30)

12. **The role of the private sector risk distribution mechanisms:** We believe that commercial instruments such as insurance and performance bonding are useful in implementing the Final Rule. These would require operators to demonstrate compliance with Protocol standards (eg vessel standards) in order to obtain insurance. Performance bonds could work the same way to ensure that expedition procedures are designed to minimize risk to the environment, and stipulated mitigation measures are carried out. Another method for minimizing risk/impact which we would support is requiring certification of expedition leaders, as this would better ensure an awareness and implementation of ATS and Protocol obligations.

TAP-31

13. **Transparency:** Broad public review of all IEEs and CEEs is very important as it is the only way to begin to build a body of common knowledge, and to ensure a quality document. Availability of IEEs should be advertised in the Federal Register and/or on EPA's Web site, and the public should have a minimum of 30 days to provide comments.

TAP-32

14. **Change in an activity:** The Protocol Article 8 requires that the EIA procedures apply to any change in an activity, whether the change arises from an increase or decrease in the intensity of the activity, from the addition of an activity, the decommissioning of a facility, etc. Thus, if there is a significant increase or decrease in the number of tourists planning on traveling to the Antarctic, a new EIA must be prepared. The tour operators are predicting a doubling in the number of tourists within five years. If this holds true, a case could be made that a CEE would be the appropriate level of impact assessment for this period. With respect to the proposed "programmatic EIA" for ship-borne Antarctic Peninsula activities of IAATO members, if this assessment is conducted for multiple years, it would need to be reviewed annually and modified if activities significantly increase or decrease.

TAP-33

15. **Application of Annex I:** Because paragraph 1 of Annex I refers to assessing the environmental impacts of "proposed" activities, there is the implication that EIA is not needed for existing activities (e.g., established bases, structures, runways, etc.) unless the level of activity changes. However, this "exemption" should not be construed to cover "ongoing" activities (e.g., tourism, scientific research projects), which, although they occur annually, are not continuous and are modified annually.

TAP-34

16. **Decision to proceed:** The scientific or other benefits of an activity must be weighed against the possible environmental impacts when deciding whether or not to proceed with the activity. If it is ultimately decided that despite an impact, the activity outweighs the environmental impact, this must be documented. This way there is the assurance that the decision to proceed was deliberative not capricious.

TAP-35

| Commentor: |  |
|------------|--|
| TAP-31     | This information was considered by EPA in the preparation of the Draft EIS. The Draft EIS considered a modification such that if a substantive provision could not be included in the final rule, then include a provision to require insurance and bonding.   |
| TAP-32     | This information was considered by EPA in the preparation of the Draft EIS. Under Alternative 2, EPA's preferred alternative, the proposed rule would carry forward the public availability process for IEEs that is in the Interim Final Rule whereby EPA announces the availability of IEEs on its website.  |
| TAP-33     | This information was considered by EPA in the preparation of the Draft EIS.  |
| TAP-34     | This information was considered by EPA in the preparation of the Draft EIS. As required by the Act, the proposed rule would require EIA documentation for nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Treaty. |
| TAP-35     | This information was considered by EPA in the preparation of the Draft EIS.  |

**RESPONSE TO COMMENTS**

**Conclusion**

The Antarctic Environmental Protocol is a landmark agreement designed to provide comprehensive protection of the world's last great wilderness. Faithful implementation of the Protocol will ensure that the values of Antarctica, as envisioned by the original signers of the Antarctic Treaty, will be strengthened and preserved. Therefore, regulations designed to implement the Protocol's provisions must ensure that the spirit as well as the substance of the Protocol are realized in the conduct of all activities. To achieve this the Final Rule for ELA for nongovernmental activities should:

1. require compliance with the Environmental Principles of Article 3;
2. provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity;
3. require the identification and mitigation of possible environmental impacts;
4. apply equally to and reach all U.S. citizens;
5. apply to all tour operators which do business in the U.S.;
6. require sufficient detail within ELA to allow informed judgments about proposed activities;
7. require identification and implementation of monitoring programs;
8. allow for a transparent process by facilitating broad public review of all IEEs and CEEs;
9. require the identification and impact assessment of alternative actions, including the alternative of not proceeding;
10. require the identification of all potential impacts, and their probability of occurring;
11. allow for flexibility to require the incorporation of new information (e.g., on cumulative impact assessment, monitoring programs) as it becomes available;
12. require documentation which explains why the least impacting alternative is not the preferred alternative; and
13. give preference to the precautionary principle when there is insufficient information upon which to make a sound judgment about a proposed activity.

TAP-36

| <b>Commentor:</b> |  |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
|-------------------|--|------|---------------------|---|--------|---|--------|---|--------|---|--------|---|--------|---|--------|---|--------|---|--------|----|--------|
| TAP-36            | The information in all 13 items was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter; for these, also see the following:  |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
|                   | <table border="0"> <thead> <tr> <th>Item</th> <th>Response to Comment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TAP-14</td> </tr> <tr> <td>2</td> <td>TAP-15</td> </tr> <tr> <td>3</td> <td>TAP-24</td> </tr> <tr> <td>4</td> <td>TAP-27</td> </tr> <tr> <td>5</td> <td>TAP-11</td> </tr> <tr> <td>6</td> <td>TAP-14</td> </tr> <tr> <td>7</td> <td>TAP-24</td> </tr> <tr> <td>8</td> <td>TAP-32</td> </tr> <tr> <td>11</td> <td>TAP-28</td> </tr> </tbody> </table> | Item | Response to Comment | 1 | TAP-14 | 2 | TAP-15 | 3 | TAP-24 | 4 | TAP-27 | 5 | TAP-11 | 6 | TAP-14 | 7 | TAP-24 | 8 | TAP-32 | 11 | TAP-28 |
| Item              | Response to Comment  |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 1                 | TAP-14   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 2                 | TAP-15   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 3                 | TAP-24   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 4                 | TAP-27   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 5                 | TAP-11   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 6                 | TAP-14   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 7                 | TAP-24   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 8                 | TAP-32   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |
| 11                | TAP-28   |      |                     |   |        |   |        |   |        |   |        |   |        |   |        |   |        |   |        |    |        |

prepared by  
Beth Clark, Director  
The Antarctica Project

**RESPONSE TO COMMENTS**



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August 14, 1998

- US ASOC Members:
- American Cetacean Society
- American Littoral Society
- Animal Welfare Institute
- The Antarctica Project
- The Atmosphere Alliance
- Cetacean Society International
- Defenders of Wildlife
- Earth Island Institute
- EarthKind
- Friends of the Earth - USA
- Friends of Whales
- Greenpeace - USA
- The Humane Society of the United States
- International Fund for Animal Welfare
- Monitor Consortium
- Monitor International
- National Audubon Society
- National Parks and Conservation Association
- National Wildlife Federation
- Natural Resources Defense Council
- Ocean Alliance
- Sierra Club
- Sierra Club Legal Defense Fund
- The Wilderness Society
- World Society for Protection of Animals
- World Wildlife Fund - USA

Mr. Joe Montgomery  
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 401 M Street, SW  
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by fax: 202-564-0072 and email: montgomery.joseph@epamail.epa.gov;  
 biggs.katherine@epamail.epa.gov

**RE: COMMENTS ON EPA'S ENVIRONMENTAL IMPACT STATEMENT FOR THE FINAL RULE FOR EIA OF NONGOVERNMENTAL ACTIVITIES IN ANTARCTICA, PROMULGATED UNDER P.L. 104-227, THE ANTARCTIC SCIENCE, TOURISM, AND CONSERVATION ACT OF 1996**

Dear Mr. Montgomery and Ms. Biggs:

Per the Federal Register notice of June 18, 1998 (supplemented by your letter of July 21 allowing a two-week delay in receiving our comments) The Antarctica Project, Greenpeace, Sierra Club, and World Wildlife Fund, on behalf of the Antarctic and Southern Ocean Coalition, welcome the opportunity to provide comments on issues to be addressed in the EIS for the Final Rule for environmental impact assessment of nongovernmental activities in Antarctica. These comments supplement the comments we sent in July 1997, in response to your request for comments following the first public scoping meeting on the Final Rule. We request that you refer to both sets of comments when drafting the Final Rule.

TAP-37

The Protocol on Environmental Protection to the Antarctic Treaty is designed to ensure that the protection of the Antarctic environment is the paramount consideration when making decisions about whether and how an activity should proceed. Activities must be planned so as to limit adverse impacts on the environment and on the basis of prior assessment of possible impacts. In order to faithfully implement the Protocol, impacts identified by the EIA process should be mitigated to the greatest extent possible, and activities which threaten to impact Antarctica's environment must be modified to minimize the possibility of this occurring.

TAP-38

To ensure that the EIA process, within the U.S., for tourism and non-governmental activities faithfully implements the Protocol, the following issues must be considered in promulgation of the Final Rule:

| <b>Commentor:</b> |  |
|-------------------|--|
| TAP-37            | EPA appreciates the scoping comments provided by TAP, Greenpeace, Sierra Club, and World Wildlife Fund, on behalf of ASOC and notes these comments supplement the comments sent in July 1997. All of the information in this letter was considered by EPA in the preparation of the Draft EIS. EPA also notes that TAP/ASOC's August 14, 1998 letter is incorporated by reference into its comment letter on the Draft EIS dated April 2, 2001; see TAP-4. |
| TAP-38            | This information was considered by EPA in the preparation of the Draft EIS.  |

**RESPONSE TO COMMENTS**

**1. Article 3 Compliance:** Compliance with the Environmental Principles of Article 3 must be demonstrated in EIA (as required by this Article), and should be incorporated into the Final Rule as a requirement. The principles are expected to guide and shape environmental planning and decision-making for all activities in Antarctica, regardless of whether or not they are covered explicitly by the Annexes. The incorporation of the Article 3 principles into the review criteria will allow an understanding of the extent to which the activity will conform with Article 3.

Article 3 requires activities to be "planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment," taking full account of the cumulative impacts of the activity, whether the activity will detrimentally affect any other activity in the area, whether technology and procedures are available to provide for environmentally safe operations, whether monitoring can be put in place to provide early detection of potential impact, and whether there exists the capacity to respond promptly to accidents. The Final Rule must request that sufficient information be included in the EIA to allow an informed judgment to be made about a proposed activity. If insufficient information is included, then the precautionary principle must apply.

TAP-39

**2. Article 3 requires that activities be modified, suspended or canceled if they result or threaten to result in impacts upon the environment or associated ecosystems** inconsistent with Article 3. The Final Rule should provide the authority to prevent an activity from proceeding if unacceptable impacts are identified, or require modification of the activity. Since the Protocol and its Annexes list prohibited activities, and environmental impacts that are to be avoided, in most cases preventing an activity from proceeding should not be an issue. However, there may be occasion when a permitted activity threatens to result in unacceptable impact, and there must be flexibility to require the modification, suspension or cancellation of the activity.

TAP-40

**3. Definition of Operator:** It is our firm view that the Final Rule must apply to all operators doing business within the United States, regardless of whether or not they are incorporated within the United States. The Interim Final Rule currently applies only to operators of "nongovernmental expeditions [to and within Antarctica] organized in or proceeding from" the United States. *s 8.2(b)*. An "operator" is defined as "any person or persons [subject to the jurisdiction of the United States] organizing a nongovernmental expedition to or within Antarctica." *s 8.3*.

It has been suggested that the Final Rule should be applied only to tour operators incorporated in the United States. Such an interpretation would be directly contrary to the language of the Antarctic Science, Tourism, and Conservation Act of 1996 (ASTCA). Please refer to our comments of last year for our detailed analysis of this issue.

TAP-41

Applying the Final Rule to all organizers who do business in the U.S. is potentially the single most important way to ensure that U.S. standards are applied to all U.S. citizens. Without being able to reach non-U.S. based operators who do business in the U.S., the possibility exists that an operator will "shop around" and base themselves in a country to escape compliance with U.S. requirements. This is a concern if that country has standards which are less stringent than U.S. standards and which may not therefore fully implement the Protocol, or if that country is not a signatory to the Protocol, and so imposes no obligations upon an operator. It is our belief that

| <b>Commentor:</b> |   |
|-------------------|---|
| TAP-39            | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter and scoping comments provided in July 1997; see TAP-14 and TAP-20. |
| TAP-40            | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter and scoping comments provided in July 1997; see TAP-15 and TAP-21. |
| TAP-41            | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 2, 2001 letter and scoping comments provided in July 1997; see TAP-11 and TAP-22. |

RESPONSE TO COMMENTS

operators will not be willing to forego the lucrative U.S. market, and will be less likely to relocate solely to evade U.S. obligations.

Applying the Final Rule in this way will have an additional benefit: given the nature of the tourist industry where companies subcontract tours and boats from each other, it will remove the question of who is the organizer, and is that company required to comply with U.S. law. In the case of Antarctic tourism, the answer will always be yes, and it will be up to the tour operators to decide amongst themselves who will fulfill this obligation.

(TAP-41)

**4. Streamlining documentation -- acceptability of foreign EIAs:** We are supportive of minimizing the paperwork burden on tour operators; however, we believe it would be risky to automatically assume that satisfactory completion of EIA for another country would be sufficient to meet the EIA requirements of the Final Rule. Thus, operators should be encouraged to provide copies of EIA submissions made to other governments (with translations, if need be) and incorporate them by reference.

TAP-42

It is worth noting, however, that most other countries have the ability to require the modification, suspension or cancellation of an activity if it threatens to impact the environment. This means that completion of an EIA for another country does not necessarily imply the acceptance of that activity. Most countries also require a permit prior to the onset of any activities in the Antarctic. Therefore, completion of these documents for other countries should not prejudice consideration by EPA.

**5. Streamlining documentation -- Multi-year EIA:** As noted above, we are supportive of minimizing the paperwork burden on tour operators, and support the completion of multi-year EIAs, on the following conditions:

- (i) a supplement is filed which reports on minor changes;
- (ii) a new EIA is produced if there is a significant change in the activity (some predetermined percentage increase or decrease in c.g., passenger number, could trigger this; and
- (iii) a CEE is completed if the number of passengers in any given year is predicted to meet or exceed 25% of the 1997/98 level.

TAP-43

The Protocol Article 8 requires that the EIA procedures apply to any change in an activity, whether the change arises from an increase or decrease in the intensity of the activity, from the addition of an activity, the decommissioning of a facility, etc. Thus, if there is a significant increase or decrease in the number of tourists planning on traveling to the Antarctic, a new EIA must be prepared. Since the Protocol was signed in 1991, the number of passengers traveling to the Antarctic has increased by 50%. In spite of statements that the number of passengers is expected to remain constant, the tour operators are predicting an additional 40-50% increase in the number of tourists in less than half that time -- by the 2000/2001 Antarctic season in three years. This increase follows the 50% increase in the number of passengers since the Protocol was signed in 1991. If this increase holds true, a case could be made that a CEE would be the appropriate level of impact assessment for this period.

**5. Operator's responsibilities:** The Final Rule must be explicit in detailing an operator's

TAP-44

| Commentor: |   |
|------------|---|
| TAP-42     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's scoping comments provided in July 1997; see TAP-30. |
| TAP-43     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that TAP/ASOC supports completion of multi-year EIAs under certain conditions.  |
| TAP-44     | This information was considered by EPA in the preparation of the Draft EIS. EPA notes that certain information in this comment is similar to certain comments presented in TAP/ASOC's April 22, 2001 letter; see TAP-12.                  |

responsibility with respect to ensuring that the boat used to transport passengers to, from or within Antarctica is able to comply with the Protocol's standards. The registry of a boat does not determine whether or not it must be in compliance with the Protocol and with U.S. implementing regulations. The nationality of the operator (and hopefully whether an operator does business within the U.S.) determines whether the operator must comply with U.S. regulations. The boat is just one part of the expedition.

(TAP-44)

**Conclusion**

The Antarctic Environmental Protocol is a landmark agreement designed to provide comprehensive protection of the world's last great wilderness. Faithful implementation of the Protocol will ensure that the values of Antarctica, as envisioned by the original signers of the Antarctic Treaty, will be strengthened and preserved. Therefore, regulations designed to implement the Protocol's provisions must ensure that the spirit as well as the substance of the Protocol are realized in the conduct of all activities. We hope that you will consider ASOC's comments of July 30, 1997 along with these comments when preparing the Final Rule for EIA for nongovernmental activities. We stand ready to assist EPA and other government agencies in their preparation of the Final Rule.

prepared by  
Beth Clark, Director  
The Antarctica Project  
August 14, 1998

**RESPONSE TO COMMENTS**



Patrick Shaw <pat@marineex.com> on 03/08/2001 06:50:52 PM

To: Katherine Biggs/DC/USEPA/US@EPA, Joseph Montgomery/DC/USEPA/US@EPA  
 cc: "Denise Landau, IAATO address" <iaato@iaato.org>

Subject: Draft EIS

Dear Katie and Joe,

This is just a quick note to thank you for including us on the distribution list for the draft EIS and to congratulate you on the very fine work that this document represents.

] ME-1

We support your recommendations regarding alternative 2 and look forward to continuing to share information with you. Both Fred Rootes and Olav Locken were in Antarctica this past season which will mean more support in Ottawa for Canadian Antarctic operators in the future.

] ME-2

In the meantime, we intend to continue to follow U.S. operational guidelines and we appreciate your willingness to keep us informed of developments with EPA's final rule.

] ME-3

Yours truly,  
 Marine Expeditions

Patrick Shaw



<<Patrick Shaw.vcf>> Patrick Shaw.vc

| <b>Commentor:</b> |   |
|-------------------|---|
| ME-1              | EPA notes that Marine Expeditions is a Canadian-based Antarctic tour operator and as such, has not been subject to the Interim Final Rule. EPA intended to retain Mr. Shaw on the mailing list for the EIS and the rule-making process. However, Marine Expeditions filed for bankruptcy in 2001; its future status, and address, as an Antarctic tour operator is unknown. |
| ME-2              | EPA notes that Marine Expeditions supports Alternative 2, EPA's preferred alternative. EPA appreciates the information provided regarding Canadian Antarctic operators.   |
| ME-3              | EPA appreciates receipt of the environmental documentation that has been provided by Marine Expeditions in past years for informational purposes.   |

*Appendix 29: Changes Between Draft and  
Final EISs*

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## **Appendix 29**

### **Changes Between Draft and Final EISs**

This appendix summarizes the major changes made between the Draft and Final Environmental Impact Statements. The majority of these changes were made as a result of public comments received on the Draft EIS. The change discussed under “Summary, Chapter 4 and Chapter 5” is a result of discussions between EPA and the Office of Management and Budget. Appendix 28 includes a copy of the comment letters received on the Draft EIS and the responses to those comments. Changes such as correction of typographical errors, table and figure reference corrections, correction and addition of references, and modifications in the narrative for the purpose of clarity (except as noted below) are not included in this summary of changes to the Final EIS.

#### **Additions:**

- Abstract
- Chapter 6                      Comments on the Draft EIS
- Appendix 28                 Comments Received by EPA on the Draft EIS and EPA’s Responses to Comments
- Appendix 29                 Changes between Draft and Final EISs

#### **Summary, Chapter 4 and Chapter 5:**

The discussion of the multi-year EIA documentation provision in the Draft EIS reflects the practices of the operators under the Interim Final Rule; i.e., annual submission of advance notification which reflects the basic information requirements of Section 8.4(a). The language in the Final EIS has been modified to eliminate a requirement for annual reporting if, in fact, this did not need to be done by an operator, and clarifies that the multi-year provision also would allow operators to update basic information and to provide information on additional activities to supplement the multi-year environmental document without having to revise and re-submit the entire document.

#### **Chapter 2:**

- An explanation was added to clarify the designation of native mammals, birds, plants, and invertebrates of Antarctica and the designation of specially protected species of native mammals, birds and plants.
- Table 2.6, and the associated text, deletes reference to macaroni penguins since these do not commonly occur in the Peninsula area.
- Summary information on the breeding chronologies of selected bird populations in the Peninsula area was added (Naveen et al 2000).
- The text was corrected to indicate that helicopter excursions to the Dry Valleys are included in the itinerary of U.S. ship-based tour operators operating aboard the *Kapitan Khlebnikov*; the associated references were also corrected (Quark, Zegrahm, Aurora IEE references for 1997, 1998 and 1999).

#### **Chapter 3:**

- The text was corrected to provide a more accurate description of the ongoing research conducted by the one U.S.-based foundation, Oceanites, Inc.

- Items were added to Table 3.3 for the 1991-92 and 1992-93 austral seasons, and the 1996-97 event was modified.
- Information from IAATO's ATCM reports was used to update the Final EIS regarding commercial yacht visits, commercial tour overflights, and, for the 1999-2000 season, the ship and yacht voyages to the Peninsula and Ross Sea areas.
- The Final EIS includes reference to IAATO's current membership list and Bylaws (2001).
- The text and references were corrected to indicate that the circumnavigation cruise was conducted by Quark Expeditions, Zegrahm Expeditions and Aurora Expeditions.
- The text was modified to indicate that, per IAATO's Bylaws, U.S.-based IAATO member operators limit the maximum number of passengers ashore at any one time to 100, and maintain a minimum 1:20 ratio of staff to passengers.
- Text was added to provide examples of why some sites are highly visited for reasons in addition to the landscape and wildlife (Landau 2001 and Biggs 24 May 2001).
- Tables previously labeled 3.11 through 3.17 were corrected to read 3.10 through 3.16. For Table 3.10, the total tourists for 1994-95 and 1997-98 were corrected as was the % land-based tourists for 1997-98.
- Summary information on Zodiac landings in the Peninsula area, including their geographical distribution, was added (Naveen et al 2001).
- The text was corrected regarding the vessel voyages to the Ross Sea area and expeditions by the large vessel operators (Landau 2001).
- The text was corrected regarding Polar Star Expeditions/Karlsen Shipping (Canada) and the IAATO membership status of Ocean Frontiers (Australia); the plans of SASCO were deleted since these plans are not materializing (Landau 2001 and Biggs 2001).
- Footnotes have been added or edited as appropriate, to indicate that Marine Expeditions filed for bankruptcy in 2001, and that in 2001, ANI opened a business office in the U.S. but has not yet submitted advance notification to the Department of State for any planned Antarctic expeditions.

#### **Chapter 4:**

- Footnote 10 was modified to indicate that an IAATO-produced slide show is also used to brief passengers.

#### **Chapter 5:**

- Footnote 61 was modified to more closely reflect the statutory and regulatory language.

#### **Chapter 7:**

- Marilyn Kuray, Office of General Counsel, added under EPA offices.

**Chapter 8:**

- Names of those requesting a copy of the Draft EIS during the public comment period were added and names were deleted of those for which mailed copies of the Draft EIS or the proposed rule were returned (address unknown). The list was also modified to address other requested changes received during the public comment period.

**Chapter 10:**

- This chapter was modified to include missing references and to add new references corresponding to the text additions and revisions. The “Sommerville 1998” reference was also modified to read “ANI 1998” to aid readers in locating this reference, and references associated with deleted text were also deleted (i.e., plans for Antarctic expeditions by SASCO).

**Appendix 1:**

- This appendix was modified to reflect that Executive Order 13175 now replaces Executive Order 13084, “Consultation and Coordination with Indian Tribal Governments,” and to add information on the new Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use.”

**Appendix 7:**

- This appendix was modified to reflect IAATO’s membership as of May 2001, and to include IAATO’s current Bylaws (2001).

**Appendix 14:**

- Footnote 1 in this appendix was modified to reflect that the one scheduled voyage by the *Lyubov Orlova* (Marine Expeditions, Canada) to the Peninsula and Ross Sea areas was canceled (Landau 2001).