THERMAL DISPERSION MODELING FOR NON-CONTACT COOLING WATER DISCHARGES FROM THE DRILL SHIP THE NOBLE DISCOVERER

BURGER FIELD

LOCATED OFFSHORE CHUKCHI SEA, ALASKA

Prepared for:

Shell Alaska Venture
Anchorage, AK 99503

Prepared by:

Fluid Dynamix
3 Elm Street, Suite 2
Maynard, MA 01754
www.fluid-dynamix.com

July 16, 2014

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Report No. Discharge_009_SO7_DISCOVERER

Author(s): Alam Mohammed
Senior Numeric Modeler
Fluid Dynamix
Boston, Massachusetts

Date: Wednesday, July 16, 2014

Data Contributor(s): A. Michael Macrander
Science Team Lead
Shell Alaska Venture
Anchorage, AK 99503

Heather Ptak
Environmental Engineer
Shell Exploration & Production
Anchorage, AK 99503

Ian Lewis
Drilling Engineer
Shell Exploration & Production
Anchorage, AK 99503

Lana Davis
Environmental Engineer
Shell Exploration & Production
Anchorage, AK 99503

Pete Nelson
Schlumberger

Tony Harris
Projects & Technology-Wells
Wells Operations Team Lead- Alaska

Data Coordinator(s): Barbara Bohn
Senior Project Manager
Olgoonik / Fairweather
Anchorage, AK 99503

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EXECUTIVE SUMMARY

The primary goal of this environmental numeric modeling was to conduct an assessments of the temperature associated with the non-contact cooling water discharges from the drilling operations to be performed by the drill ship the **Noble Discoverer** in the burger field, located in the Chuckchi Sea, by SHELL Alaska venture. The drill ship Noble Discoverer will discharge approximately **107,314.29** barrels (bbls) per day (bbls/day) of the non-contact cooling water from six (**6**) different outlets located on this drill ship. This constitutes the discharge described in the Permit No.: **AKG-28-8100** as **Discharge 009** (non-contact cooling water).

Numeric modeling for the thermal dispersion were conducted using the **US EPA Visual Plumes Model** to characterize the temperature associated with the non-contact cooling water discharges (**Discharge 009)** both for the mean and maximum currents speed from the drilling operations to be conducted in the burger field by the drill rig Noble Discoverer. This provides a sensitivity analysis of the numeric model results to the model input parameter: currents speed. The numeric simulations were conducted for six (**6**) point discharge sources from the drill rig Noble Discoverer. The six point discharge sources are identified as: engine room, motor control center (MCC) room, generator room (diesel generator I), generator room (diesel generator II), silicon controlled rectifier (SCR) room, and main deck. The volumes of the non-contact cooling water discharges from the engine room, MCC room, diesel generator I (generator room), diesel generator II (generator room), SCR room, and main deck are approximately: **34,285.71**, **17,142.86**, **17,485.71**, **17,485.71**, **20,571.43**, and **342.86** bbls/day, respectively. The total non-contact cooling water discharges (**Discharge 009)** from these six sources is **107,314.29** bbls/day.

The thermal dispersion simulations were performed using the effluent and ambient data for the planned drilling period. The planned drilling period is within the open water season of July thru October. The direction of the discharge was assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**).

The potential impact assessments of the excess temperature of **0.05** degrees Celsius (°C) on the ambient water quality based on the US EPA Visual Plumes thermal dispersion numeric simulations both for the mean and maximum currents speed indicate that the discharge plume sinks deeper into the ambient and also wider at mean currents. It travels farther at the maximum currents. The higher ambient flow velocity induces enhanced mixing of the plume at the maximum currents. Hence, the plume cools to within **0.05** °C of the ambient sooner after the cessation of the discharge at the maximum currents speed than at the mean currents speed. The areas affected by the excess temperature of **0.05** ^{o}C at the maximum currents speed are generally less than those at the mean currents speed. Therefore, mean currents speed represents the worst case scenario.

The Visual Plumes model estimates: maximum plume depth is **5.0** meters (m); maximum plume width is **54.0** m; maximum distance from the source is **218.0** m; maximum duration for the plume to cool within **0.05** °C of the ambient after the cessation of the discharge is **56.0** minutes; and total area affected is **1.34** hectares (ha). These estimates indicate **low** impacts on the ambient water quality from the temperature associated with the Discharge **009** (non-contact cooling water) of approximately **107**,**314**.**29** bbls/day from the six (**6**) different outlets located on the drill ship Noble Discoverer.

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Table of Acronyms

A/C	Air conditioner
bbls	Barrels
bbls/day	Barrels per day
bbls/hour	Barrels per hour
°C	Degrees Celsius
gal	Gallons
gpm	Gallons per minute
ha	Hectares
HVAC	Heating, ventilation, and air conditioning
kg/m^3	Kilograms per cubic meter
m	Meters
m^2	Square meters
m/s	Meters per second
MCC	Motor control center
psu	Practical salinity scale unit
SCR	Silicon controlled rectifier
σ_T	Density of seawater

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Section 1: Introduction

This technical report describes the assessments of the temperature associated with the non-contact cooling water discharges from the drilling operations to be performed by the drill ship the Noble Discoverer in the burger field, located in the Chuckchi Sea, by SHELL Alaska Venture. The drill ship Noble Discoverer will discharge approximately **107,314.29** barrels (bbls) per day (bbls/day) of the non-contact cooling water from six (**6**) different outlets located on this drill ship. This constitutes the discharge described in Permit No.: **AKG-28-8100** as **Discharge 009** (non-contact cooling water).

Numeric simulations for the thermal dispersion were conducted using the US EPA Visual Plumes Model to characterize the temperature associated with the non-contact cooling water discharges (**Discharge 009)** both at the mean and maximum currents speeds during the drilling operations to be conducted in the burger field by the drill rig Noble Discoverer. This provides a sensitivity analysis of the numeric model results to the model input parameter: currents speed. The location of the burger field in the Chukchi Sea is presented in **Figure 1**. The numeric simulations were conducted for six (**6**) point discharge sources from the drill rig Noble Discoverer as listed in **Table 1**. The six point discharge sources are identified as: engine room, motor control center (MCC) room, generator room (diesel generator I), generator room (diesel generator II), silicon controlled rectifier (SCR) room, and main deck.

Figure 1-1: Location of the Burger Field

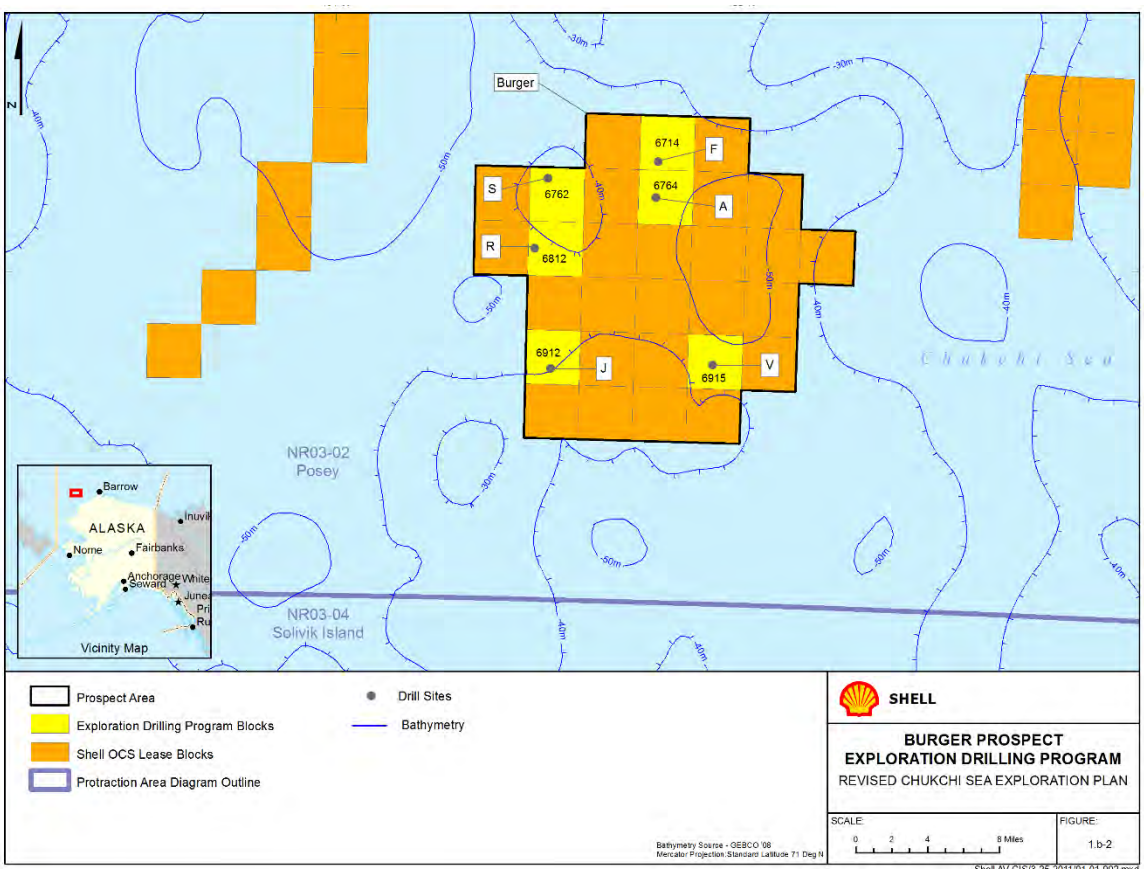

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Table 1: Non-Contact Cooling Water Discharges (009) from the Drill Rig Noble Discoverer

Discharge Type	Discharge Number	Discharge Source		Notes	Volume Discharged		Discharge Duration, hours/day	Internal Diameter (inches)	Effluent Characteristics	
		Description	Location		gpm	bbls/day			Temp (°C)	Salinity (psu)
Non-Contact Cooling Water	009	A/C Cooling Water HVAC A/C Cooling Water	Engine Room (Starboard)	Shared	1,000	34,285.71	24	6.00	5.1	30
		Hydraulic Unit, Compressor Chiller & Rig Brake Cooling Water	MCC Room (Port)		500	17,142.86	24	4.00	4.2	30
		Diesel Generators I Cooling Water	Generator Room (Forward M/C Space (Port))		510	17,485.71	24	8.00	16.1	30
		Diesel Generators II Cooling Water Diesel Generators II Re-circulation Cooling Water	Generator Room (Forward M/C Space (Starboard))	Shared	510	17,485.71	24	8.00	16.1	30
		SCR Room A/C Cooling Water	SCR Room (Starboard /Mid Ship)		600	20,571.43	24	4.00	4.2	30
		Halliburton Cement Unit Cooling Water	Main Deck (Port)	Intermittent flows	10	342.86	18 - 24	4.00	12.0	30
					Total	107,314.29	bbls/day			

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1.1 The US EPA Visual Plumes Model

The **Visual Plumes** is a mixing zone model developed by the US EPA's Ecosystems Research Division, National Exposure Research Laboratory (Frick **2003**). The **PDS** module of the Visual Plumes model was used for the numeric simulations of the thermal dispersion for all point discharges listed in Table **1**. The PDS is a three-dimensional plume model that applies to the point discharges to the water bodies. The PDS module provides simulations for the temperature and dilution over a wide range of discharge conditions. It is an Eulerian integral flux model for the surface discharge into a moving ambient body of water that includes the effects of the surface heat transfer. The initial discharge momentum causes the plume to penetrate the ambient at the same time that the current bends the plume in the direction of flow (Frick **2003**).

1.2 Effluent Data

The estimated volumes of the non-contact cooling water discharges from the engine room, MCC room, diesel generator I (generator room), diesel generator II (generator room), SCR room, and main deck are: **34,285.71**, **17,142.86**, **17,485.71**, **17,485.71**, **20,571.43**, and **342.86** bbls/day, respectively as listed in Table **1**. The durations of the discharge are **24** hours per day. The temperatures of the effluents to be discharged from the different discharge locations vary from a low of **4.2** degrees Celsius (°C) to a high of **16.1** °C as presented in Table **1**. The salinities for all the effluents are **30** Practical Salinity Scale Unit (psu). The discharge pipe internal diameters vary from **4.0** inches to **8.0** inches. All effluent discharges occur at or the near the sea surface for the modeling purpose.

1.3 Ambient Data

The ambient water depth at the prospect well Burger J within the burger field location in the Chukchi Sea is **43.9** meters (m). The mean and maximum currents speed are approximately **0.07** and **0.25** meter per second (m/sec), respectively with a prevailing direction of flow to the east for the planned drilling period. The temperature of the ambient water varies from **4** °C at the surface stratum to - **0.5** °C at the bottom stratum, with a significant stratification occurring at **15** m depth. The salinity of the ambient water varies from **30** psu at the surface stratum to **32** psu at the bottom stratum, with a significant stratification occurring at **15** m depth.

Table 2: Ambient Data for the Burger Field, Chukchi Sea

Water Depth	Temperature	Salinity	Mean Currents		Maximum Currents	
m	°C	Psu	Speed (m/s)	Direction	Speed (m/s)	Direction
0	4.0	30	0.07	to the East	0.25	to the East
43.9-45.7	-0.5	32	0.07	to the East	0.25	to the East

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Section 2: Thermal Dispersion Modeling

Thermal dispersion numeric simulations were performed for the six point discharge sources listed below. Each discharge sources were modeled using the **US EPA Visual Plumes** model as described in **Section 1**. The modeling results for each source are described in details in the followings **sections 3-8**. **Section 9** presents the summary and conclusion for all the point discharge sources listed below. **Section 10** lists the references cited in this report. Appendices **A, B, C, D, E, F,** and **G** describe: model input data, model outputs for engine room, model outputs for MCC room, model outputs for diesel generators I, model outputs for diesel generators II, model outputs for SCR room, and model outputs for main deck, respectively.

The six (**6**) point non-contact cooling water discharge (**Discharge 009**) sources are:

1. A/C and HVAC A/C cooling water from engine room
2. Hydraulic unit, compressor chiller, and rig brake cooling water from MCC room
3. Diesel generators I cooling water from the generator room
4. Diesel generators II cooling water from the generator room
5. SCR room A/C cooling water from SCR room
6. Halliburton cement unit cooling water from main deck

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Section 3: Thermal Dispersion Modeling – Engine Room

The total volume of the non-contact cooling water discharges from the ***A/C and HVAC A/C,*** located in the engine room is **34,285.71** bbls/day. The duration of the discharge is **24** hours/day. The temperature and salinity of the effluent are **5.1** °C and **30** psu, respectively. The discharge occurs from a **6.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

3.1 Non-contact Cooling Water from Engine Room at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay currents are presented in **Figures 3-1, 3-2, 3-3, 3-4,** and **3-5** respectively. **Figures 3-6** and **3-7** present the duration of the excess temperature and the area affected.

Figure 3-1: Ambient and Plume Properties – Engine Room Cooling Water at Mean Currents

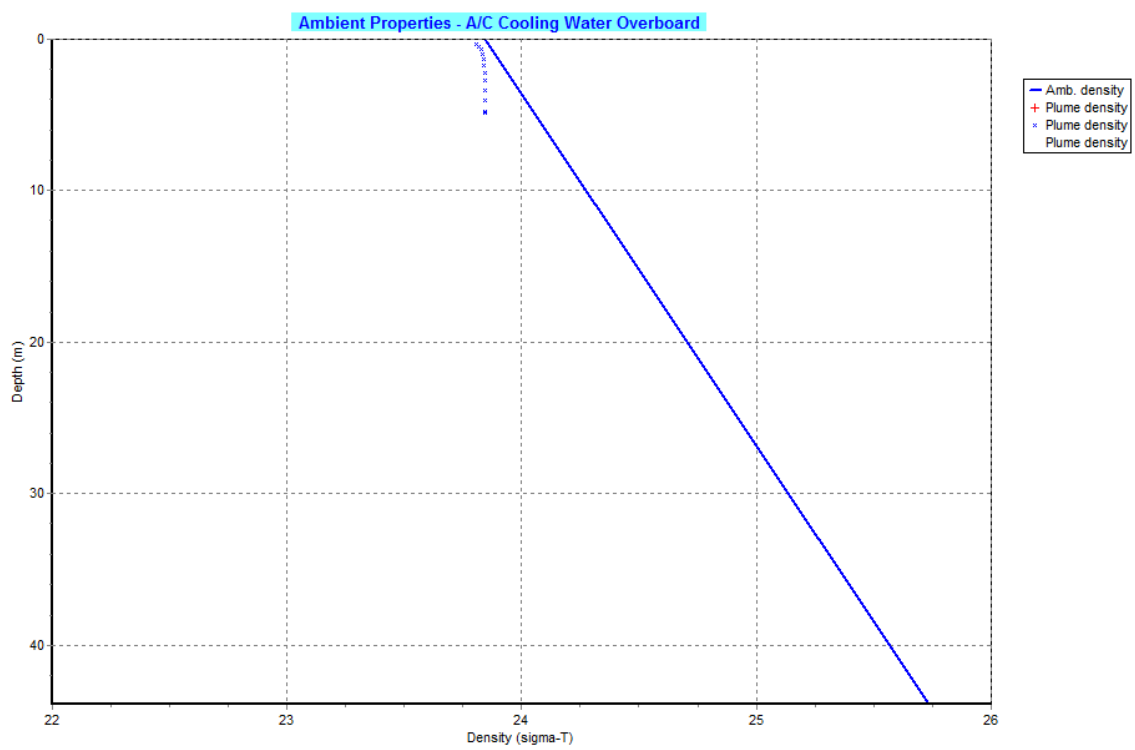

Figure 3-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.68** kg/m^3) plume to sink into the ambient to a depth of approximately **5.0** m. **Figure 3-2** presents the width of the plume. The maximum width of the plume is approximately **40** m at a distance of approximately **180** m from the source. The plume trajectory presented in **Figure 3-3** also

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shows that the plume reaches a depth of **5.0** m at a distance of approximately **180** m from the source and attains an average dilution factor of **400** as seen in **Figure 3-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 3-5** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **15** m from the source. It takes approximately **1** minute after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 3-6**. The area affected by the excess temperature of **0.05** °C or higher is limited to **50** square meters approximately as seen in **Figure 3-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **50** square meters only.

Figure 3-2: Plume Path - Engine Room Cooling Water at Mean Currents

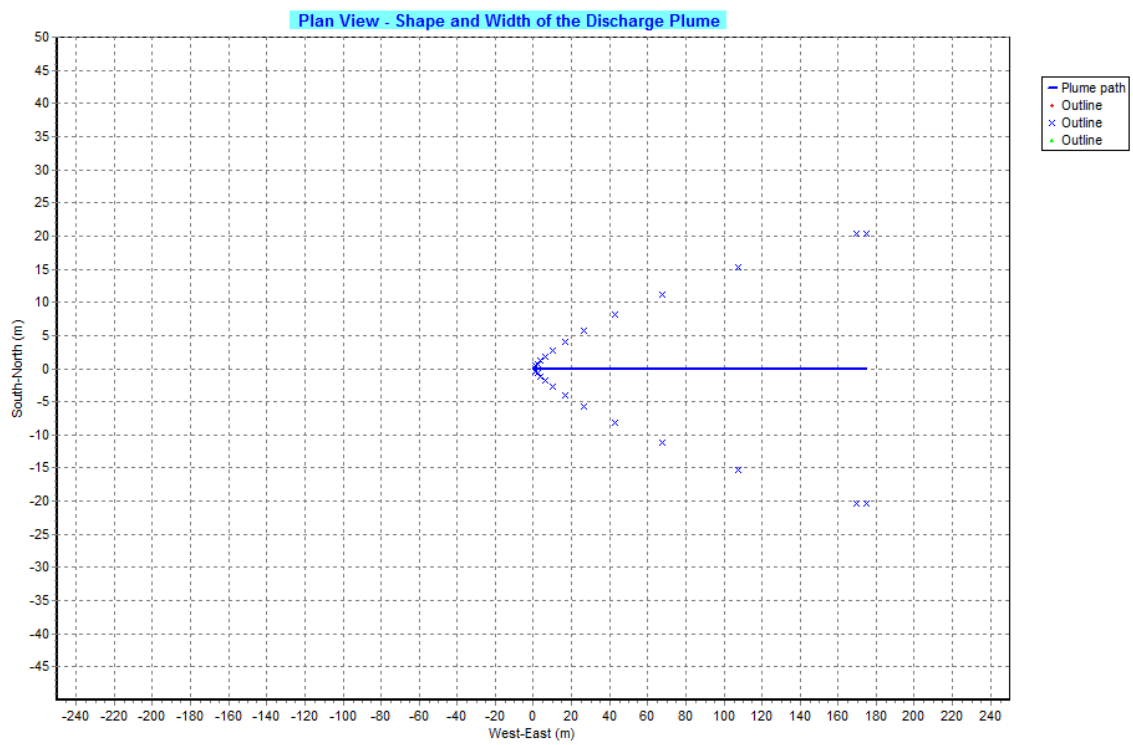

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Figure 3-3: Plume Trajectory - Engine Room Cooling Water at Mean Currents

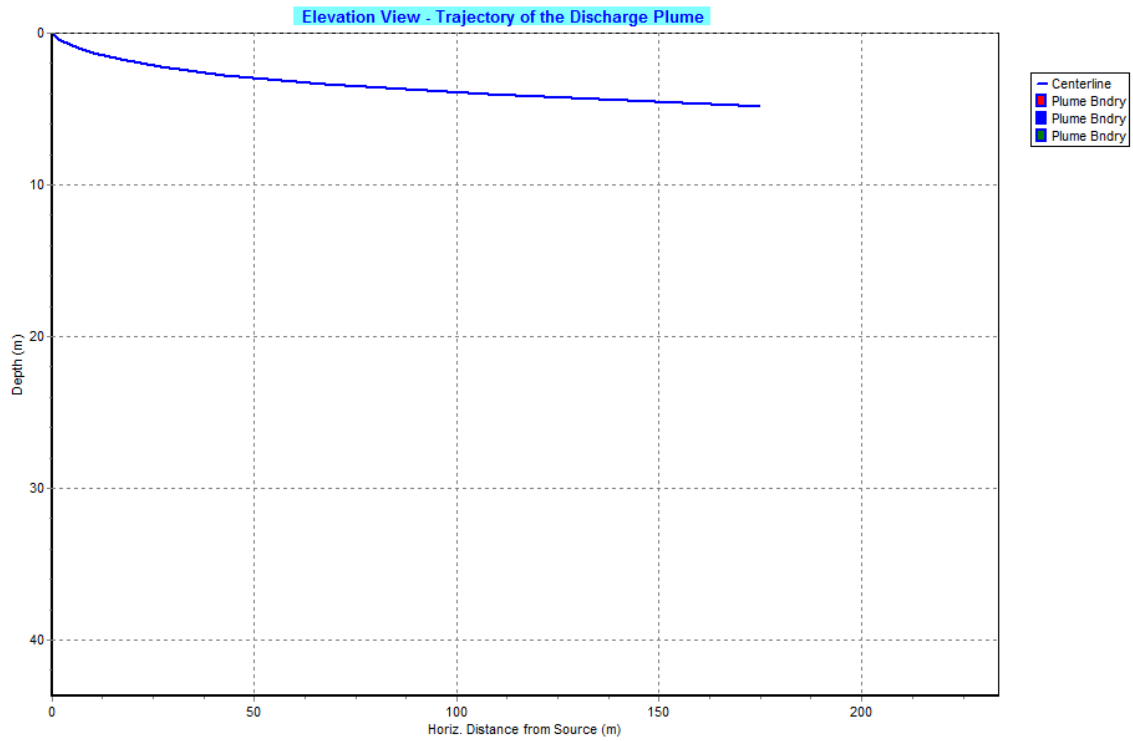

Figure 3-4: Plume Dilution - Engine Room Cooling Water at Mean Currents

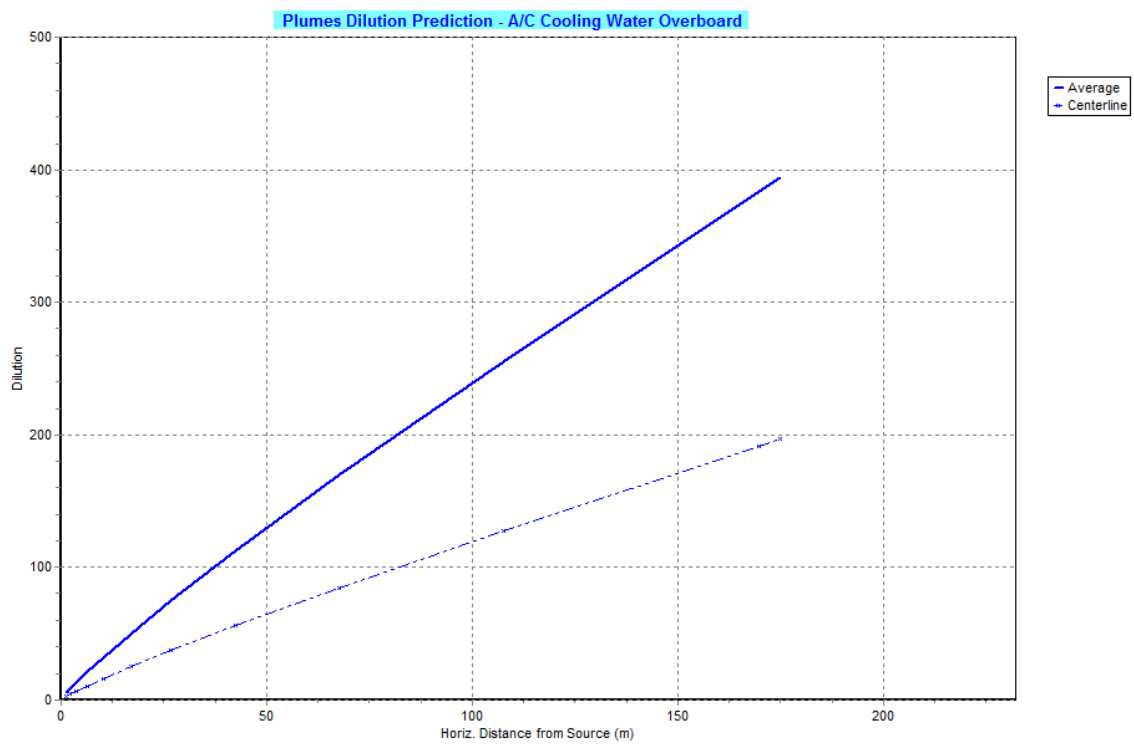

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Figure 3-5: Plume Temperature Decay - Engine Room Cooling Water at Mean Currents

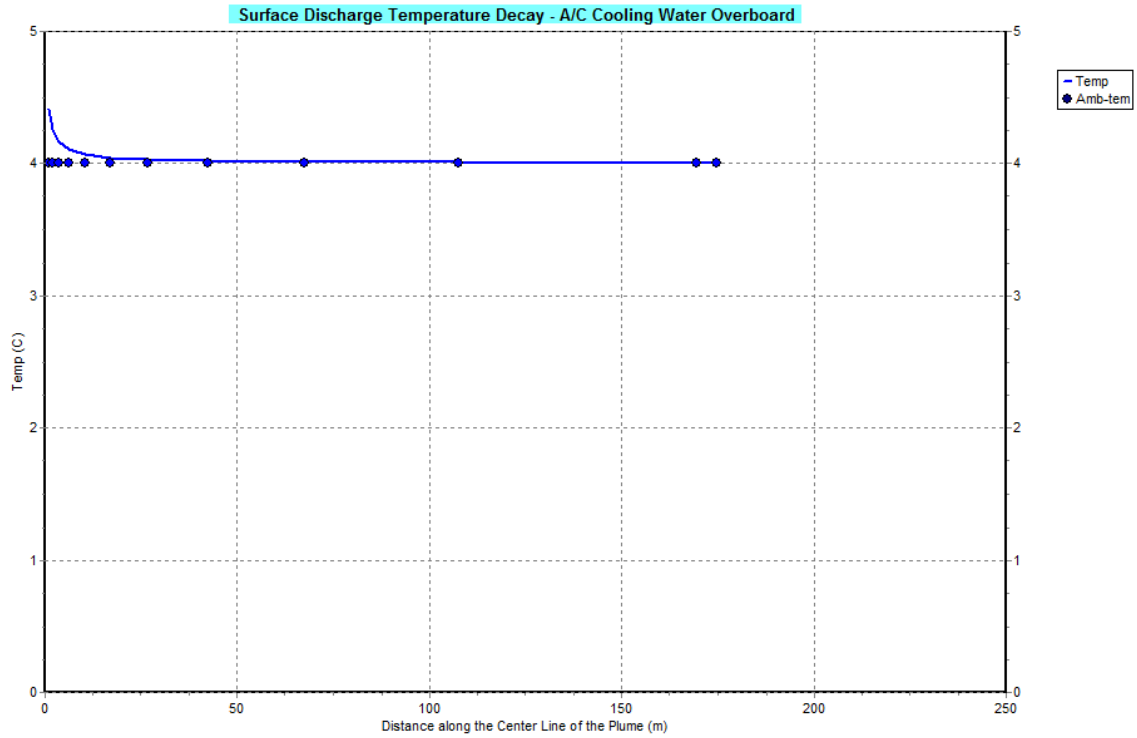

Figure 3-6: Duration of Excess Temperature - Engine Room Cooling Water at Mean Currents

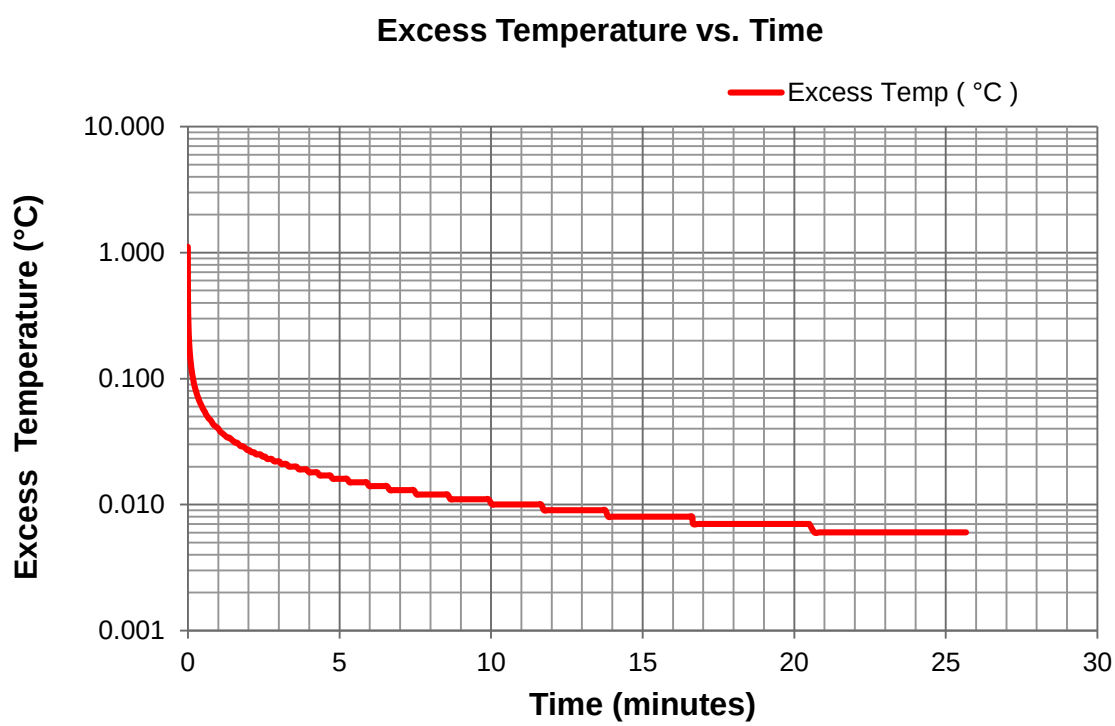

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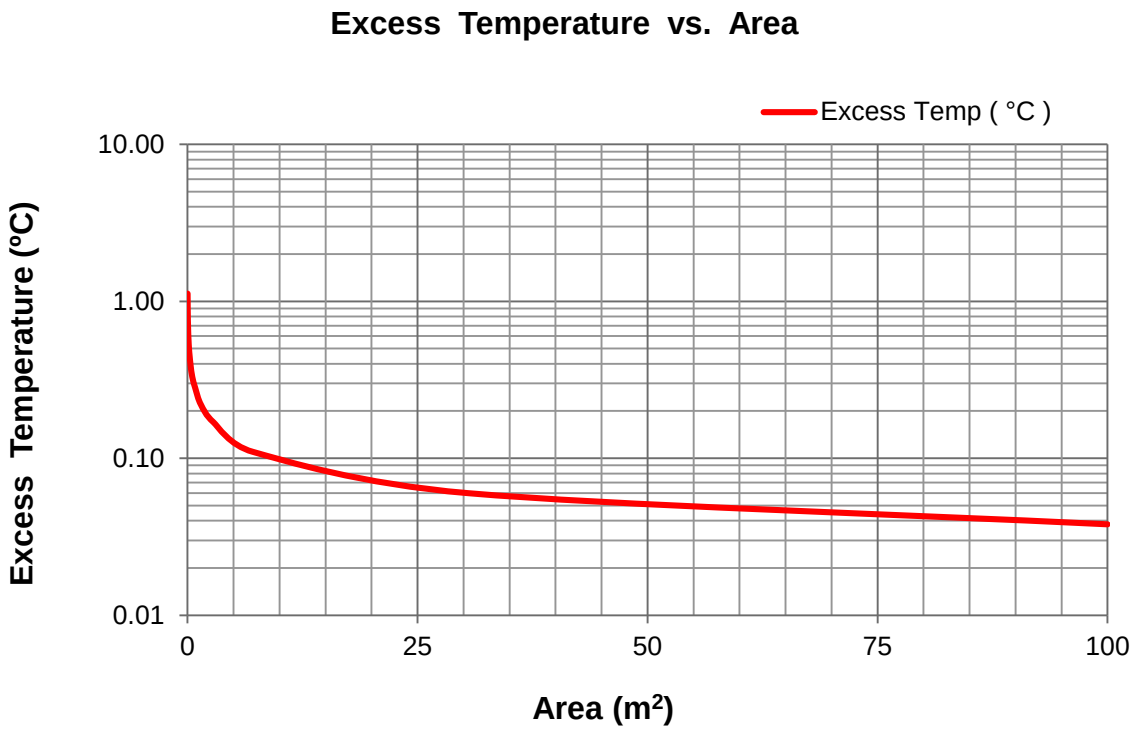
Figure 3-7: Area Affected by Excess Temperature - Engine Room Cooling Water at Mean Currents



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3.2 Non-contact Cooling Water from Engine Room at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 3-8, 3-9, 3-10, 3-11,** and **3-12** respectively. **Figures 3-13** and **3-14** present the duration of the excess temperature and the area affected.

Figure 3-8: Ambient and Plume Properties - Engine Room Cooling Water at Maximum Currents

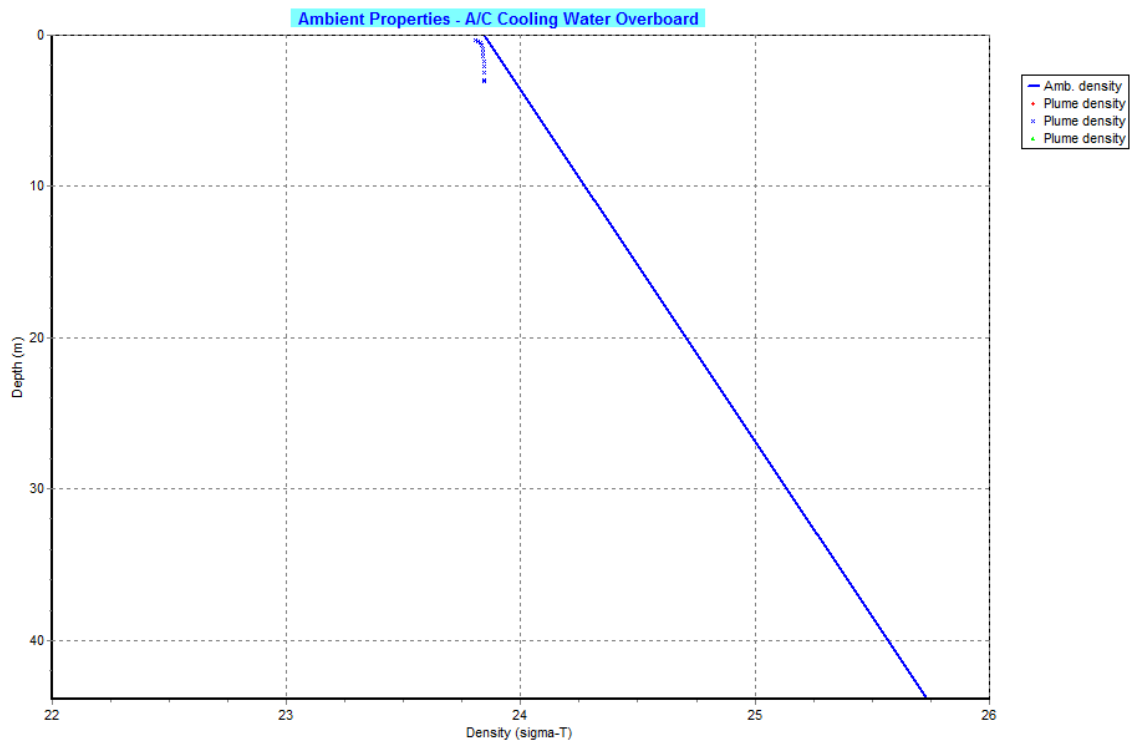

Figure 3-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.68** kg/m^3) plume to sink into the ambient to a depth of approximately **3.0** m. **Figure 3-9** presents the width of the plume. The maximum width of the plume is approximately **20** m at a distance of approximately **200** m from the source. The plume trajectory presented in **Figure 3-10** also shows that the plume reaches a depth of **3.0** m at a distance of approximately **200** m from the source and attains an average dilution factor of **400** as seen in **Figure 3-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 3-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **17** m from the source. It takes approximately **0.5** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 3-13**. The area affected by the excess temperature of **0.05** °C or higher is limited to **30** square meters approximately as seen in **Figure 3-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **30** square meters only.

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Figure 3-9: Plume Path - Engine Room Cooling Water at Maximum Currents

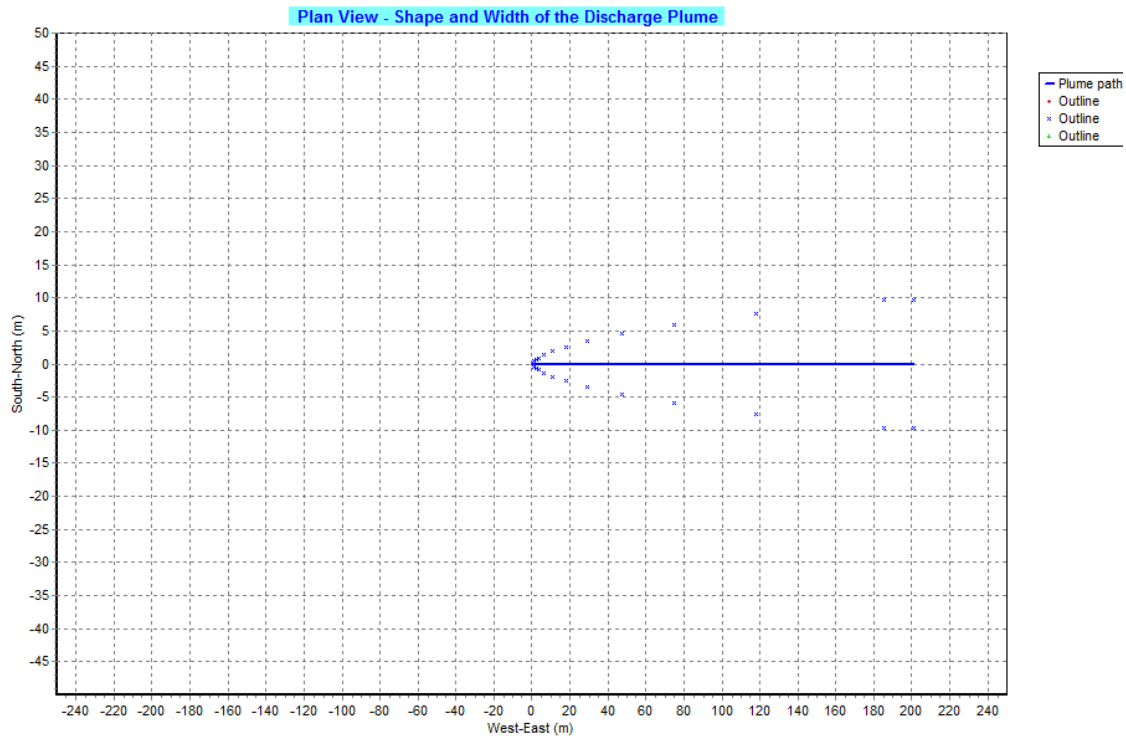

Figure 3-10: Plume Trajectory - Engine Room Cooling Water at Maximum Currents

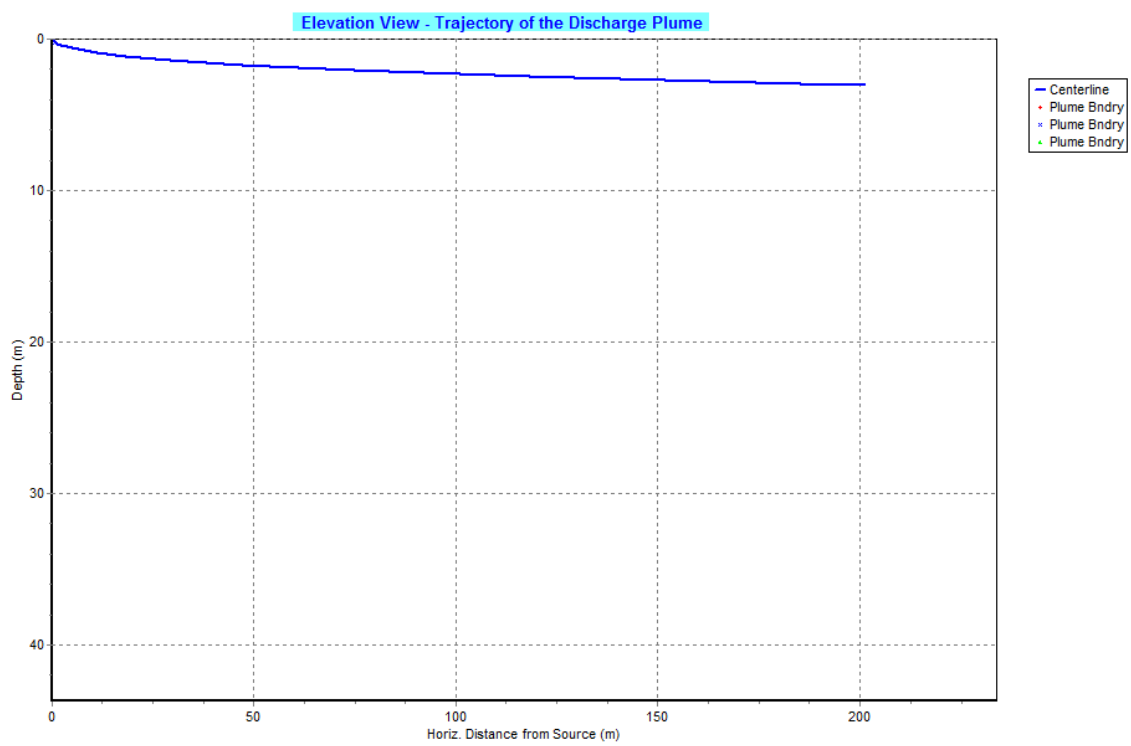

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Figure 3-11: Plume Dilution - Engine Room Cooling Water at Maximum Currents

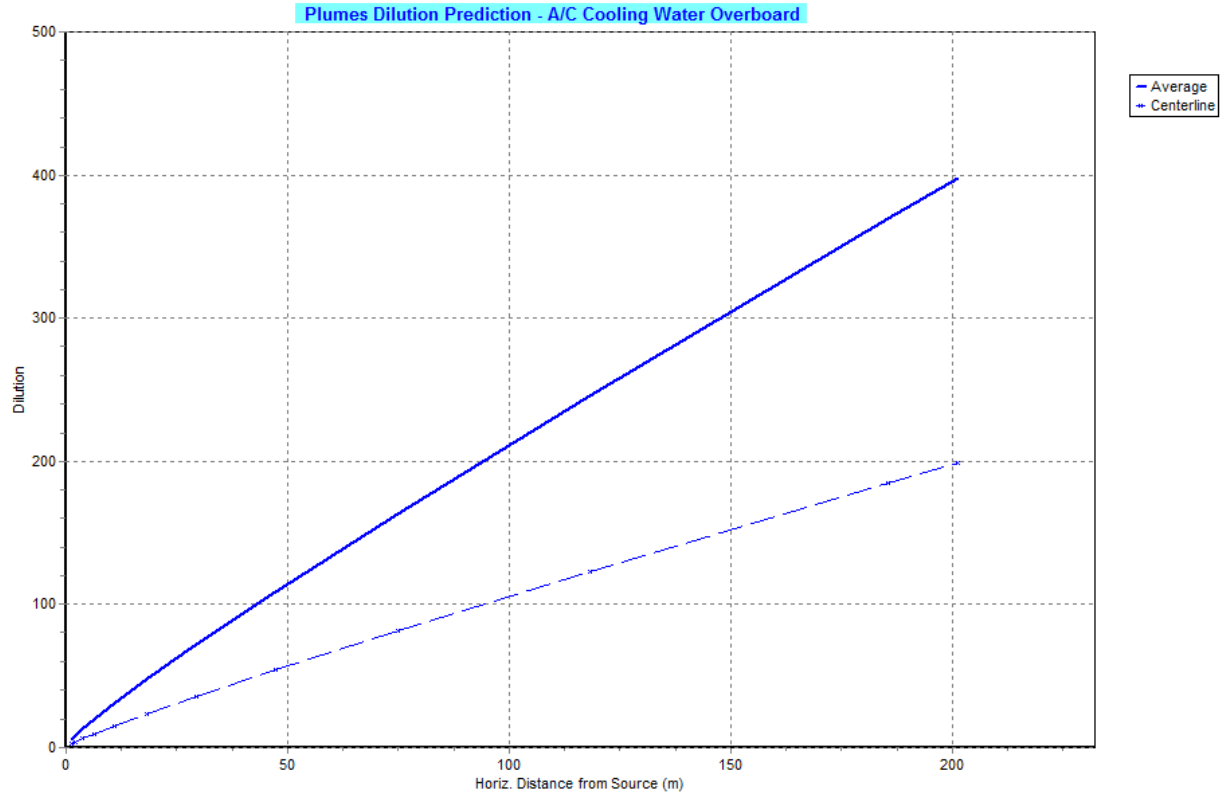

Figure 3-12: Plume Temperature Decay - Engine Room Cooling Water at Maximum Currents

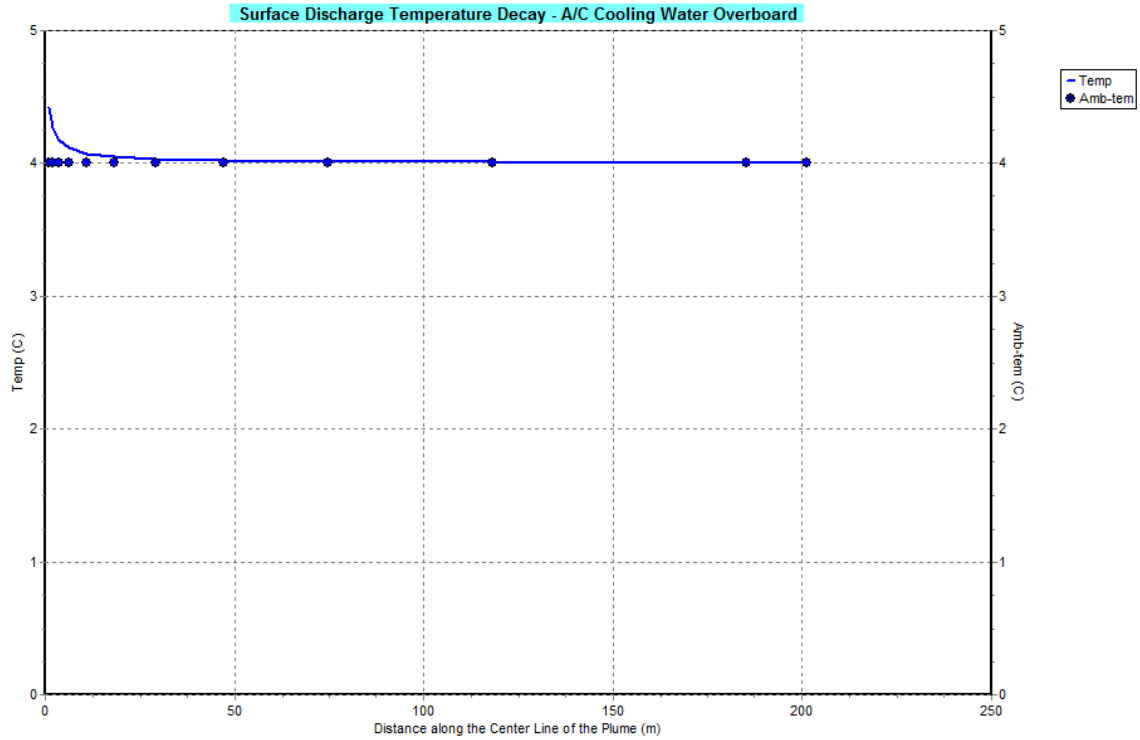

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Figure 3-13: Duration of Excess Temperature - Engine Room Cooling Water at Maximum Currents

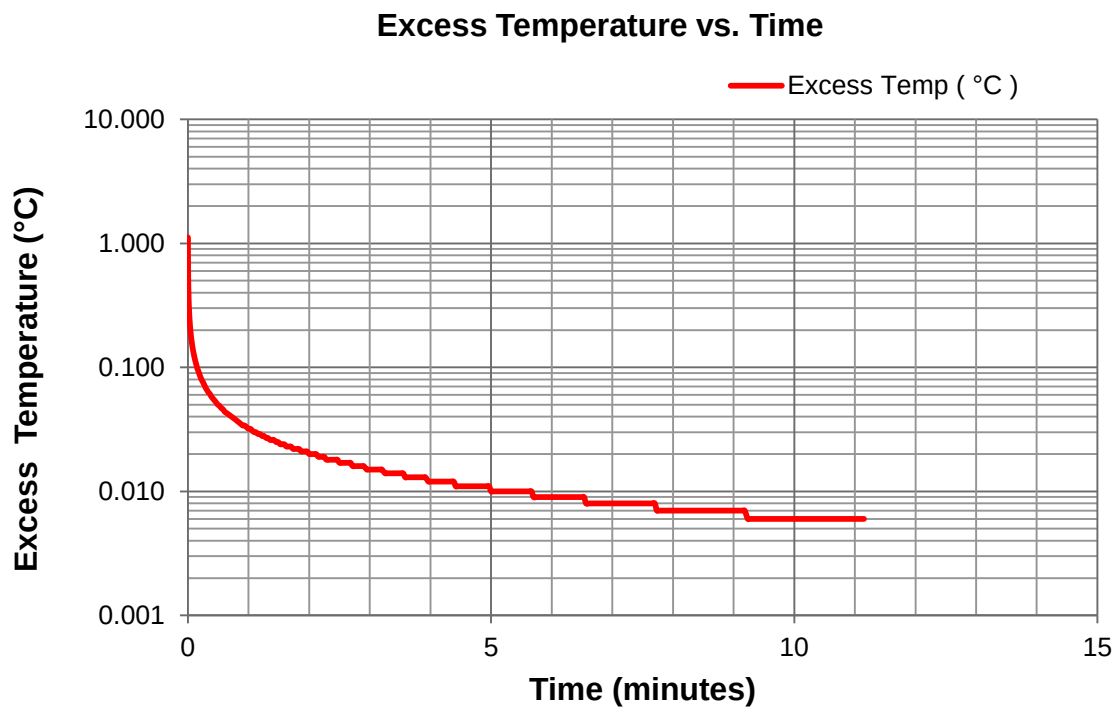
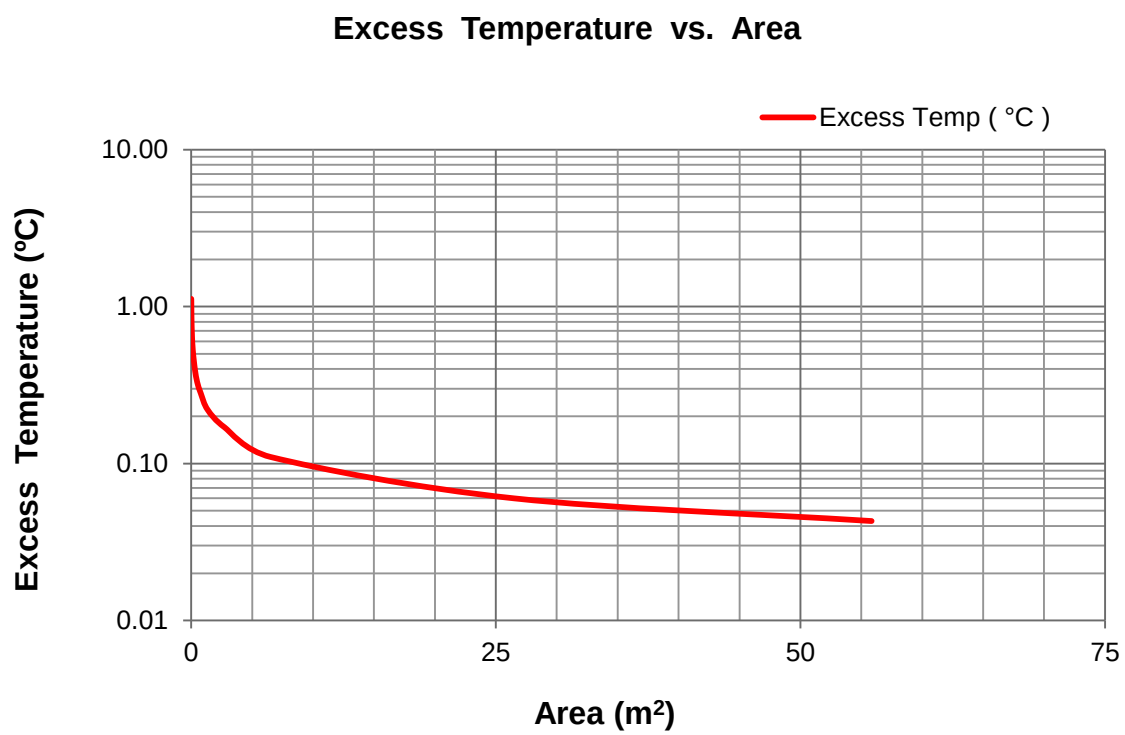


Figure 3-14: Area Affected by Excess Temperature - Engine Room Cooling Water at Maximum Currents



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Section 4: Thermal Dispersion Modeling – MCC Room

The volume of the non-contact cooling water discharge from the ***hydraulic unit, compressor chiller & rig brake,*** located in the motor control center (**MCC**) room is **17,142.86** bbls/day. The duration of the discharge is **24** hours/day. The temperature and salinity of the effluent are **4.2** °C and **30** psu, respectively. The discharge occurs from a **4.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

4.1 Non-contact Cooling Water from MCC Room at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 4-1, 4-2, 4-3, 4-4,** and **4-5** respectively. **Figures 4-6** and **4-7** present the duration of the excess temperature and the area affected.

Figure 4-1: Ambient and Plume Properties - MCC Room Cooling Water at Mean Currents

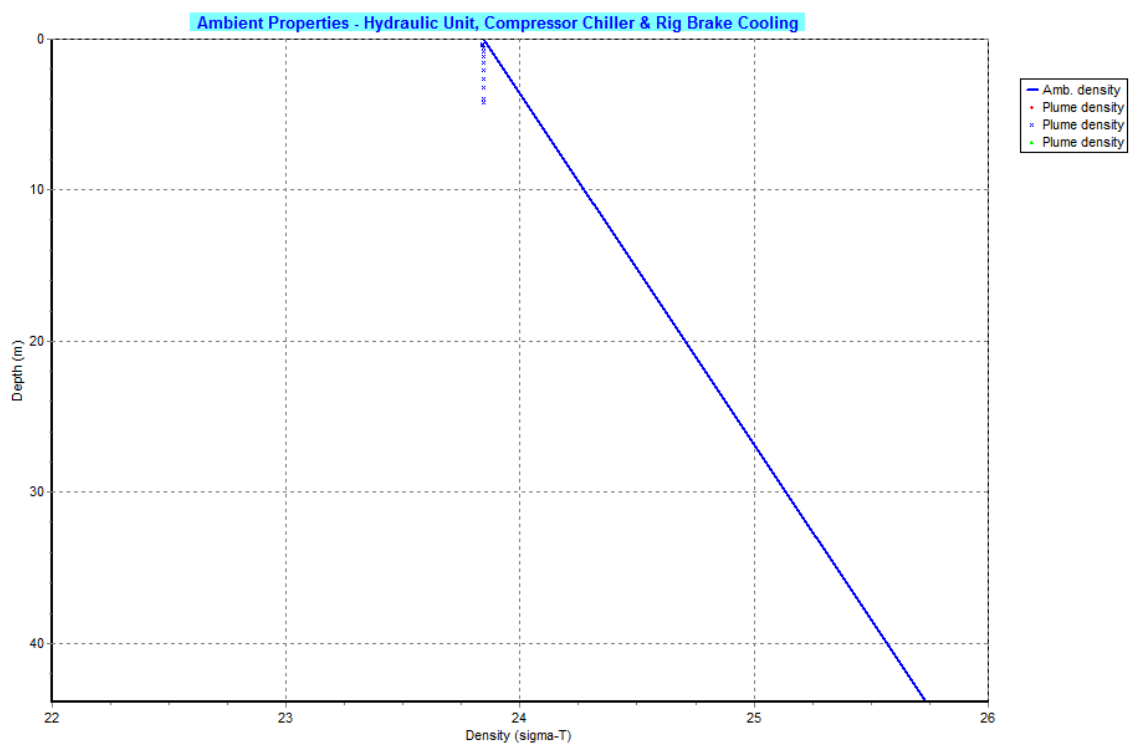

Figure 4-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.78** kg/m^3) plume to sink into the ambient to a depth of approximately **4.2** m. **Figure 4-2** presents the width of the plume. The maximum width of the plume is approximately **24** m at a distance of approximately **114** m from the source. The plume trajectory presented in **Figure 4-3** also

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shows that the plume reaches a depth of approximately **4**.**2** m at a distance of approximately **114** m from the source and attains an average dilution factor of **400** approximately as seen in **Figure 4-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 4-5** shows that it has cooled to within **0**.**05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **2 m** from the source. It takes approximately less than **1** minute after the cessation of the discharge for the plume to cool to within **0**.**05** °C of the ambient as presented in **Figure 4-6**. The area affected by the excess temperature of **0.05** °C or higher is limited to **0.5** square meters approximately as seen in **Figure 4-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to a total area of **0.5** square meters only.

Figure 4-2: Plume Path - MCC Room Cooling Water at Mean Currents

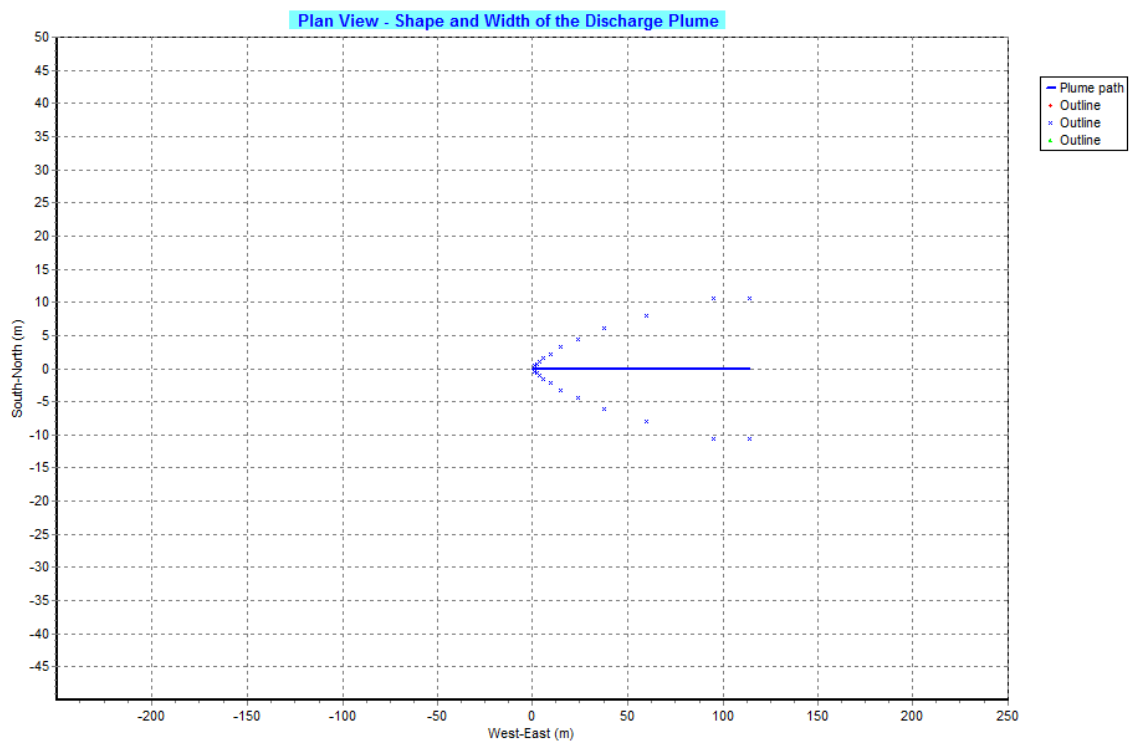

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Figure 4-3: Plume Trajectory - MCC Room Cooling Water at Mean Currents

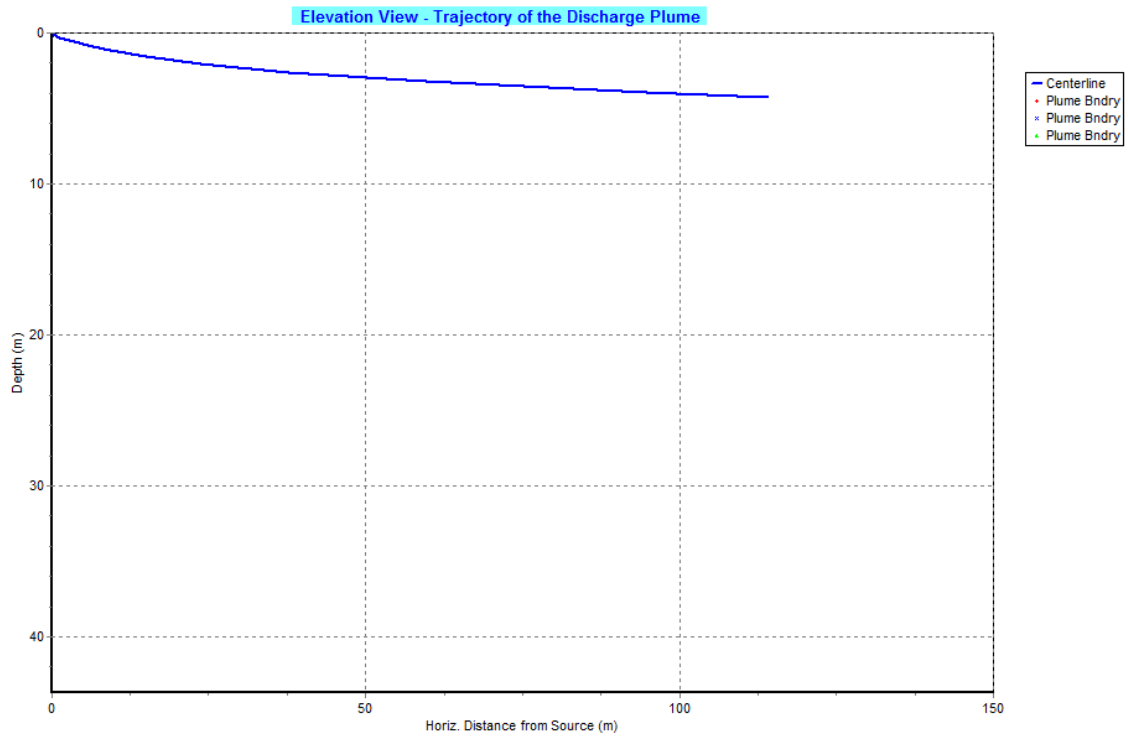

Figure 4-4: Plume Dilution - MCC Room Cooling Water at Mean Currents

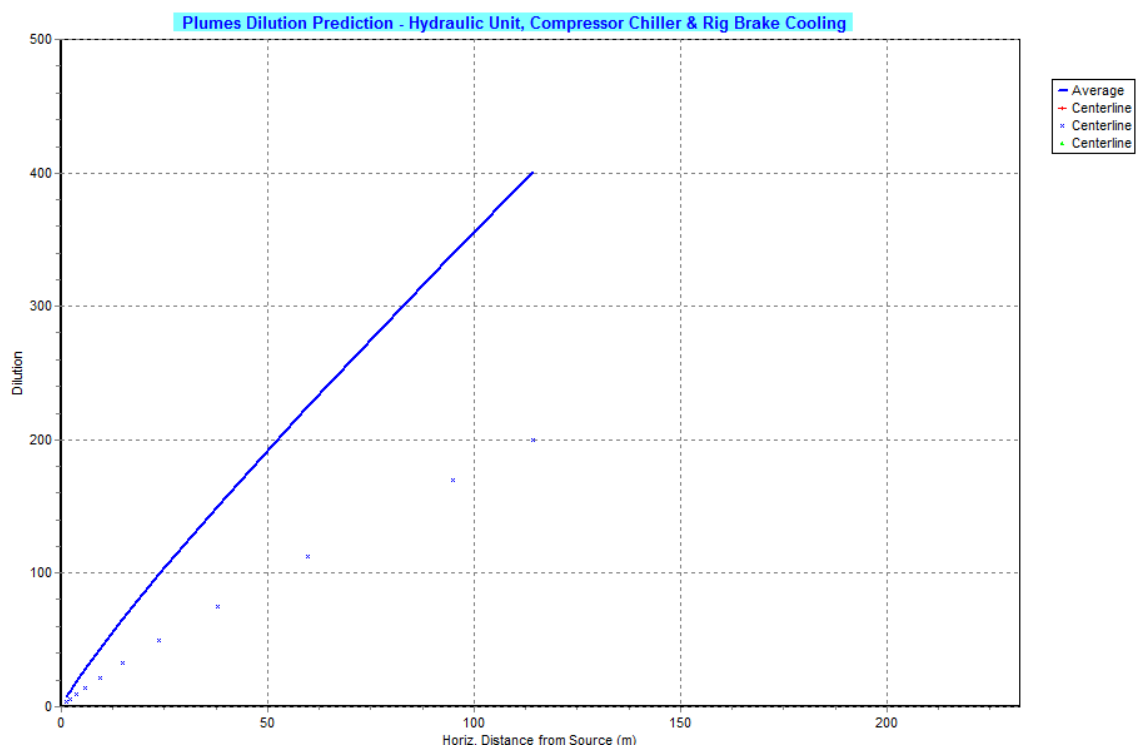

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Figure 4-5: Plume Temperature Decay - MCC Room Cooling Water at Mean Currents

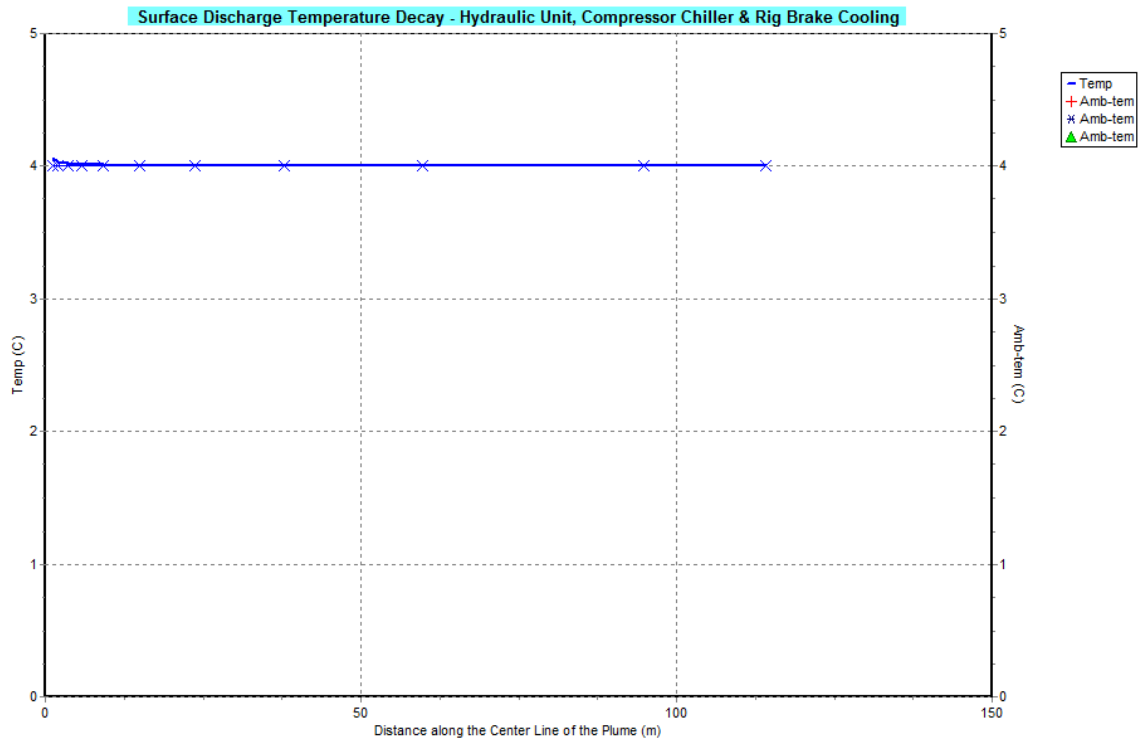

Figure 4-6: Duration of Excess Temperature - MCC Room Cooling Water at Mean Currents

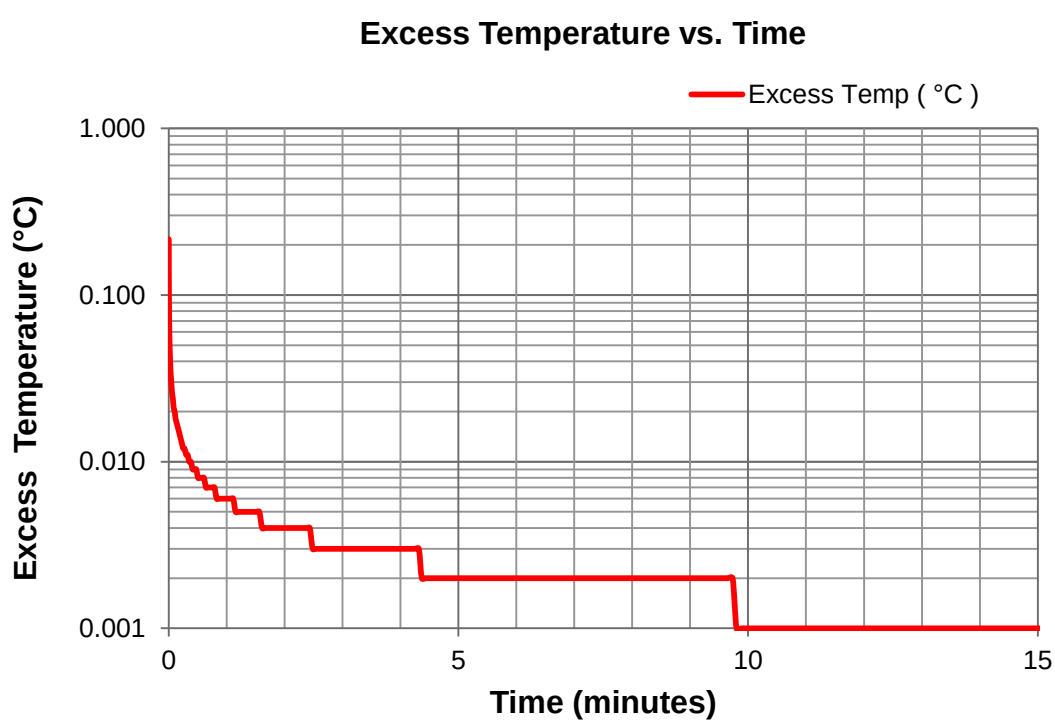

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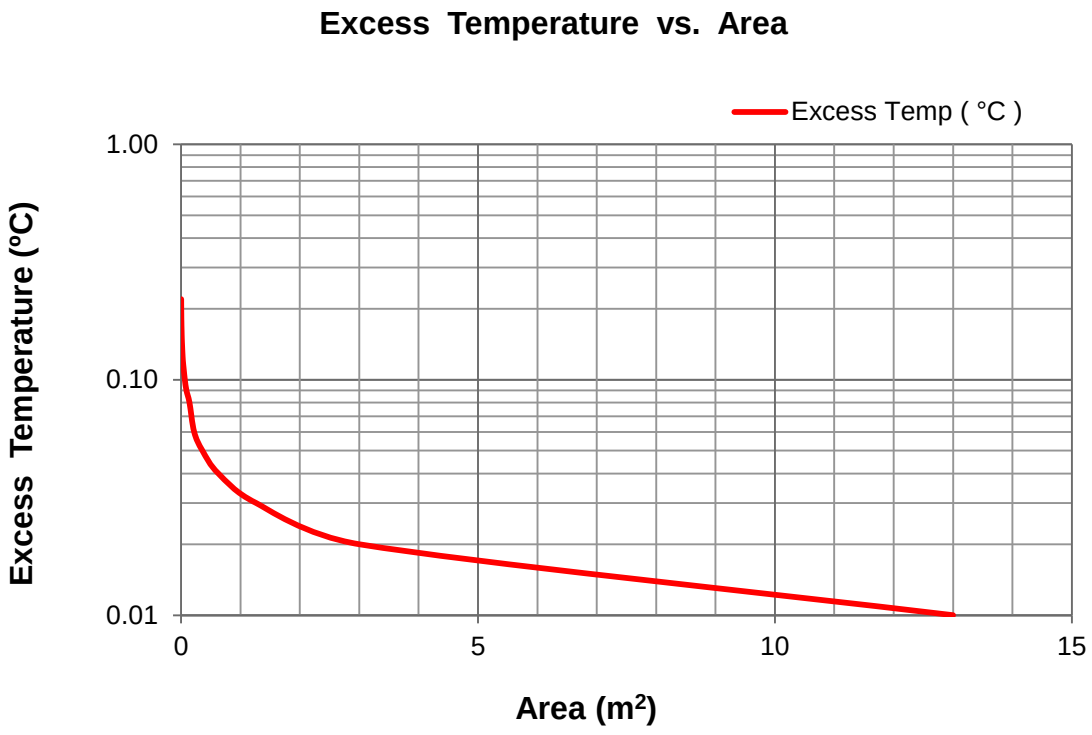
Figure 4-7: Area Affected by Excess Temperature - MCC Room Cooling Water at Mean Currents



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4.2 Non-contact Cooling Water from MCC Room at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 4-8, 4-9, 4-10, 4-11,** and **4-12** respectively. **Figures 4-13** and **4-14** present the duration of the excess temperature and the area affected.

Figure 4-8: Ambient and Plume Properties - MCC Room Cooling Water at Maximum Currents

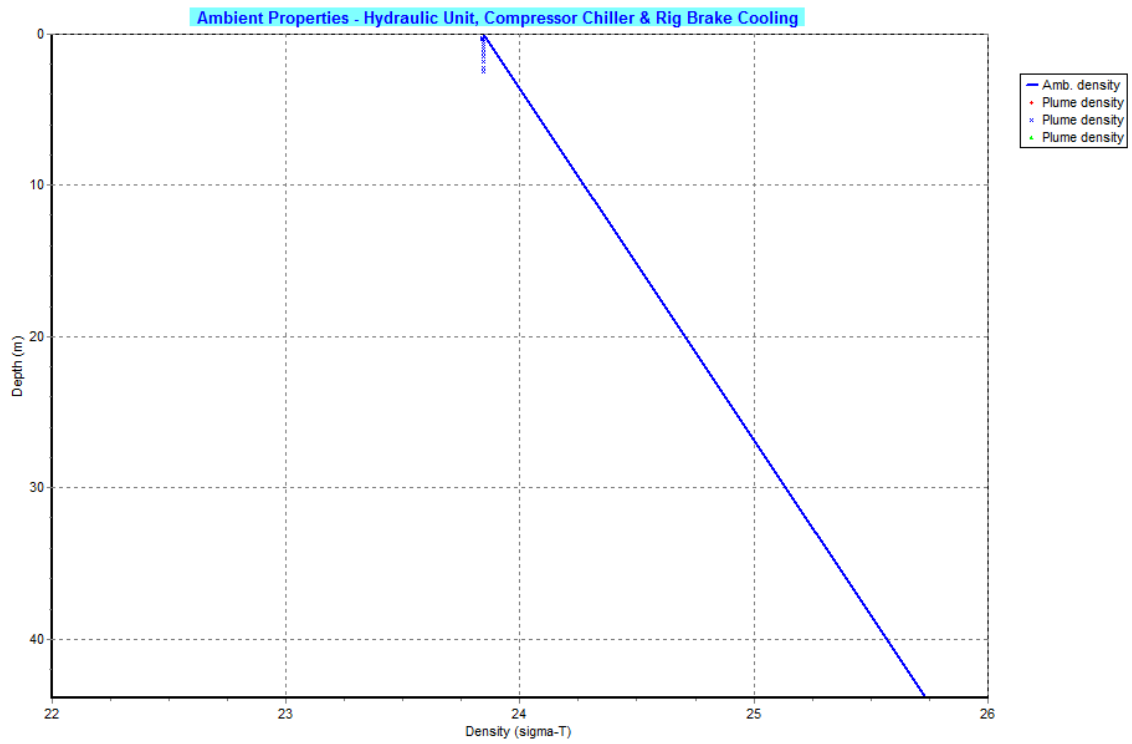

Figure 4-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.78** kg/m^3) plume to sink into the ambient to a depth of approximately **2.5** m. **Figure 4-9** presents the width of the plume. The maximum width of the plume is approximately **12.5** m at a distance of approximately **133** m from the source. The plume trajectory presented in **Figure 4-10** also shows that the plume reaches a depth of approximately **2.5** m at a distance of approximately **133** m from the source and attains an average dilution factor of **400** approximately as seen in **Figure 4-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 4-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **2 m** from the source. It takes approximately less than **1** minute after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 4-13**. The area affected by the excess temperature of **0.05** °C or higher is less than **0.5** square meters approximately as seen in **Figure 4-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to a total area of **0.5** square meters only.

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Figure 4-9: Plume Path - MCC Room Cooling Water at Maximum Currents

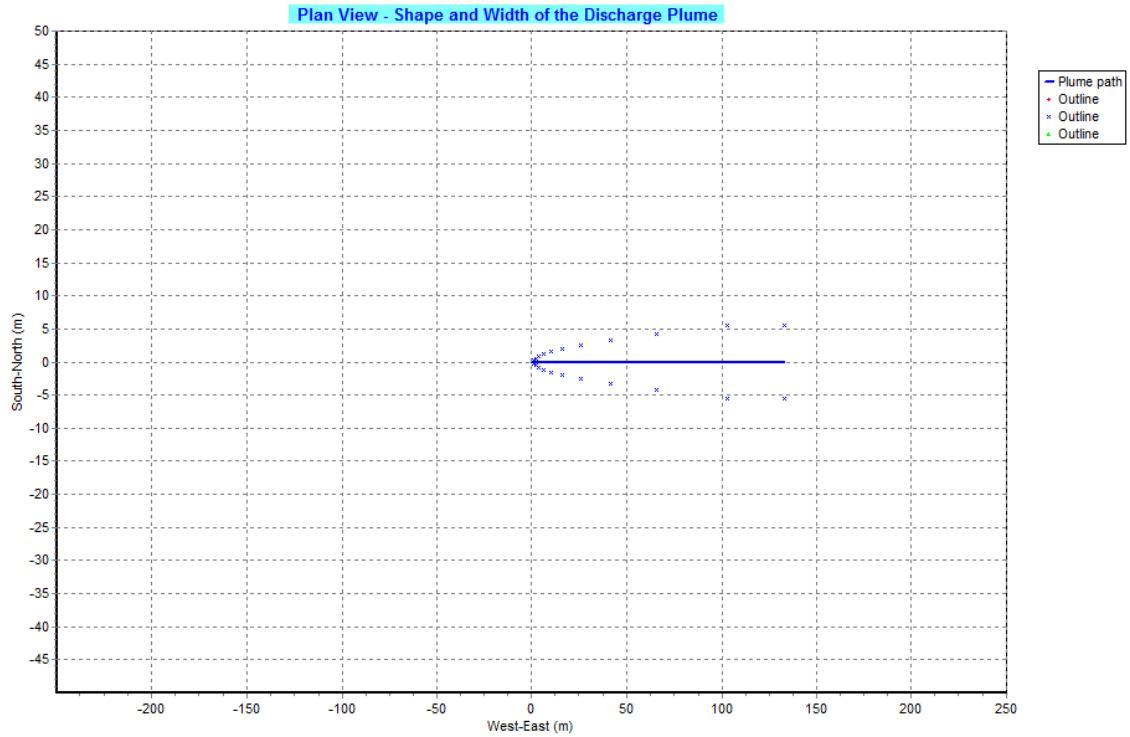

Figure 4-10: Plume Trajectory - MCC Room Cooling Water at Maximum Currents

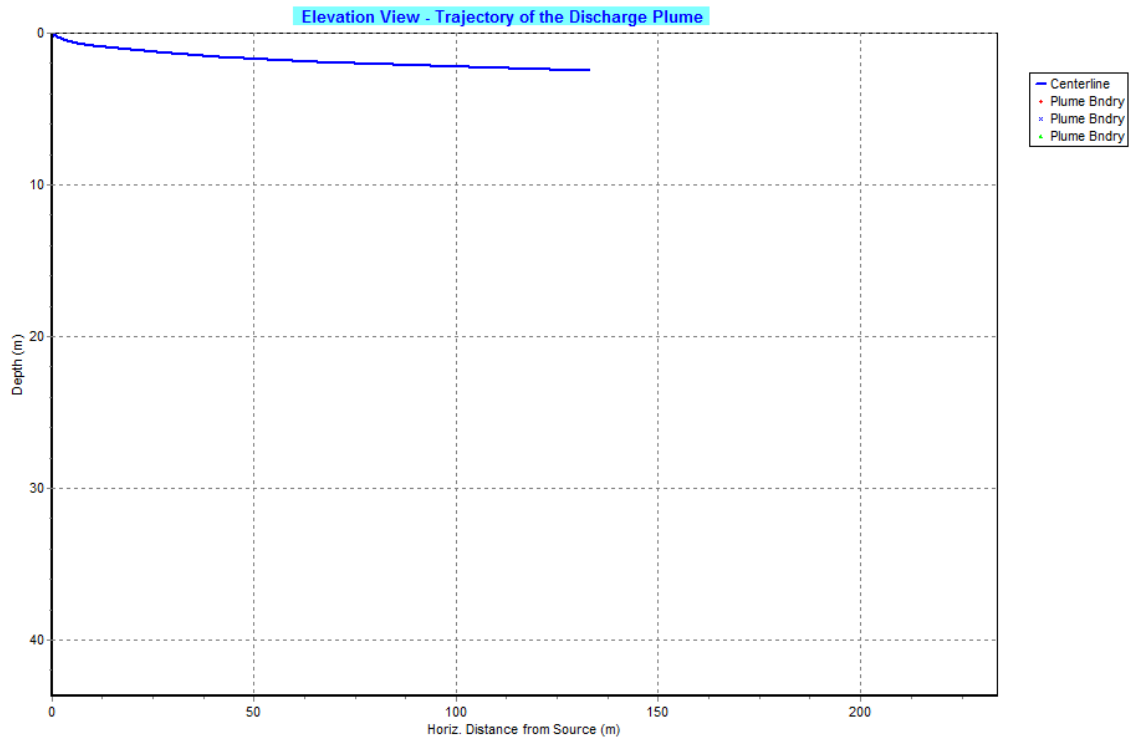

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Figure 4-11: Plume Dilution - MCC Room Cooling Water at Maximum Currents

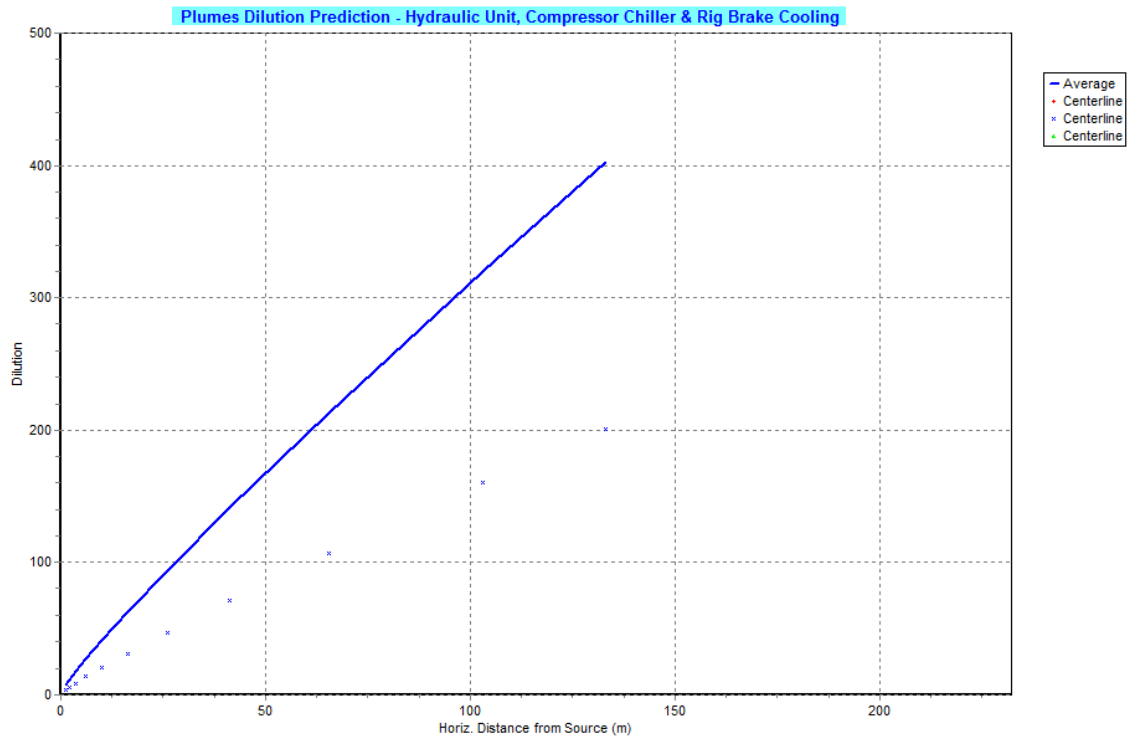

Figure 4-12: Plume Temperature Decay - MCC Room Cooling Water at Maximum Currents

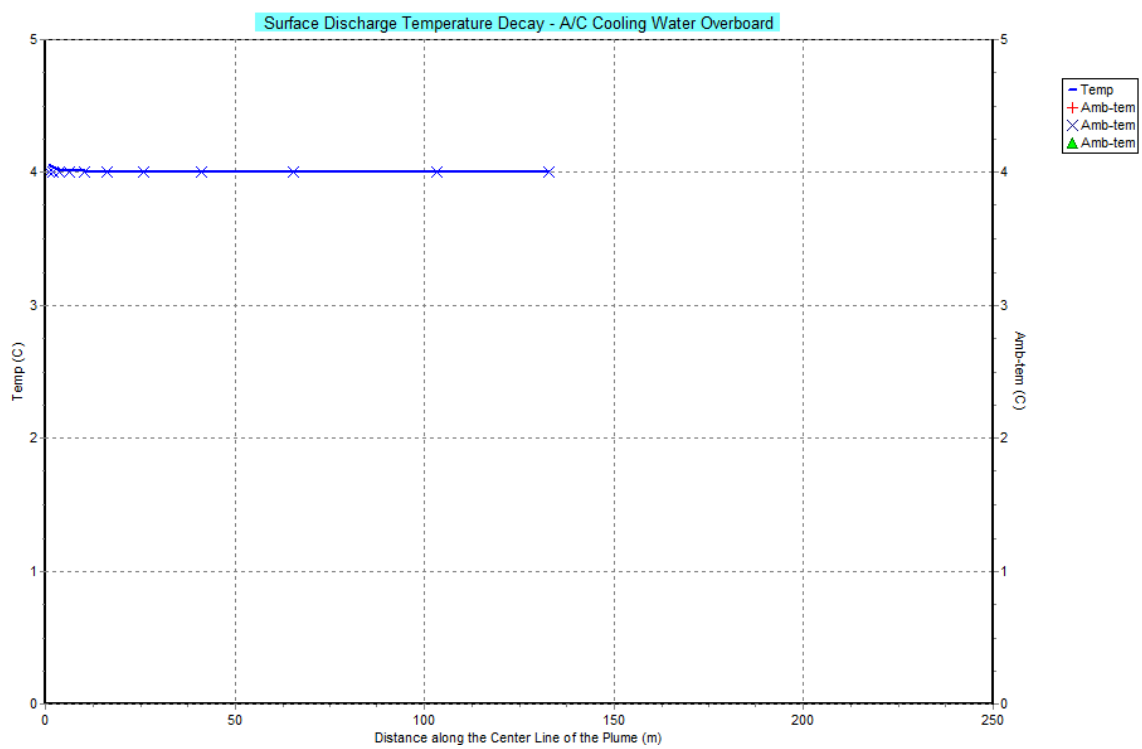

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Figure 4-13: Duration of Excess Temperature - MCC Room Cooling Water at Maximum Currents

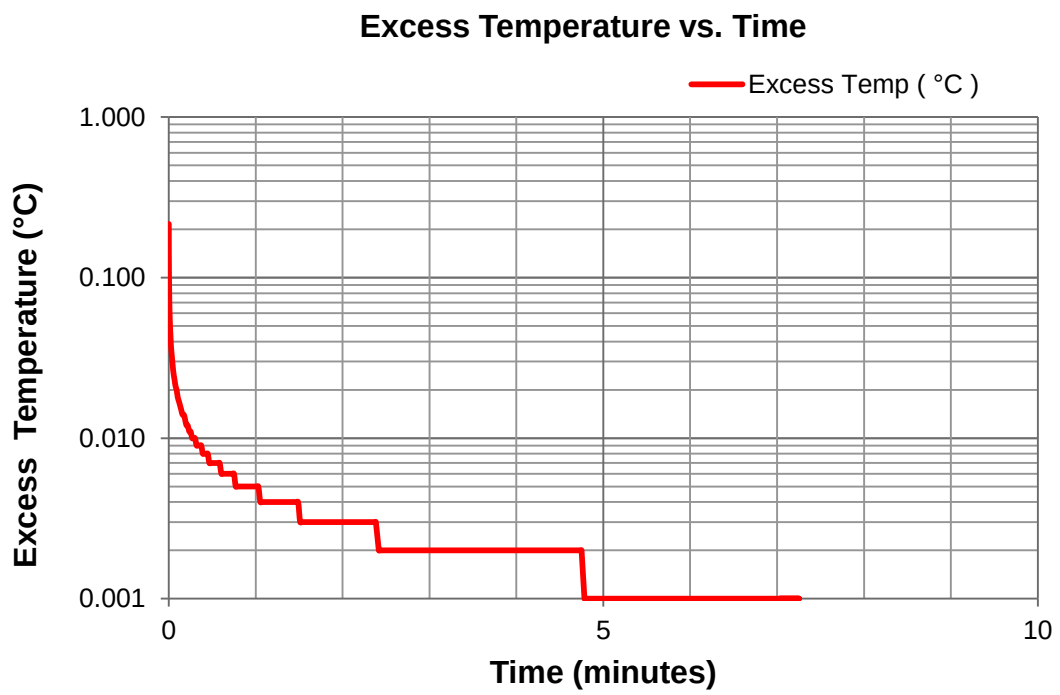
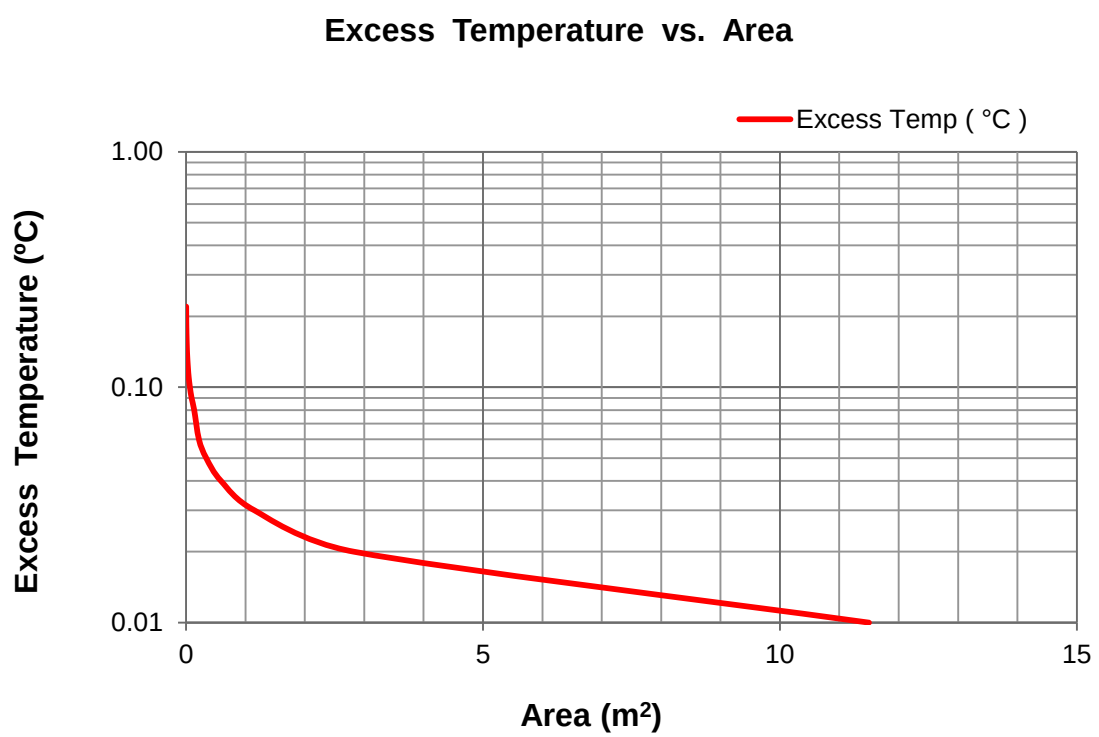


Figure 4-14: Area Affected by Excess Temperature - MCC Room Cooling Water at Maximum Currents



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Section 5: Thermal Dispersion Modeling – Diesel Generators I

The volume of the non-contact cooling water discharge from the ***diesel generators I,*** located in generator room is **17,485.71** bbls/day. The duration of the discharge is **24** hours/day. The temperature and salinity of the effluent are **16.1** °C and **30** psu, respectively. The discharge occurs from an **8.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

5.1 Non-contact Cooling Water from Diesel Generators I at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 5-1, 5-2, 5-3, 5-4,** and **5-5** respectively. **Figures 5-6** and **5-7** present the duration of the excess temperature and the area affected.

Figure 5-1: Ambient and Plume Properties - Diesel Generators I Cooling Water at Mean Currents

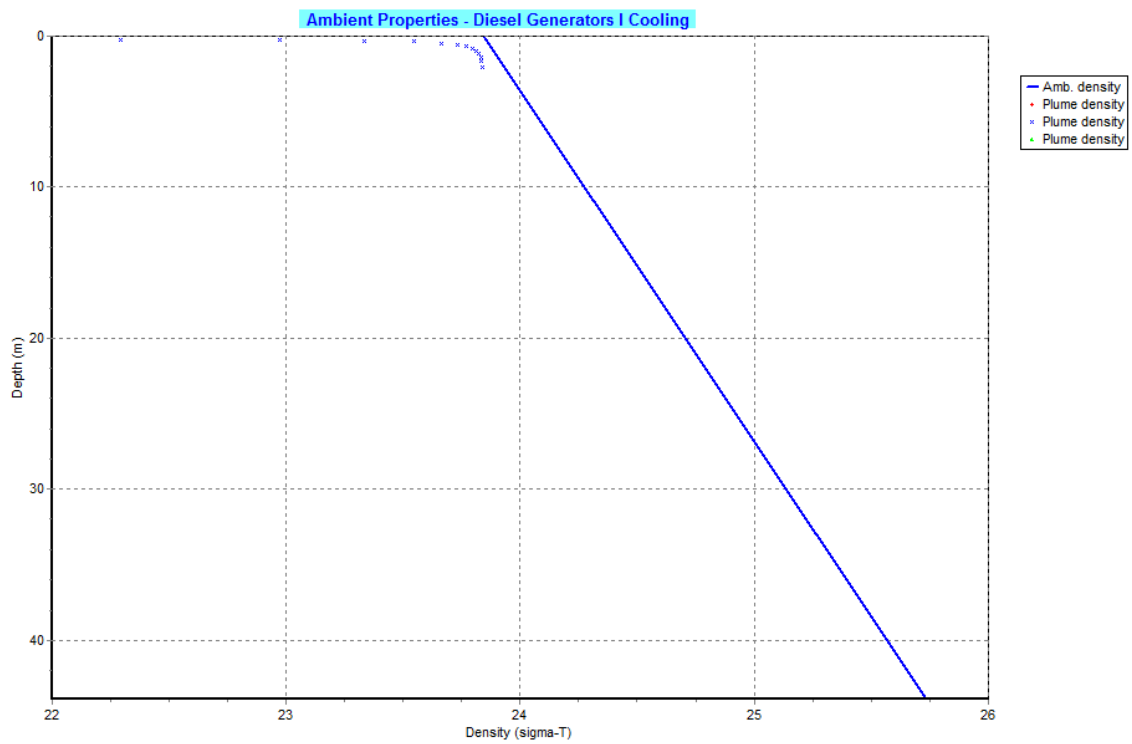

Figure 5-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **21.89** kg/m^3) plume to sink into the ambient only to a depth of approximately **2.0** m. **Figure 5-2** presents the width of the plume. The maximum width of the plume is approximately **54** m at a distance of approximately **216** m from the source. The plume trajectory presented in **Figure 5-3** also

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shows that the plume reaches a depth of **2** m at a distance of approximately **216** m from the source and attains an average dilution factor of **390** as seen in **Figure 5-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 5-5** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **216** m from the source. It takes approximately **56** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 5-6**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **6,500** square meters as seen in **Figure 5-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **6,500** square meters.

Figure 5-2: Plume Path - Diesel Generators I Cooling Water at Mean Currents

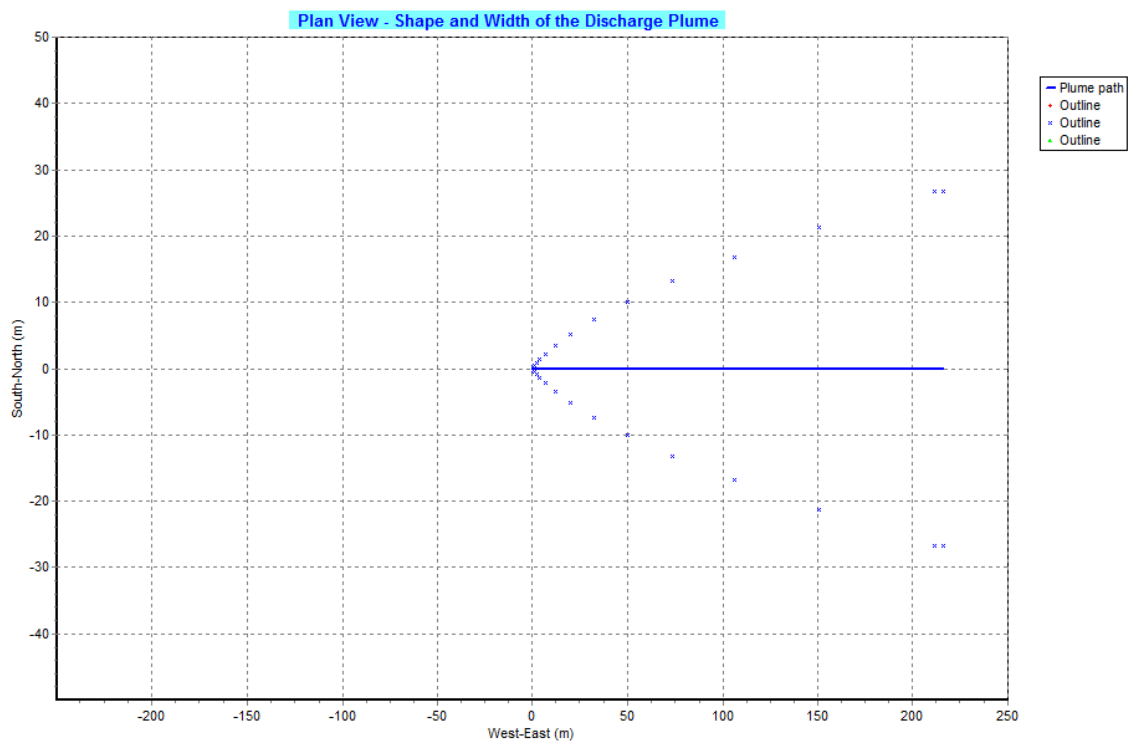

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Figure 5-3: Plume Trajectory - Diesel Generators I Cooling Water at Mean Currents

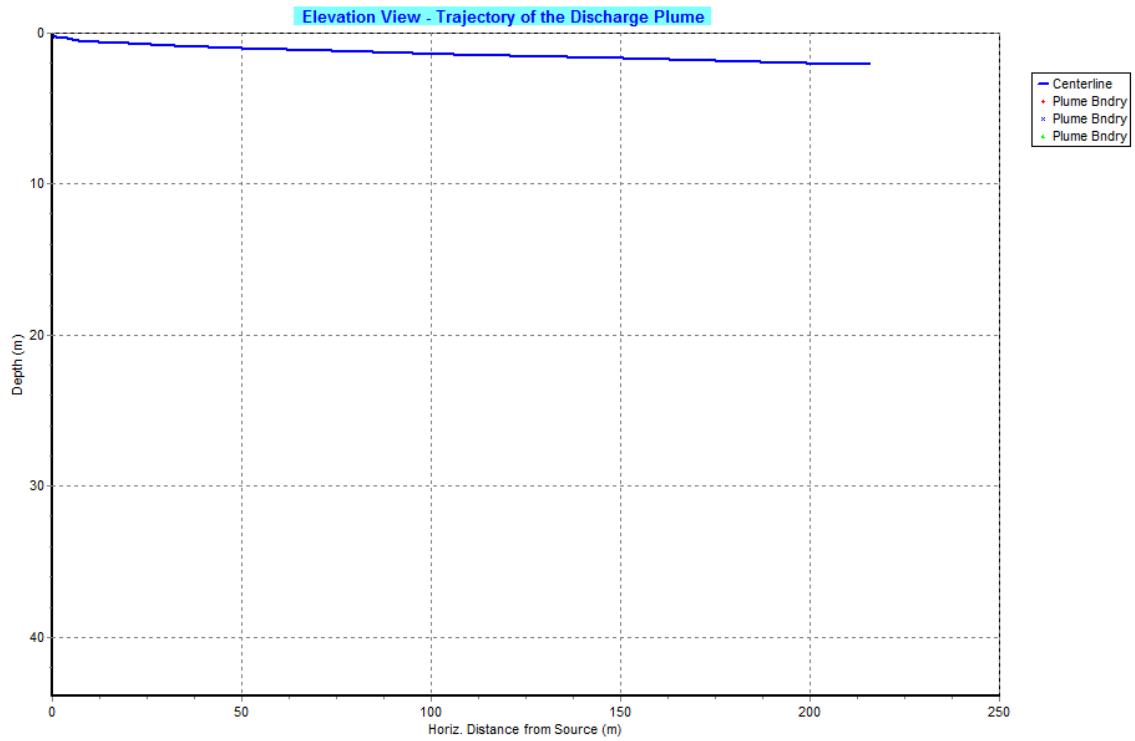

Figure 5-4: Plume Dilution - Diesel Generators I Cooling Water at Mean Currents

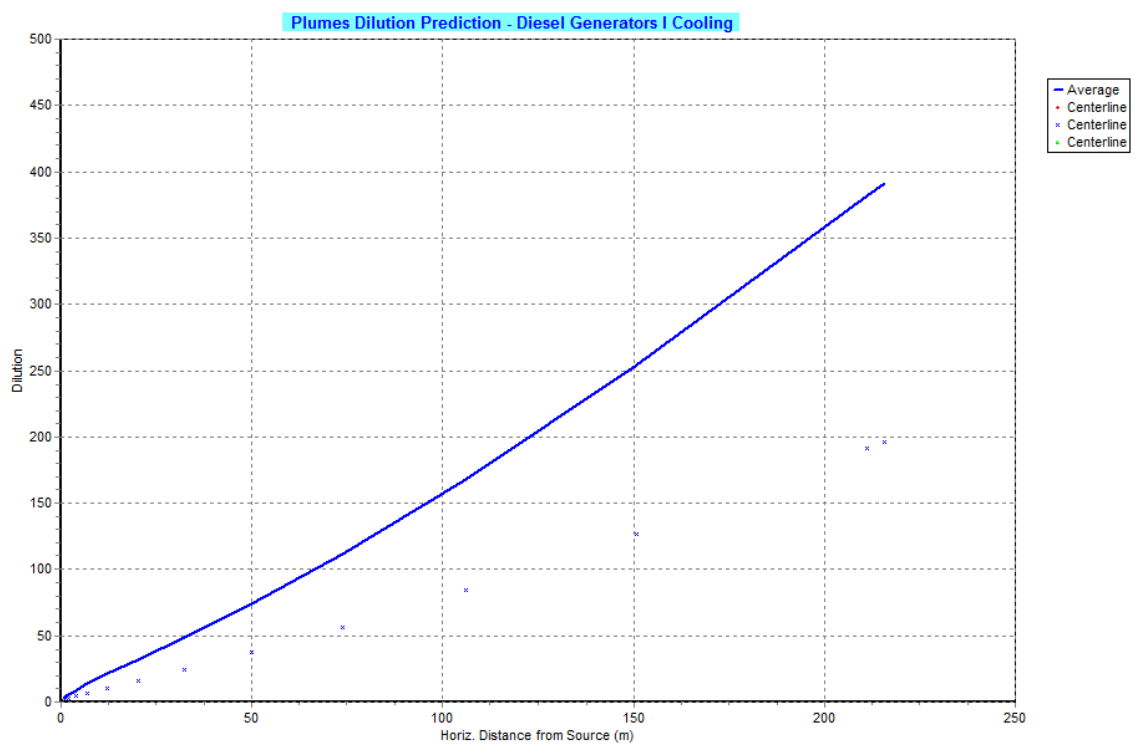

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Figure 5-5: Plume Temperature Decay - Diesel Generators I Cooling Water at Mean Currents

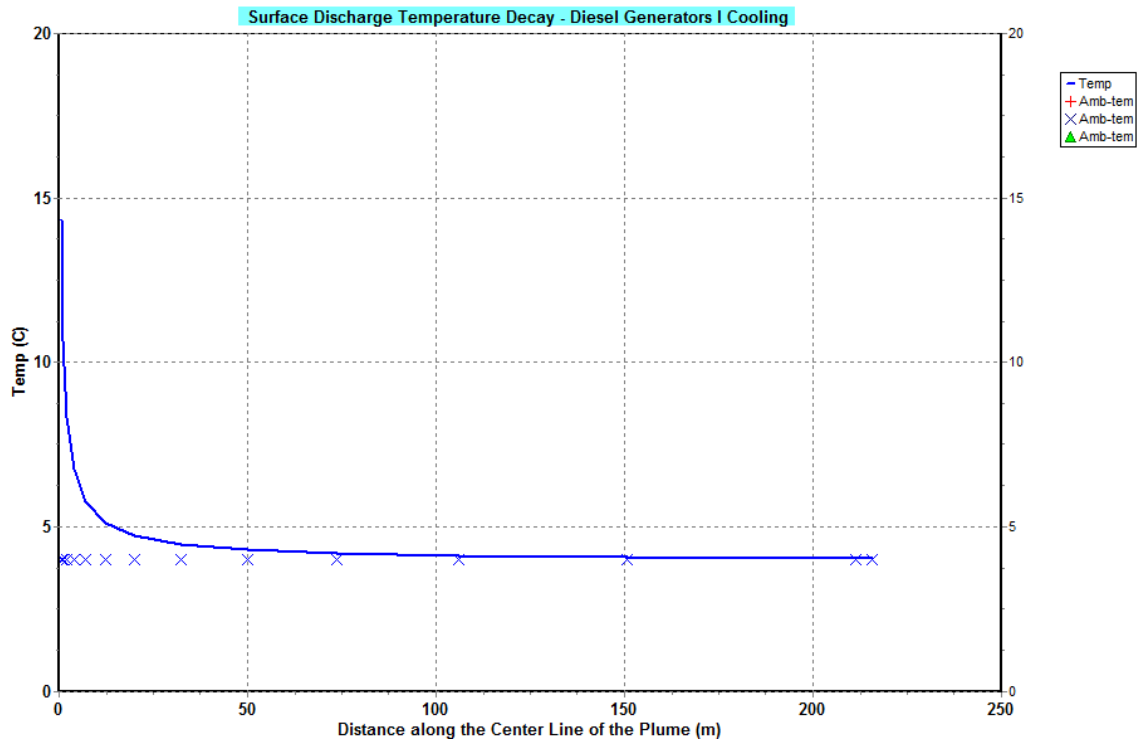

Figure 5-6: Duration of Excess Temperature - Diesel Generators Cooling Water I at Mean Currents

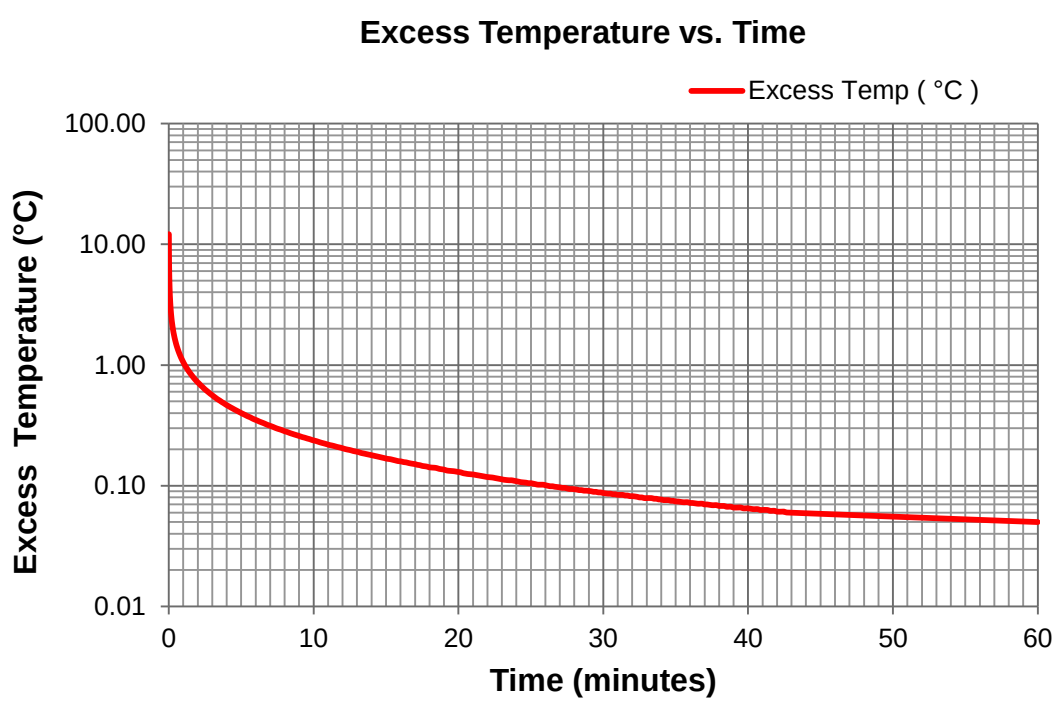

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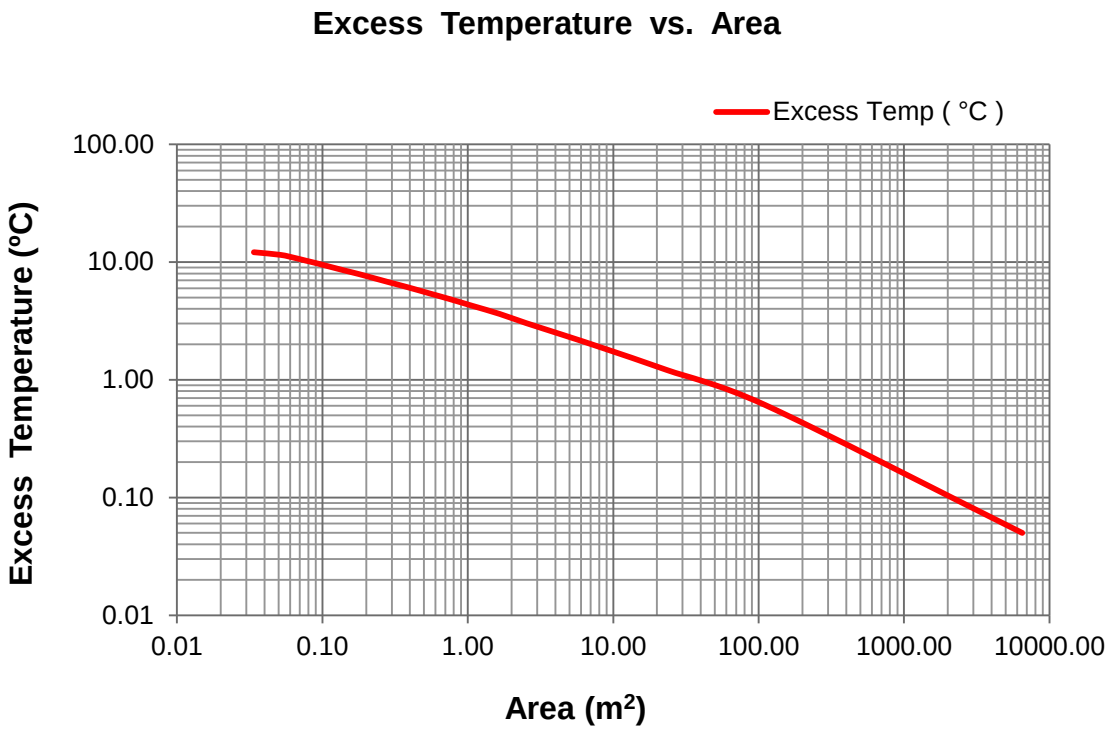
Figure 5-7: Area Affected by Excess Temperature - Diesel Generators I Cooling Water at Mean Currents



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5.2 Non-contact Cooling Water from Diesel Generators I at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 5-8, 5-9, 5-10, 5-11,** and **5-12** respectively. **Figures 5-13** and **5-14** present the duration of the excess temperature and the area affected.

Figure 5-8: Ambient and Plume Properties - Diesel Generators I Cooling Water at Maximum Currents

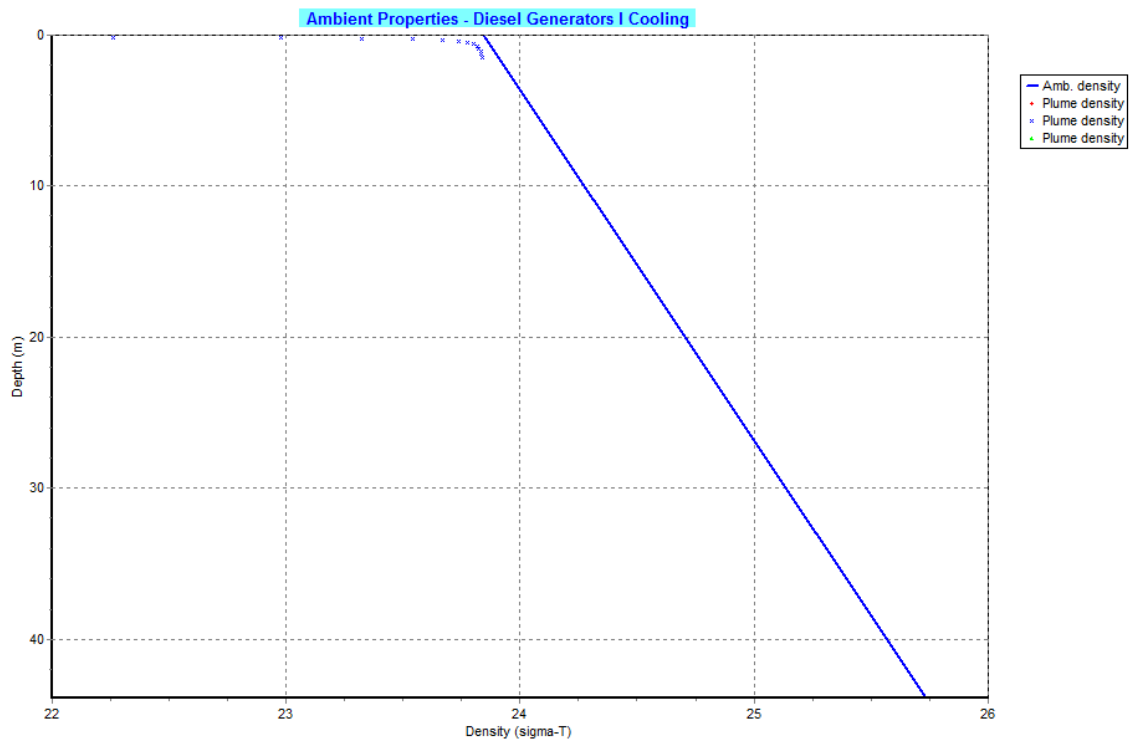

Figure 5-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **21.89** kg/m^3) plume to sink into the ambient only to a depth of approximately **1.5** m. **Figure 5-9** presents the width of the plume. The maximum width of the plume is approximately **21.5** m at a distance of approximately **218** m from the source. The plume trajectory presented in **Figure 5-10** also shows that the plume reaches a depth of **1.5** m at a distance of approximately **218** m from the source and attains an average dilution factor of **400** as seen in **Figure 5-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 5-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **218** m from the source. It takes approximately **18** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 5-13**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **2,850** square meters as seen in **Figure 5-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **2,850** square meters.

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Figure 5-9: Plume Path - Diesel Generators I Cooling Water at Maximum Currents

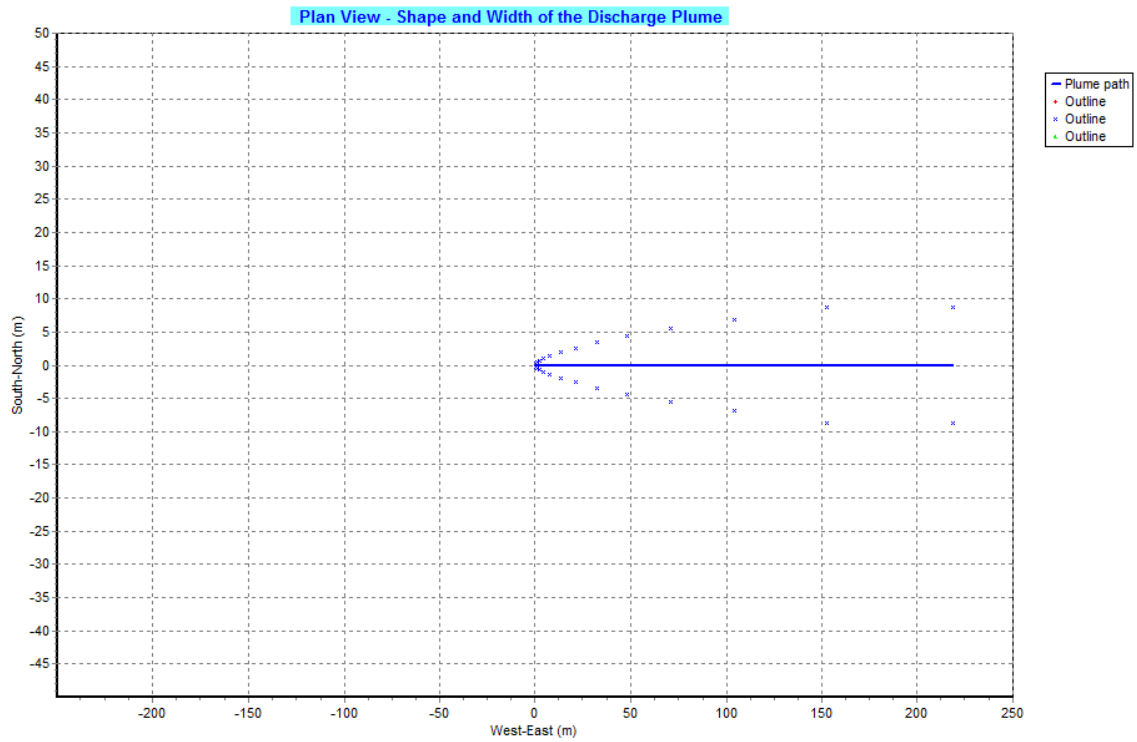

Figure 5-10: Plume Trajectory - Diesel Generators I Cooling Water at Maximum Currents

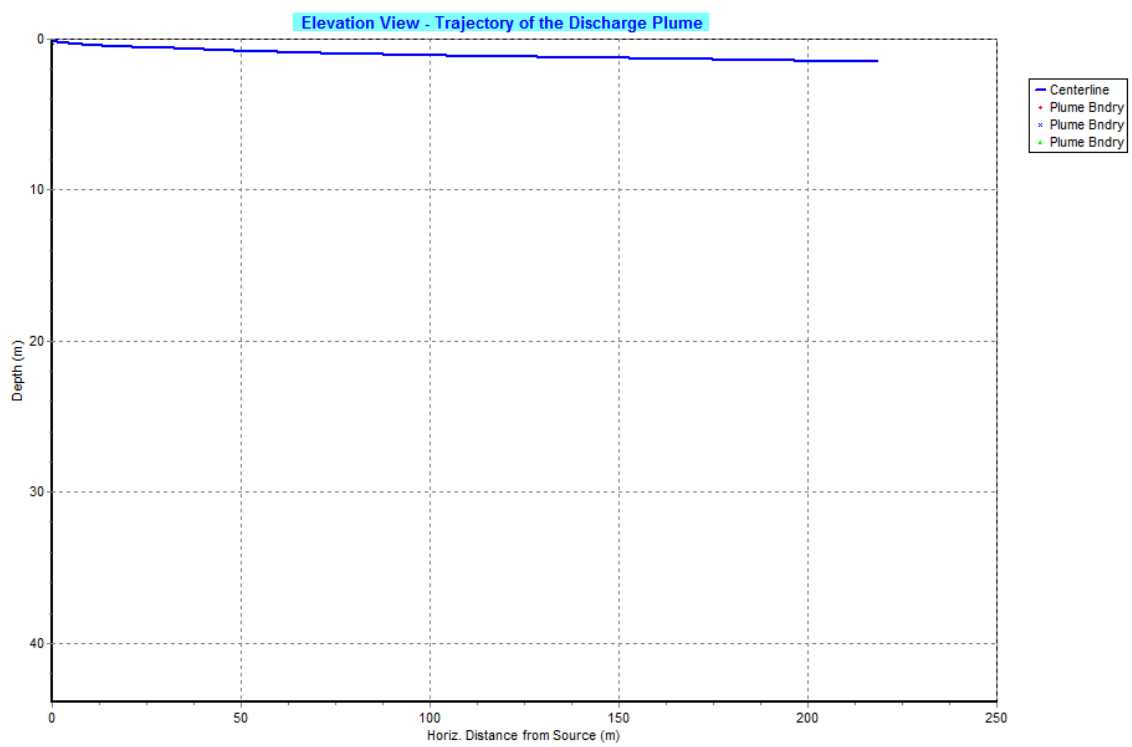

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Figure 5-11: Plume Dilution - Diesel Generators I Cooling Water at Maximum Currents

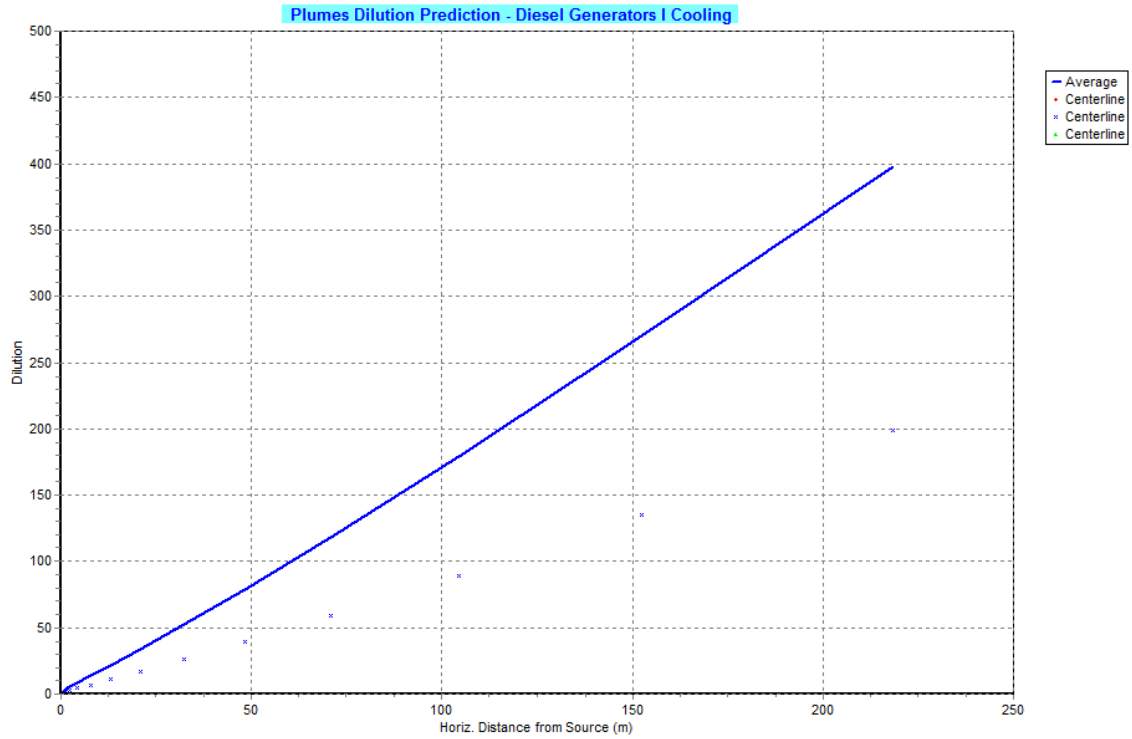

Figure 5-11: Plume Temperature Decay - Diesel Generators I Cooling Water at Maximum Currents

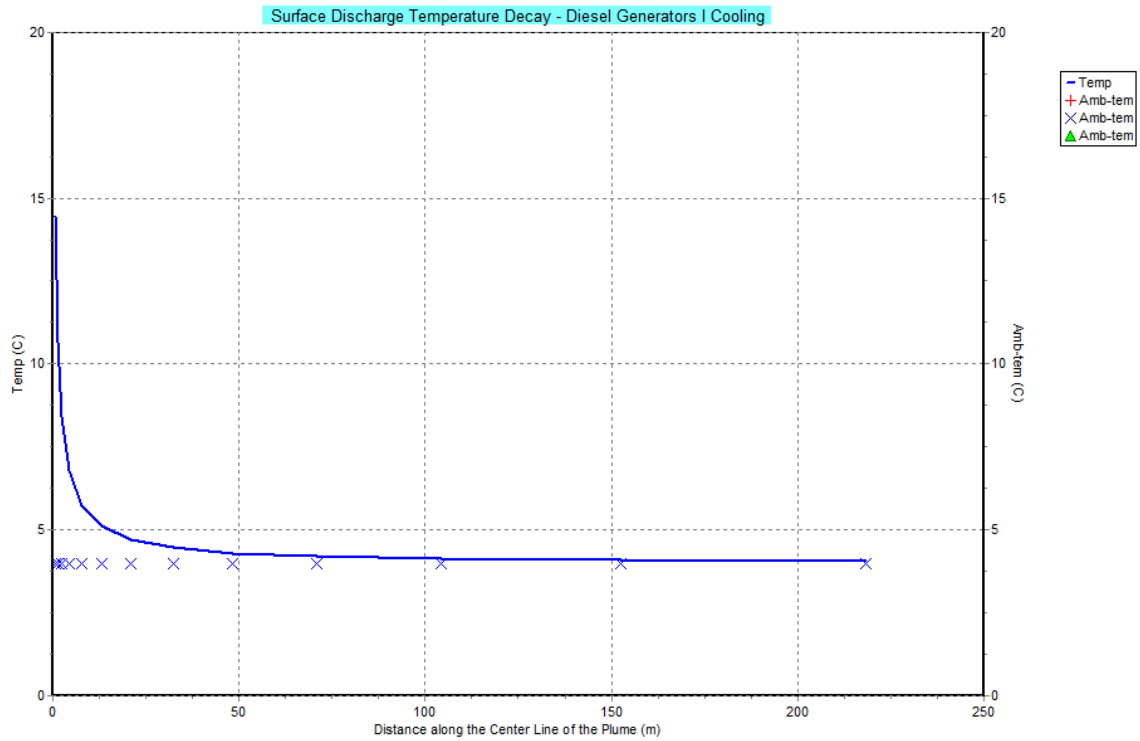

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Figure 5-13: Duration of Excess Temperature - Diesel Generators I Cooling Water at Maximum Currents

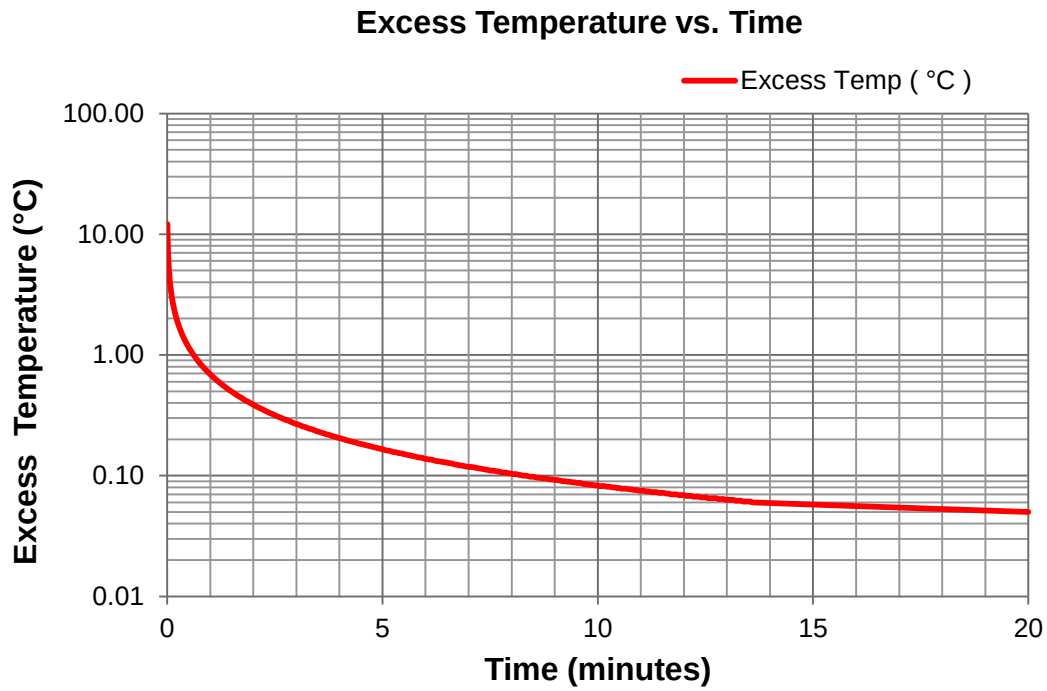
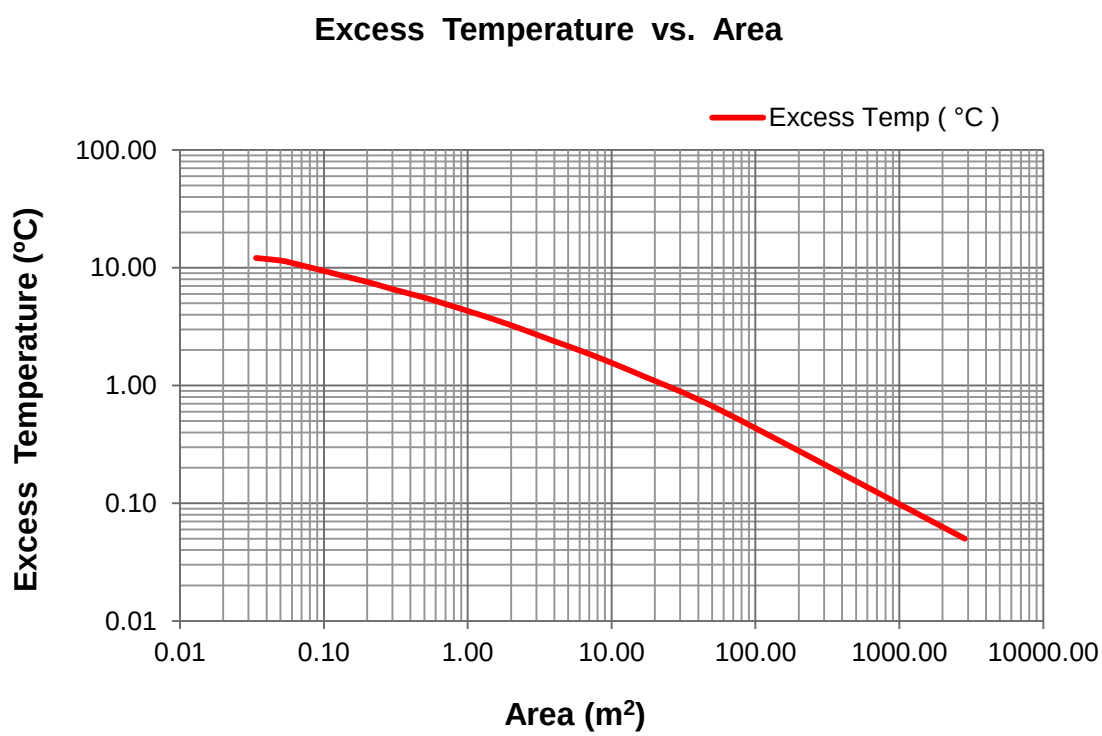


Figure 5-14: Area Affected by Excess Temperature - Diesel Generators I Cooling Water at Maximum Currents



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Section 6: Thermal Dispersion Modeling – Diesel Generators II

The volume of the non-contact cooling water discharge from the ***diesel generators II,*** located in generator room is **17,485.71** bbls/day. The duration of the discharge is **24** hours/day. The temperature and salinity of the effluent are **16.1** °C and **30** psu, respectively. The discharge occurs from an **8.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

6.1 Non-contact Cooling Water from Diesel Generators II at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 6-1, 6-2, 6-3, 6-4,** and **6-5** respectively. **Figures 6-6** and **6-7** present the duration of the excess temperature and the area affected.

Figure 6-1: Ambient and Plume Properties - Diesel Generators II Cooling Water at Mean Currents

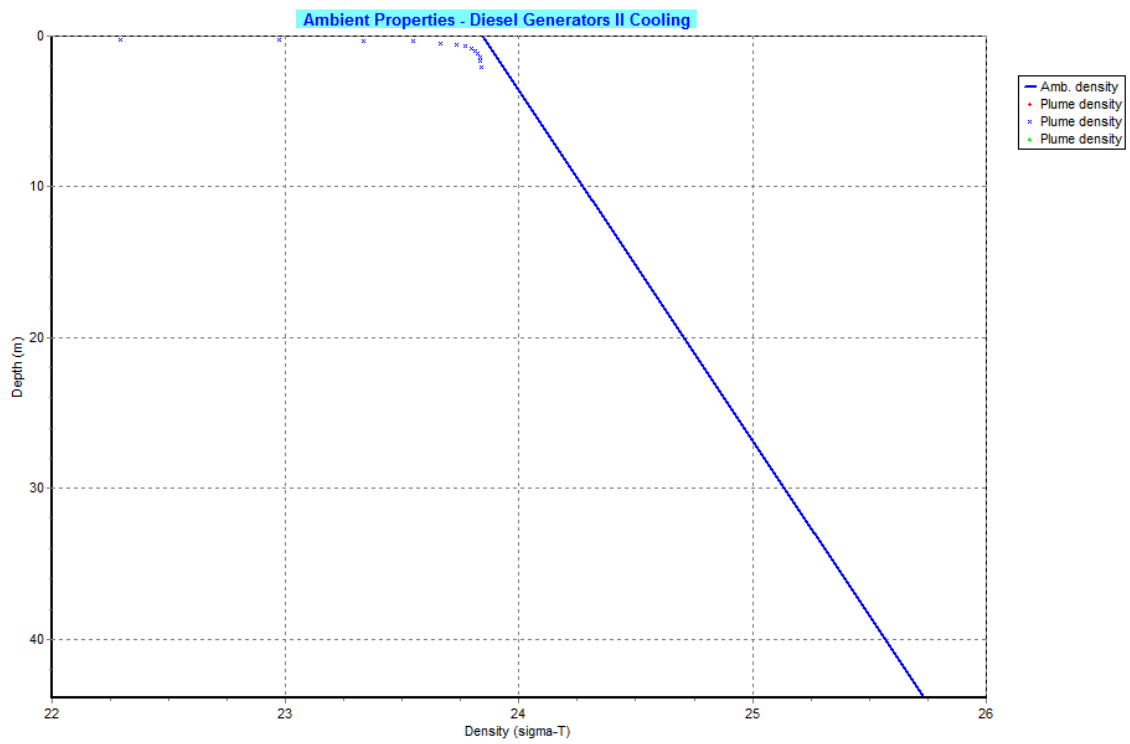

Figure 6-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **21.89** kg/m^3) plume to sink into the ambient only to a depth of approximately **2.0** m. **Figure 6-2** presents the width of the plume. The maximum width of the plume is approximately **54** m at a distance of approximately **216** m from the source. The plume trajectory presented in **Figure 6-3** also

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shows that the plume reaches a depth of **2** m at a distance of approximately **216** m from the source and attains an average dilution factor of **390** as seen in **Figure 6-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 6-5** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **216** m from the source. It takes approximately **56** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 6-6**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **6,500** square meters as seen in **Figure 6-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **6,500** square meters.

Figure 6-2: Plume Path - Diesel Generators II Cooling Water at Mean Currents

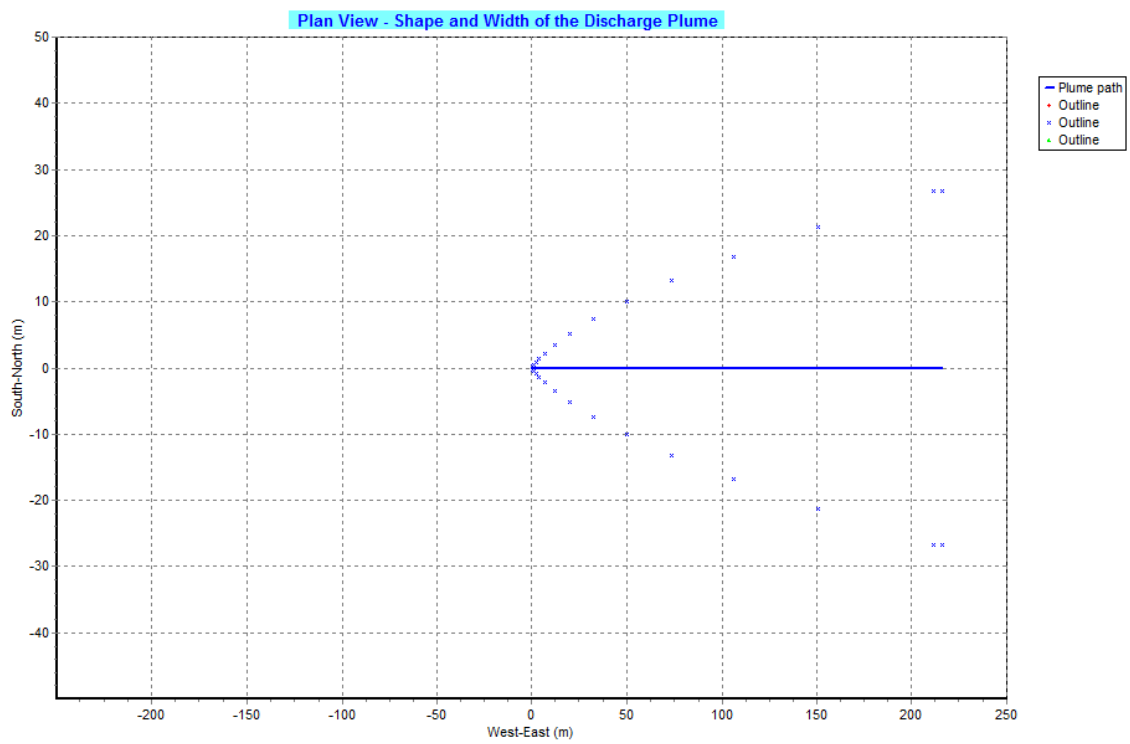

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Figure 6-3: Plume Trajectory - Diesel Generators II Cooling Water at Mean Currents

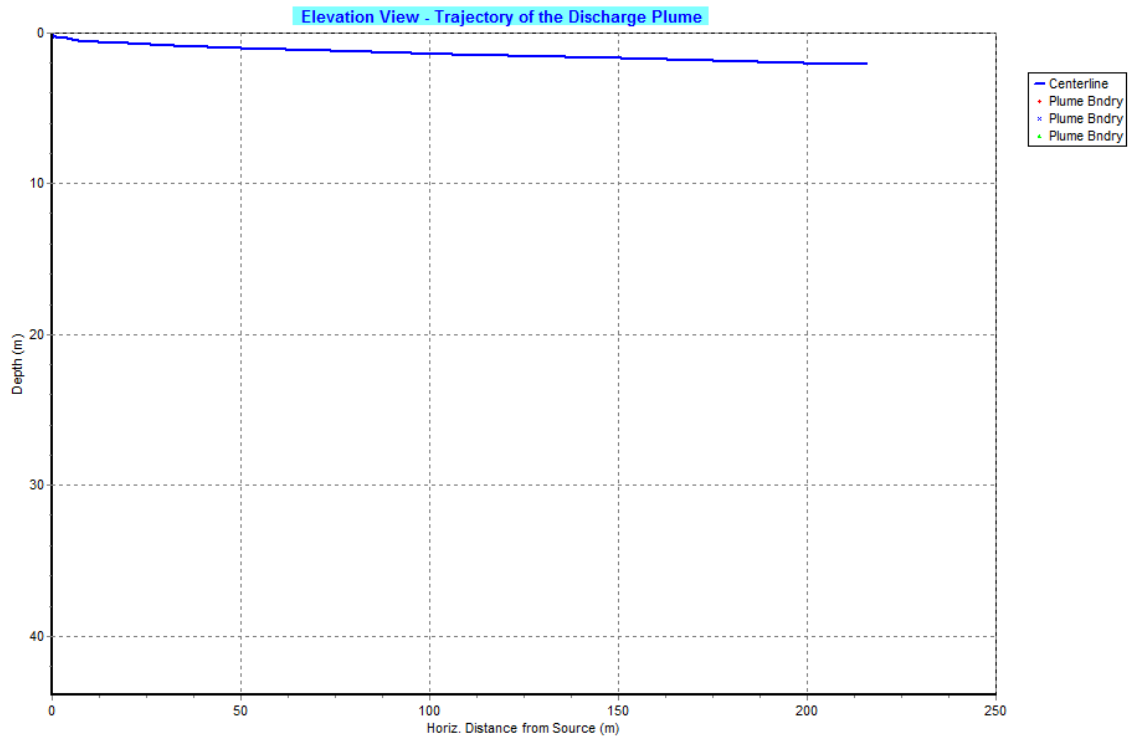

Figure 6-4: Plume Dilution - Diesel Generators II Cooling Water at Mean Currents

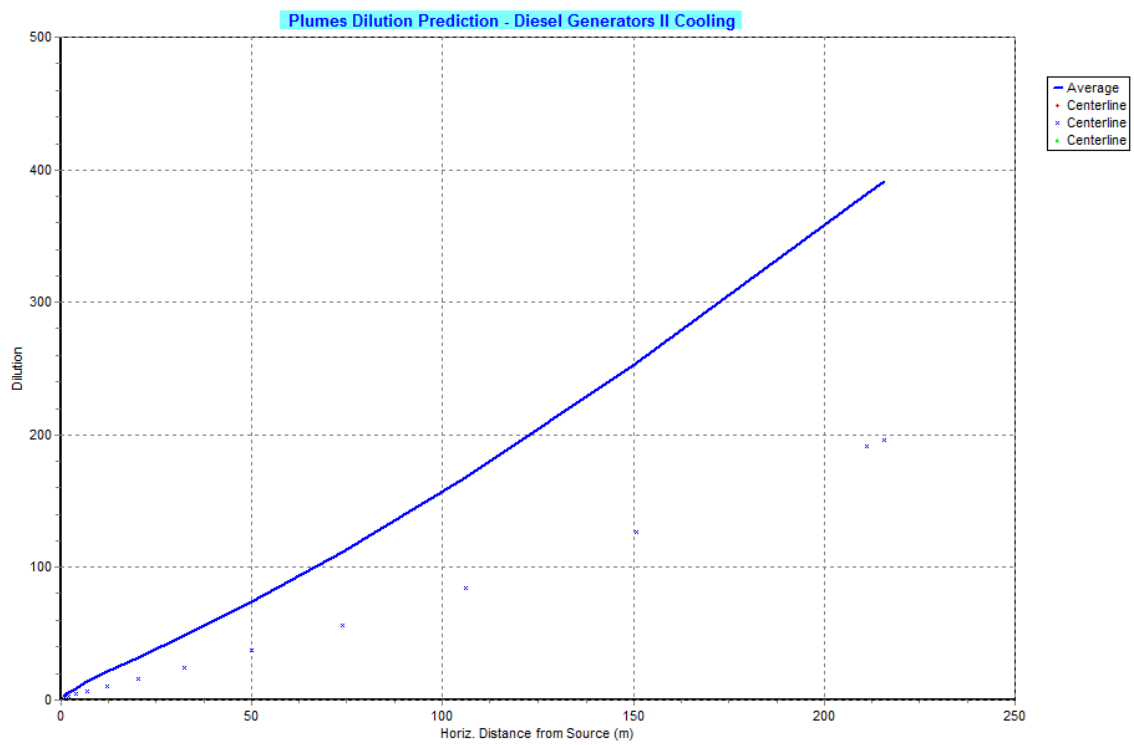

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Figure 6-5: Plume Temperature Decay - Diesel Generators II Cooling Water at Mean Currents

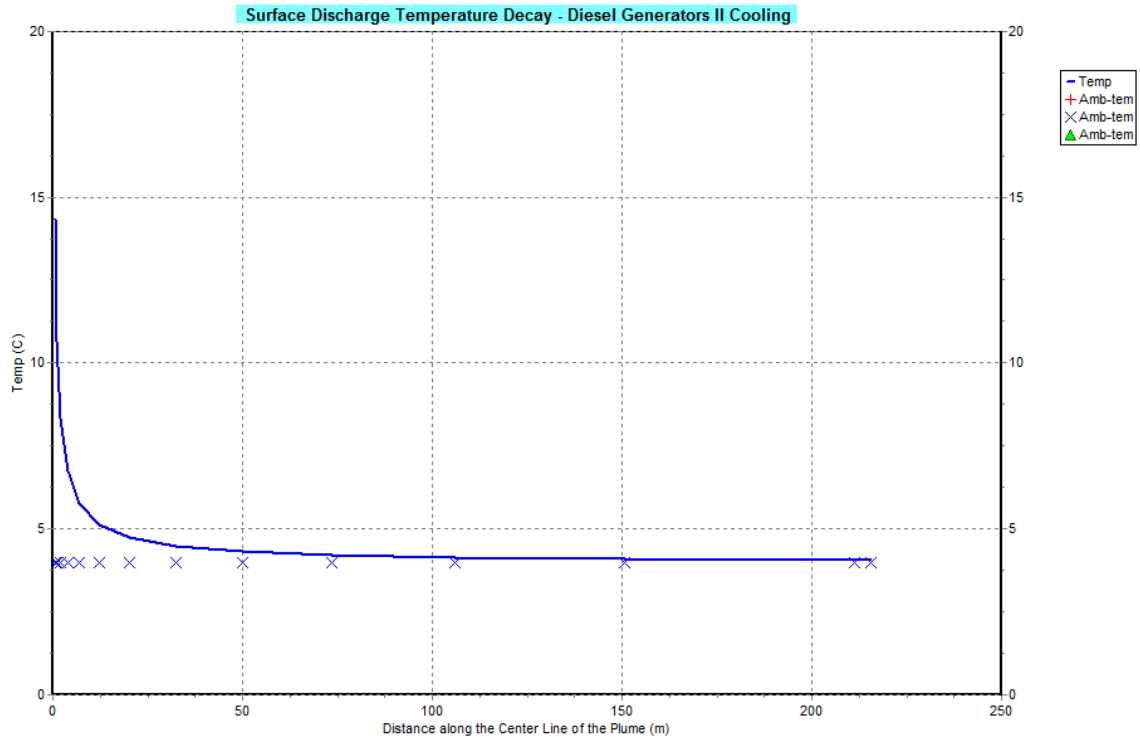

Figure 6-6: Duration of Excess Temperature - Diesel Generators II Cooling Water at Mean Currents

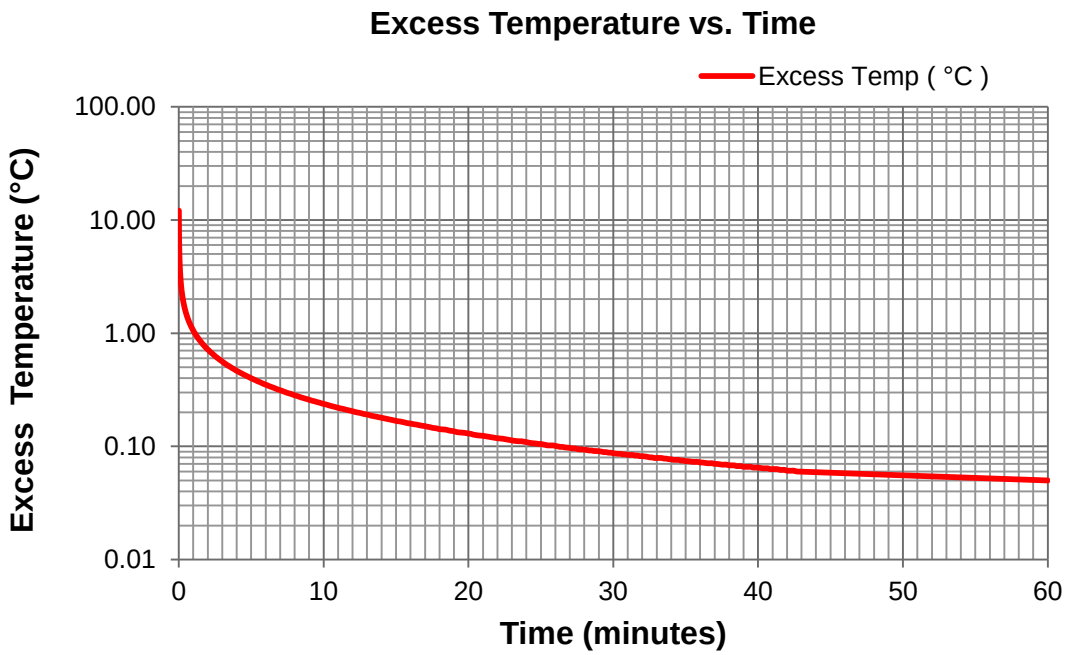

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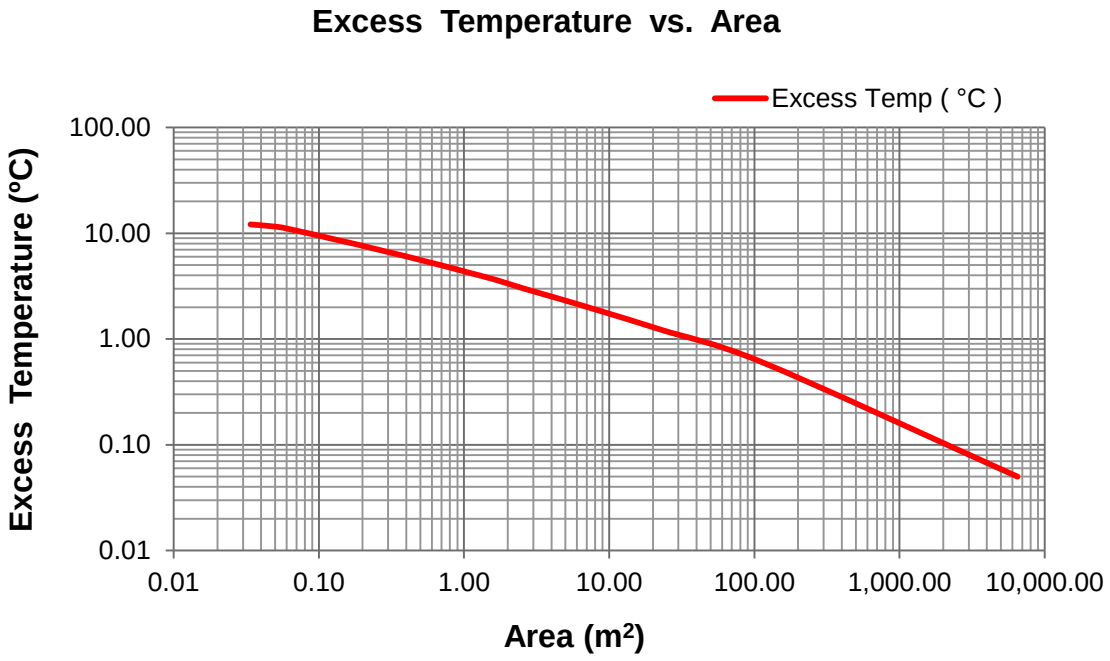
Figure 6-7: Area Affected by Excess Temperature - Diesel Generators II Cooling Water at Mean Currents



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6.2 Non-contact Cooling Water from Diesel Generators II at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 6-8, 6-9, 6-10, 6-11,** and **6-12** respectively. **Figures 6-13** and **6-14** present the duration of the excess temperature and the area affected.

Figure 6-8: Ambient and Plume Properties - Diesel Generators II Cooling Water at Maximum Currents

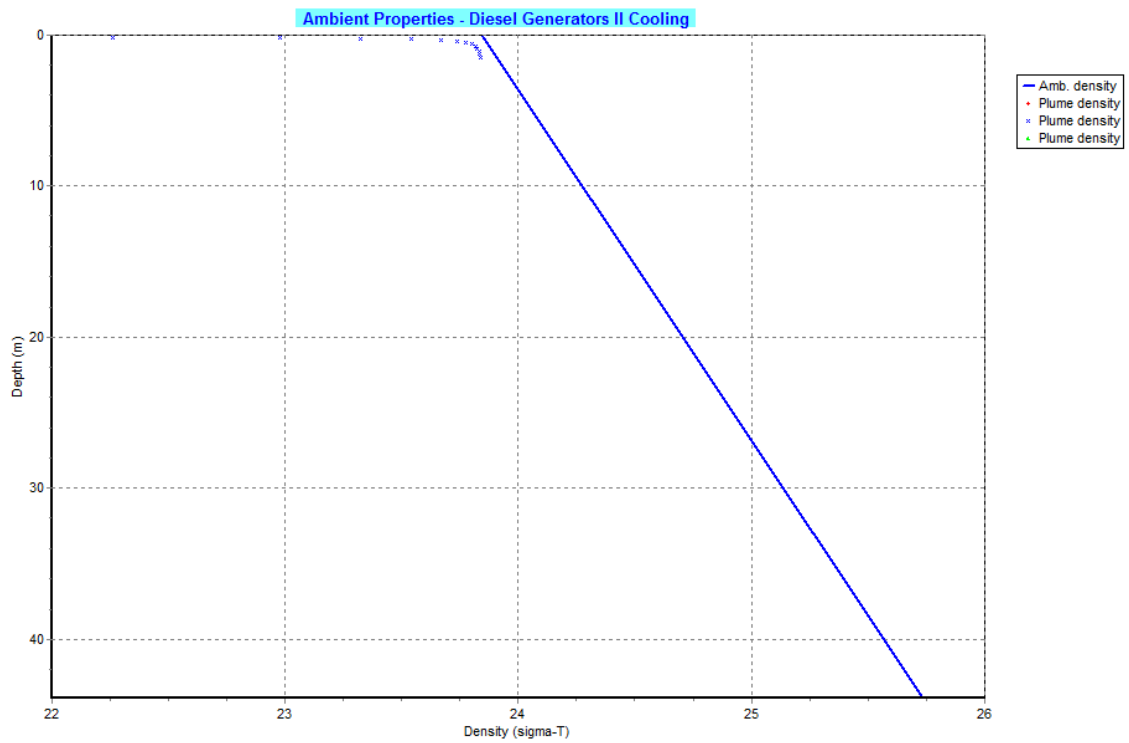

Figure 6-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **21.89** kg/m^3) plume to sink into the ambient only to a depth of approximately **1.5** m. **Figure 6-9** presents the width of the plume. The maximum width of the plume is approximately **21.5** m at a distance of approximately **218** m from the source. The plume trajectory presented in **Figure 6-10** also shows that the plume reaches a depth of **1.5** m at a distance of approximately **218** m from the source and attains an average dilution factor of **400** as seen in **Figure 6-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 6-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **218** m from the source. It takes approximately **18** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 6-13**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **2,850** square meters as seen in **Figure 6-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **2,850** square meters.

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Figure 6-9: Plume Path - Diesel Generators II Cooling Water at Maximum Currents

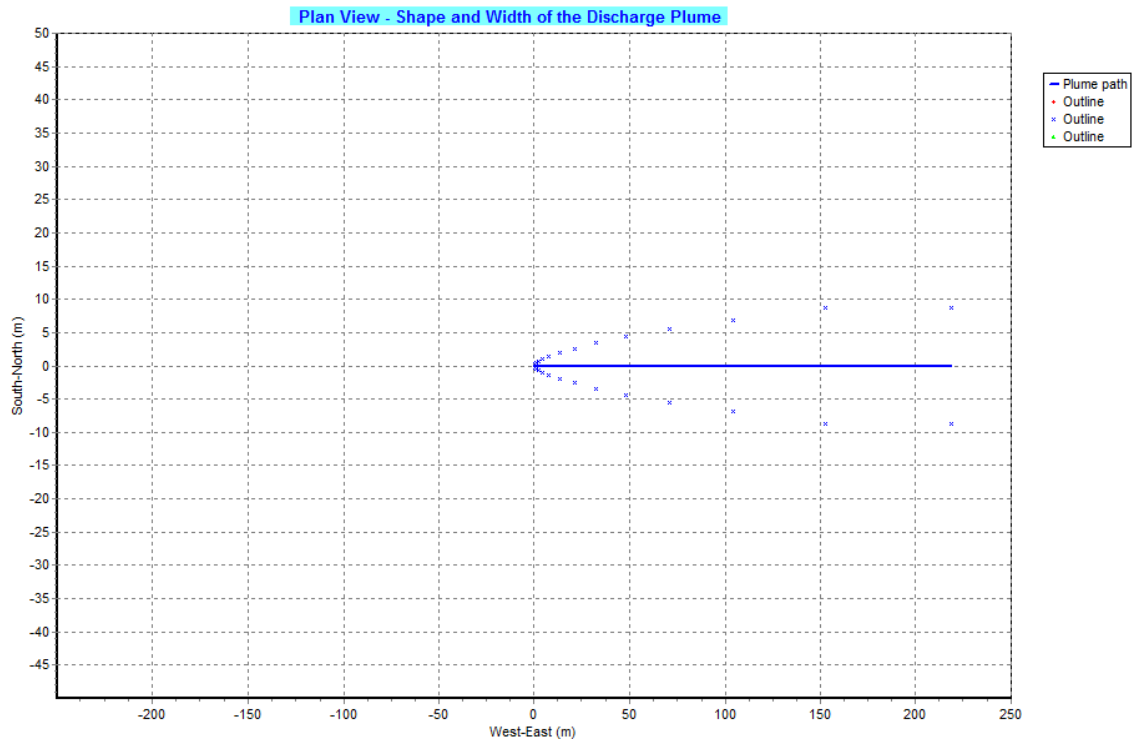

Figure 6-10: Plume Trajectory - Diesel Generators II Cooling Water at Maximum Currents

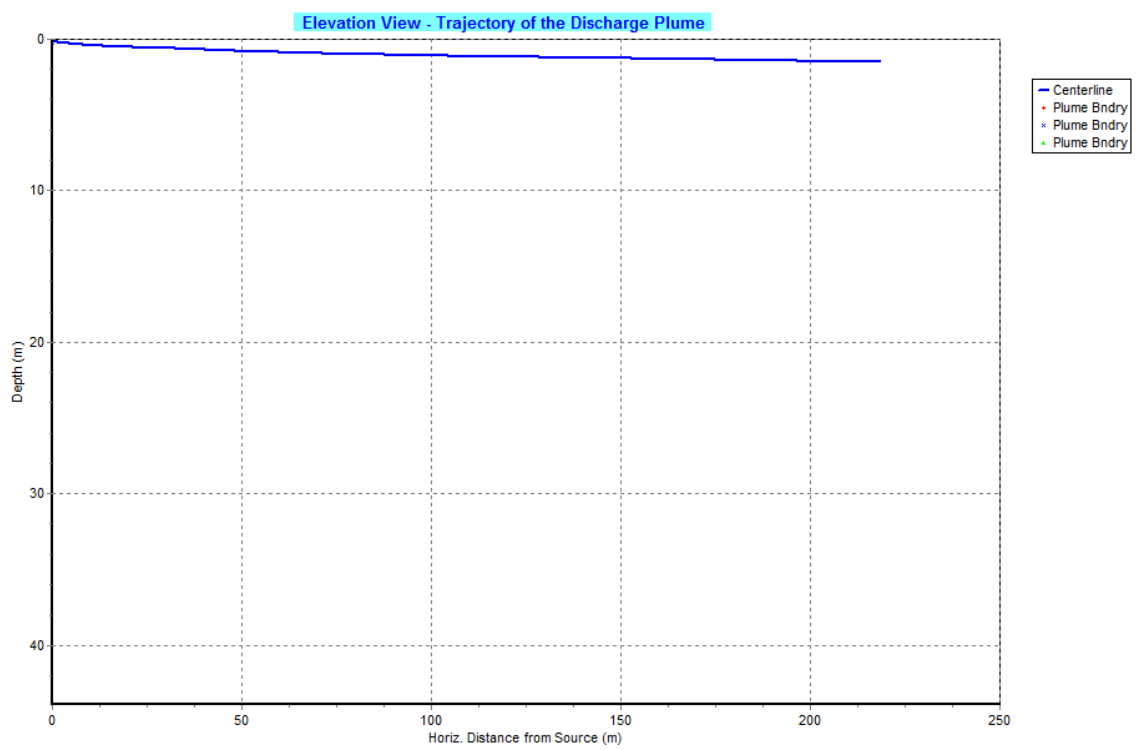

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Figure 6-11: Plume Dilution - Diesel Generators II Cooling Water at Maximum Currents

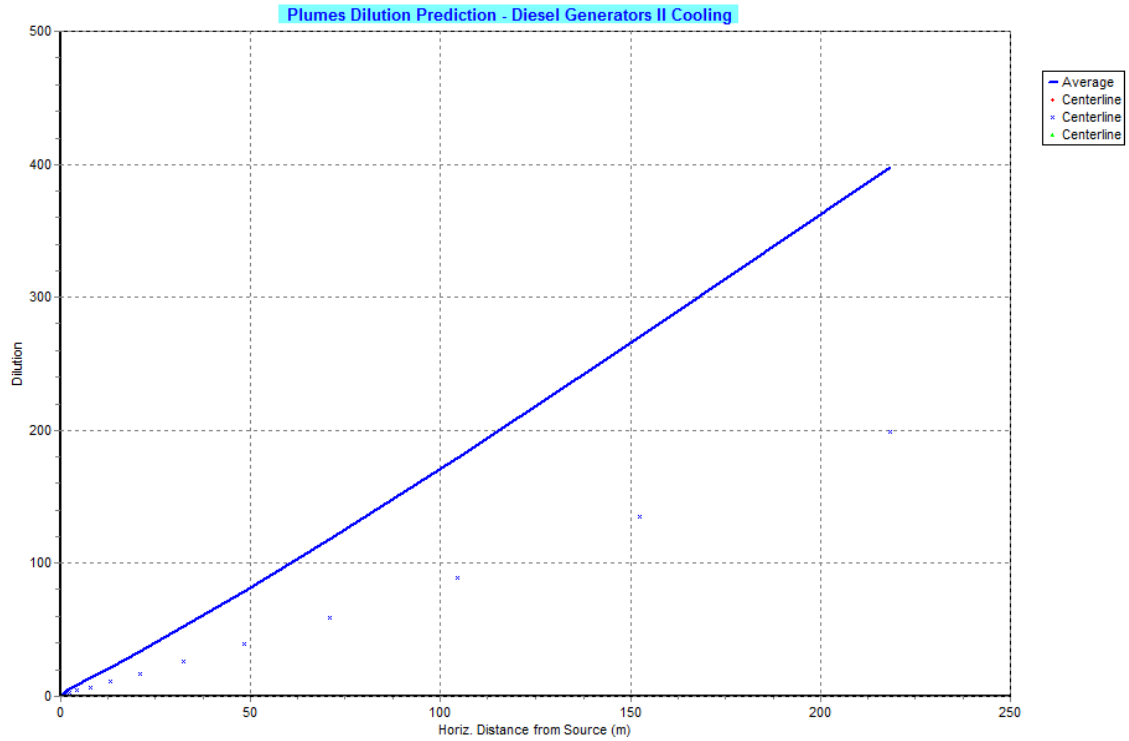

Figure 6-12: Plume Temperature Decay - Diesel Generators II Cooling Water at Maximum Currents

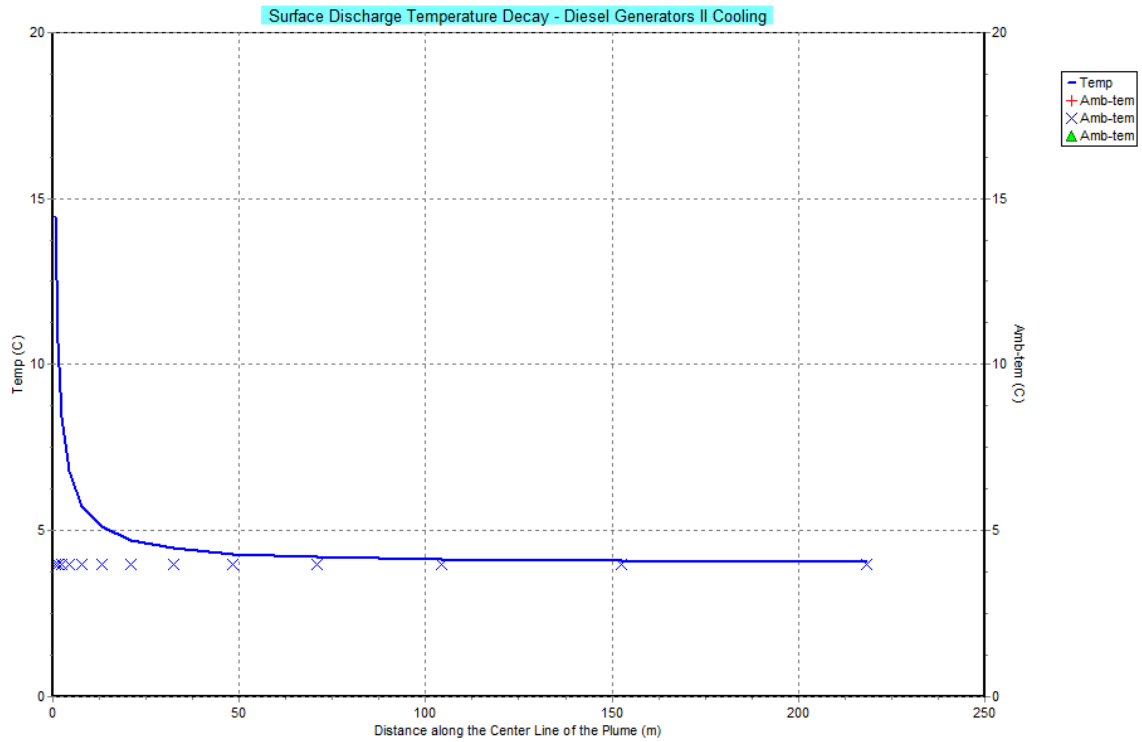

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Figure 6-13: Duration of Excess Temperature - Diesel Generators II Cooling Water at Maximum Currents

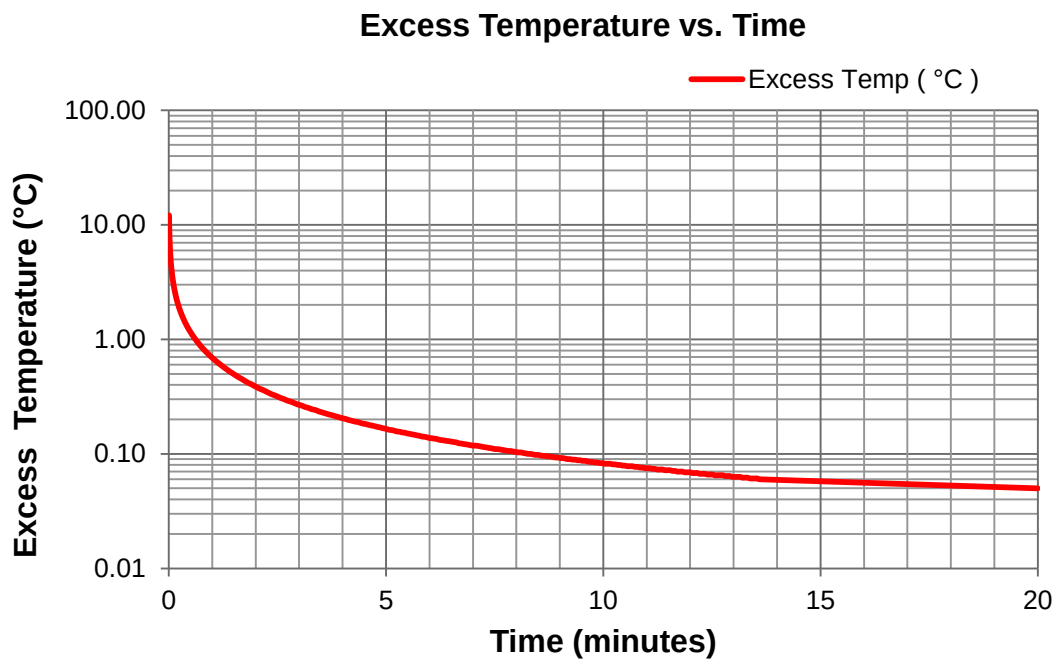
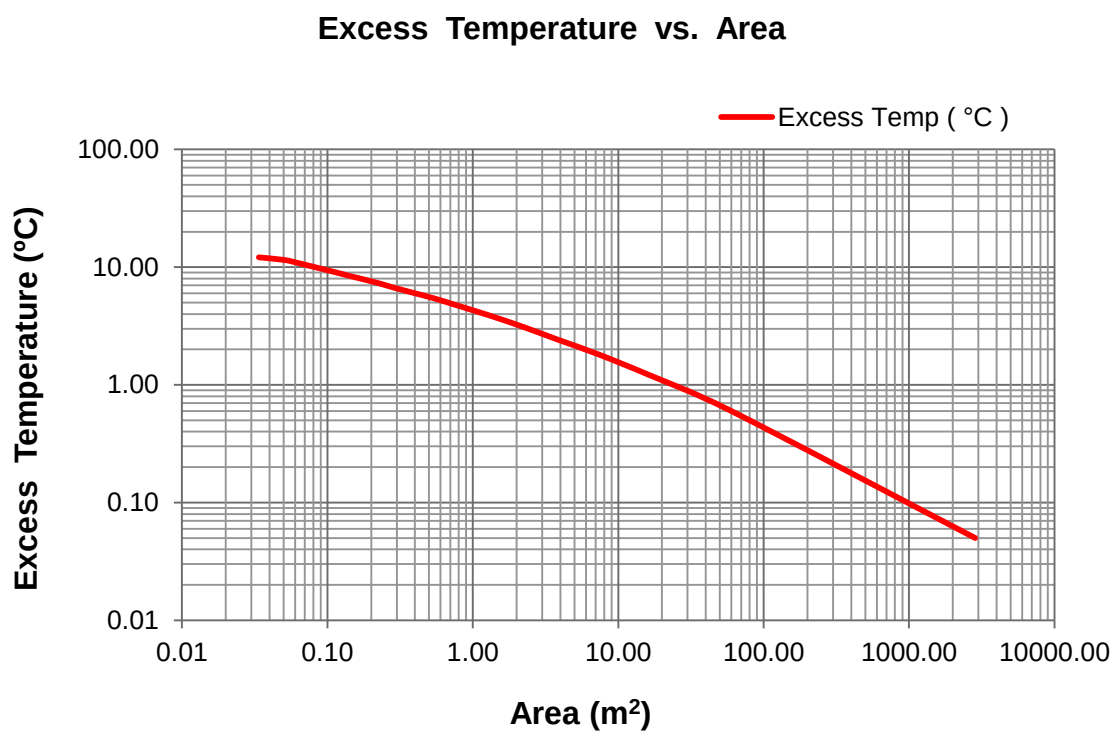


Figure 6-14: Area Affected by Excess Temperature - Diesel Generators II Cooling Water at Maximum Currents



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Section 7: Thermal Dispersion Modeling – SCR Room

The volume of the non-contact cooling water discharge from the ***silicon controlled rectifier (SCR) room A/C,*** located in SCR room is **20, 571.43** bbls/day. The duration of the discharge is **24** hours/day. The temperature and salinity of the effluent are **4.2** °C and **30** psu, respectively. The discharge occurs from a **4.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

7.1 Non-contact Cooling Water from SCR Room at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 7-1, 7-2, 7-3, 7-4,** and **7-5** respectively. **Figures 7-6** and **7-7** present the duration of the excess temperature and the area affected.

Figure 7-1: Ambient and Plume Properties – SCR Room Cooling Water at Mean Currents

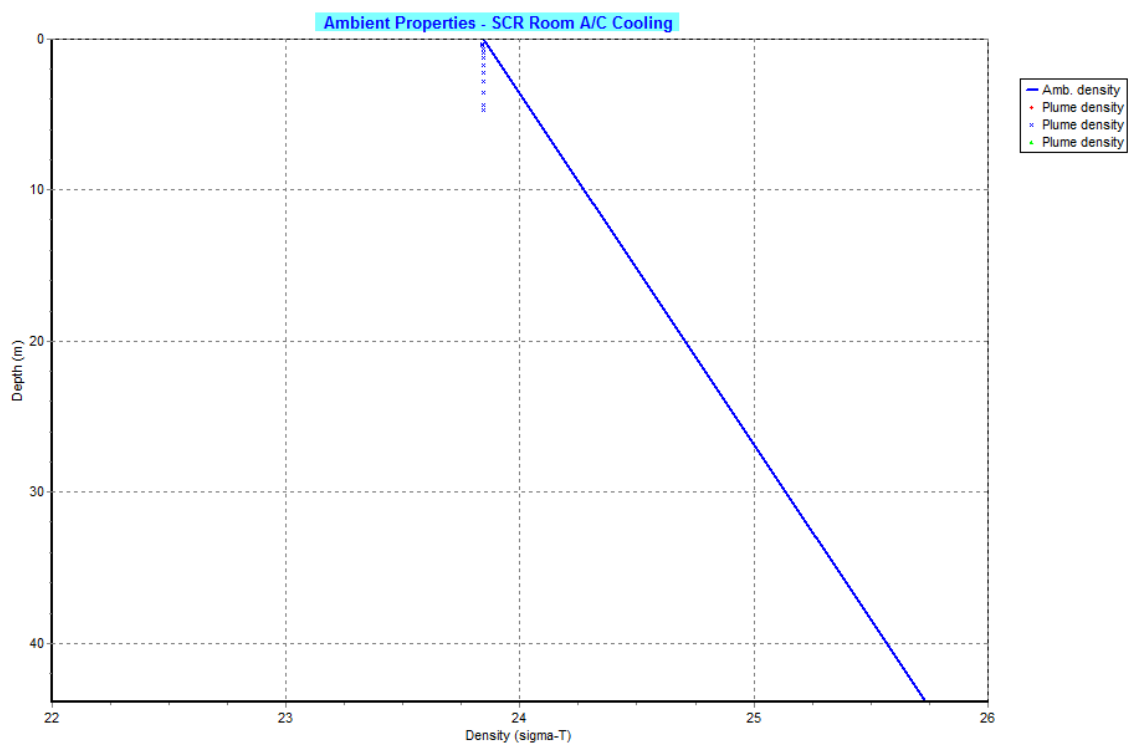

Figure 7-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.78** kg/m^3) plume to sink into the ambient to a depth of approximately **5** m. **Figure 7-2** presents the width of the plume. The maximum width of the plume is approximately **25** m at a distance of approximately **112** m from the source. The plume trajectory presented in **Figure 7-3** also

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shows that the plume reaches a depth of **5** m at a distance of approximately **112** m from the source and attains an average dilution factor of **400** as seen in **Figure 7-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 7-5** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance less than **2 m** from the source. It takes less than **1** minute after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 7-6**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **0.5** square meters only as seen in **Figure 7-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to a total area of **0.5** square meters only.

Figure 7-2: Plume Path - SCR Room Cooling Water at Mean Currents

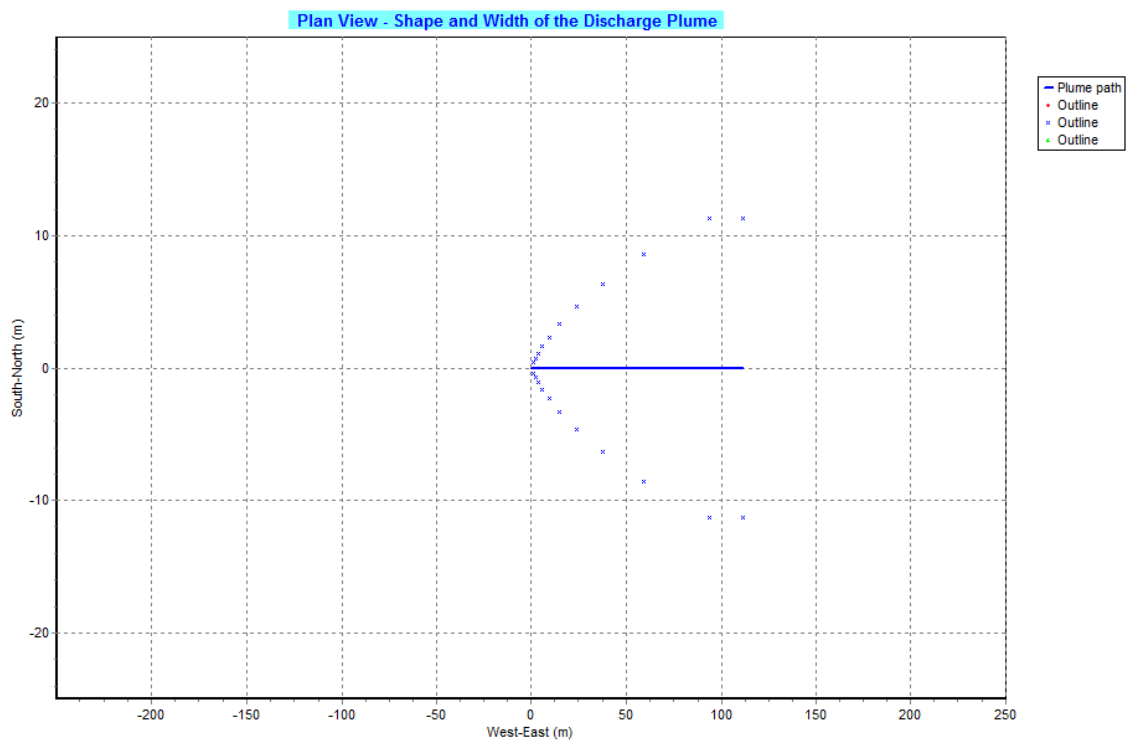

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Figure 7-3: Plume Trajectory - SCR Room Cooling Water at Mean Currents

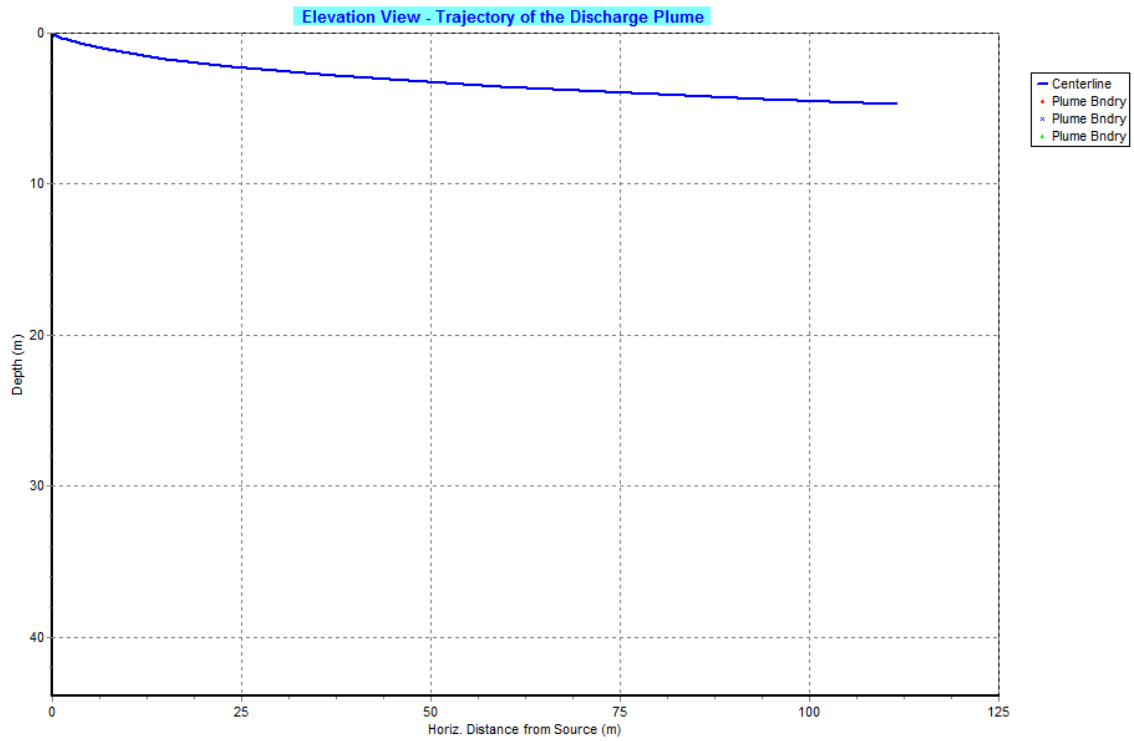

Figure 7-4: Plume Dilution - SCR Room Cooling Water at Mean Currents

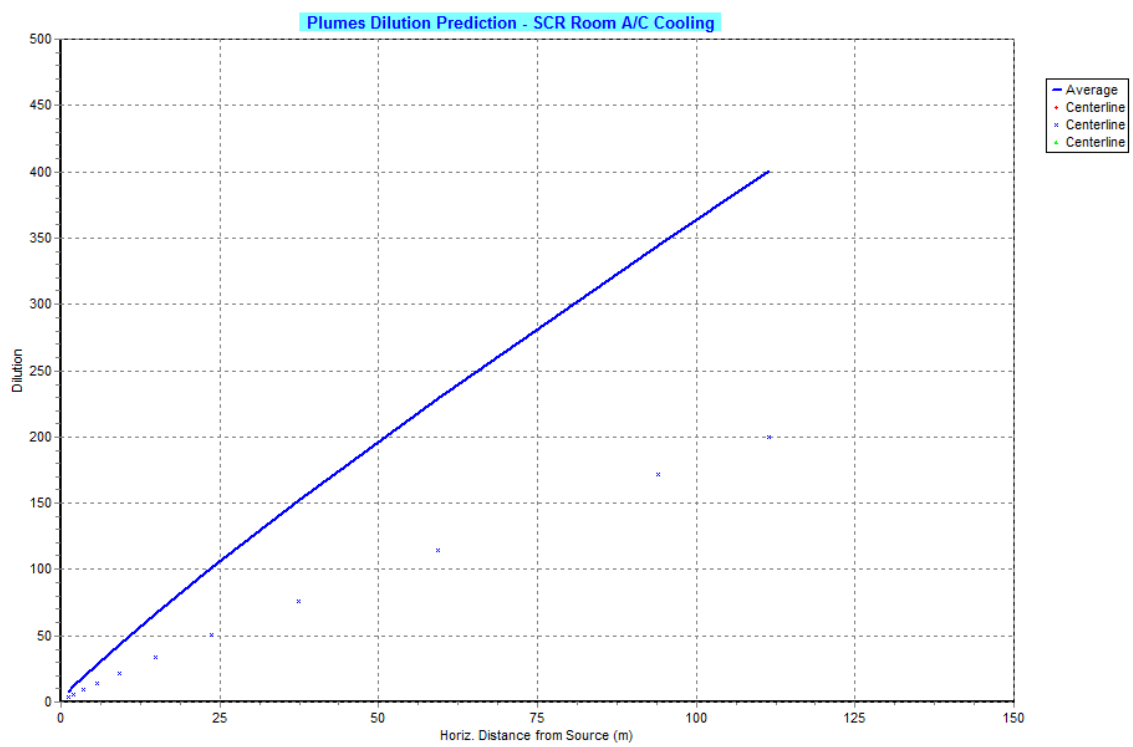

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Figure 7-5: Plume Temperature Decay - SCR Room Cooling Water at Mean Currents

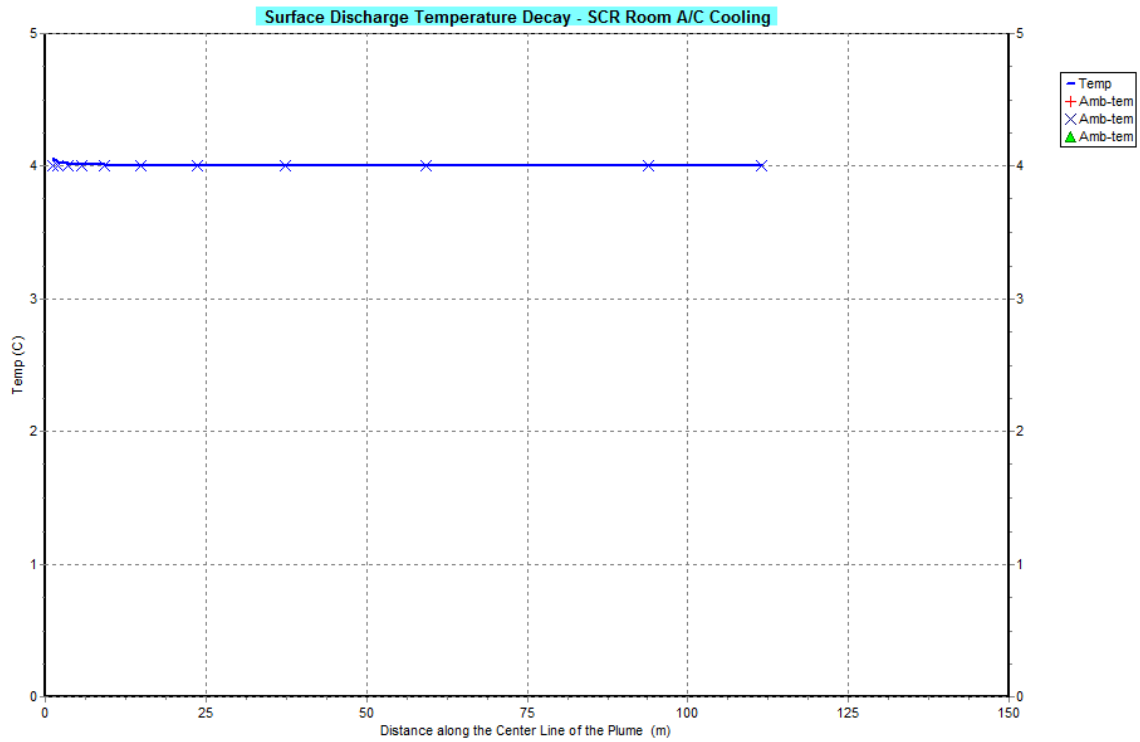

Figure 7-6: Duration of Excess Temperature - SCR Room Cooling Water at Mean Currents

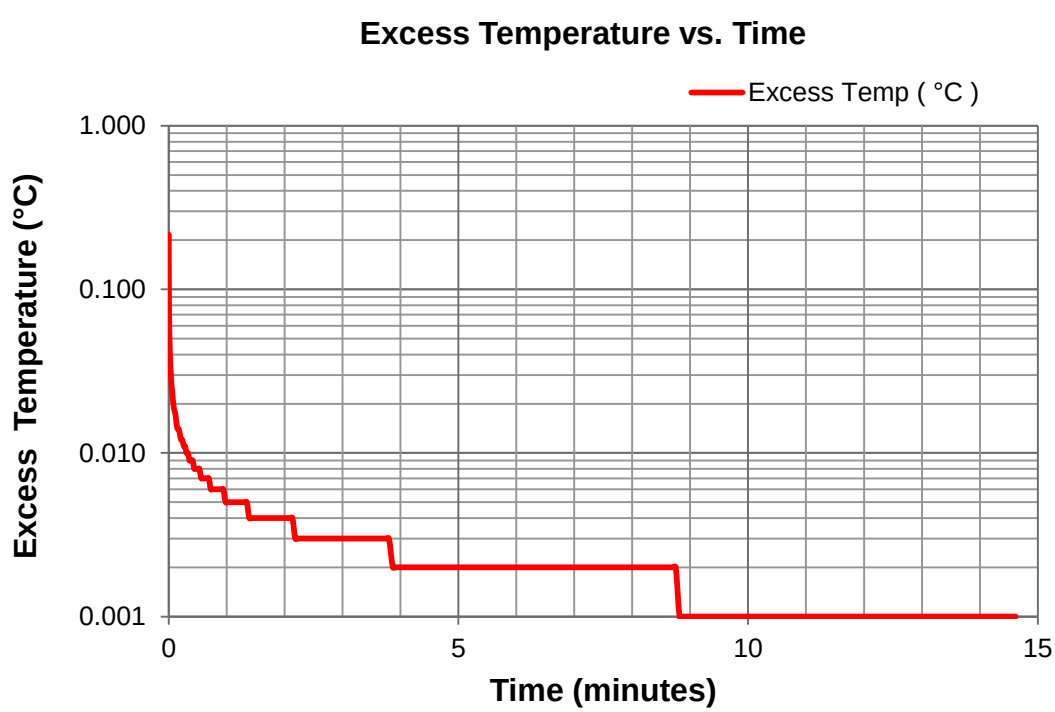

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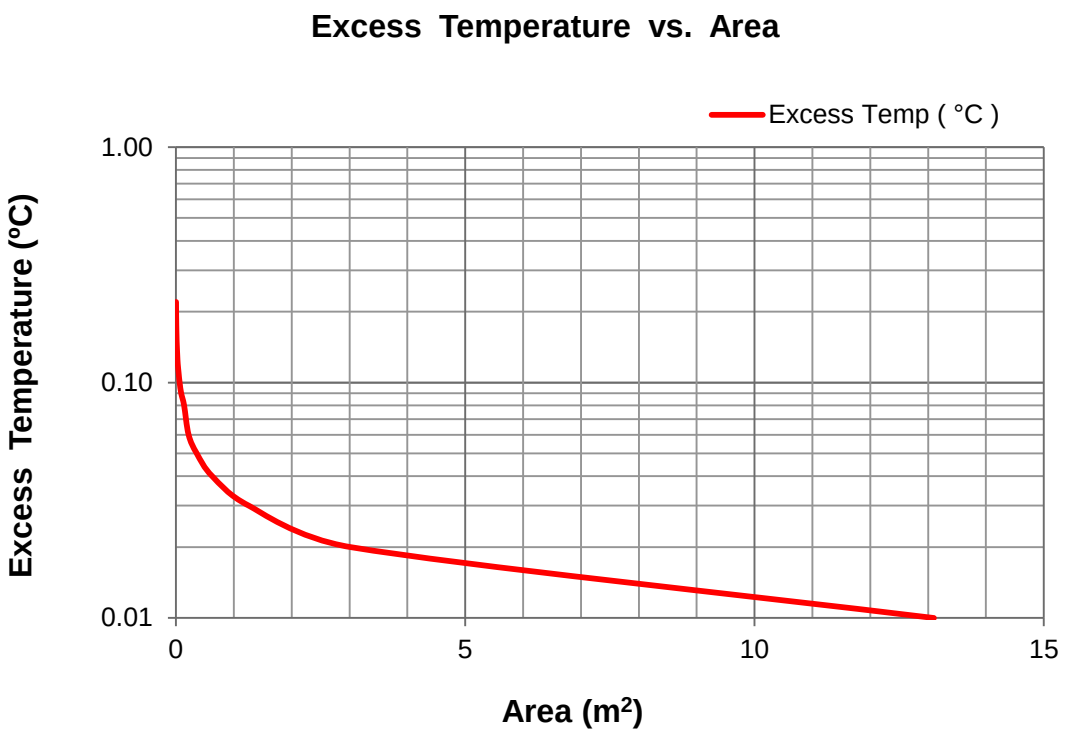
Figure 7-7: Area Affected by Excess Temperature - SCR Room Cooling Water at Mean Currents



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7.2 Non-contact Cooling Water from SCR Room at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 7-8, 7-9, 7-10, 7-11,** and **7-12** respectively. **Figures 7-13** and **7-14** present the duration of the excess temperature and the area affected.

Figure 7-8: Ambient and Plume Properties – SCR Room Cooling Water at Maximum Currents

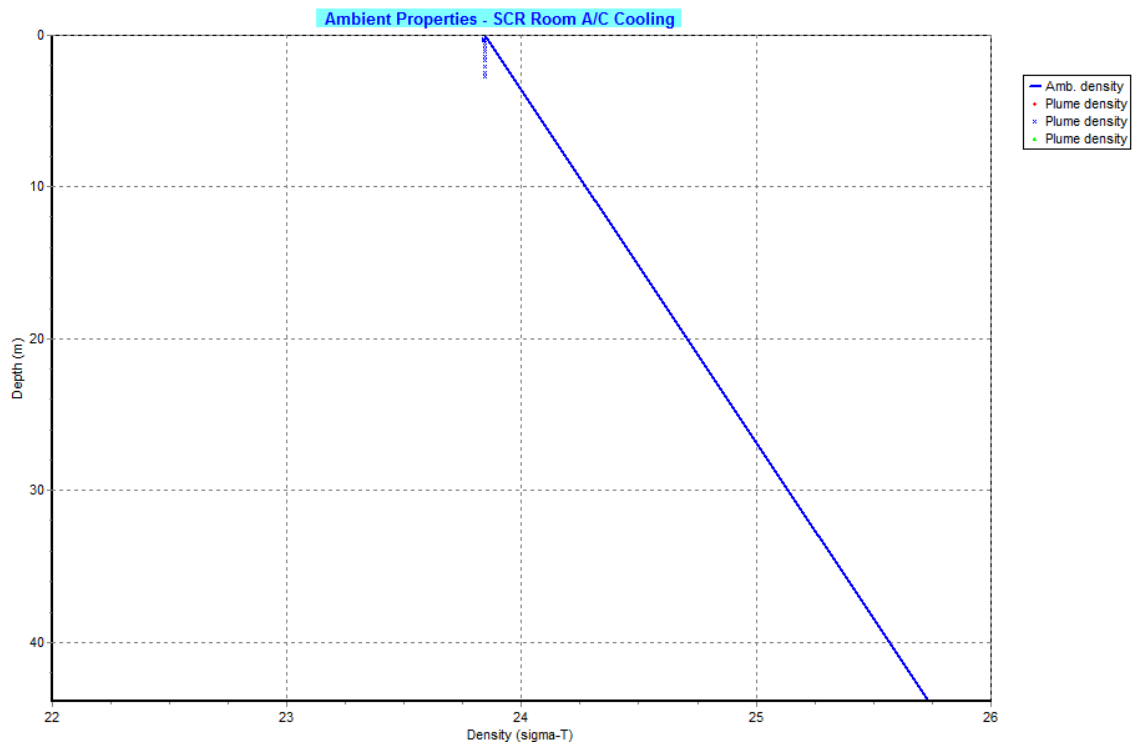

Figure 7-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the initial discharge momentum causes the effluent (σ_T = **23.78** kg/m^3) plume to sink into the ambient to a depth of approximately **2.75** m. **Figure 7-9** presents the width of the plume. The maximum width of the plume is approximately **13.5** m at a distance of approximately **130** m from the source. The plume trajectory presented in **Figure 7-10** also shows that the plume reaches a depth of **2.75** m at a distance of approximately **130** m from the source and attains an average dilution factor of **400** as seen in **Figure 7-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 7-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance less than **2** m from the source. It takes less than **1** minute after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 7-13**. The area affected by the excess temperature of **0.05** °C or higher is limited to approximately **0.5** square meters only as seen in **Figure 7-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to a total area of **0.5** square meters only.

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Figure 7-9: Plume Path - SCR Room Cooling Water at Maximum Currents

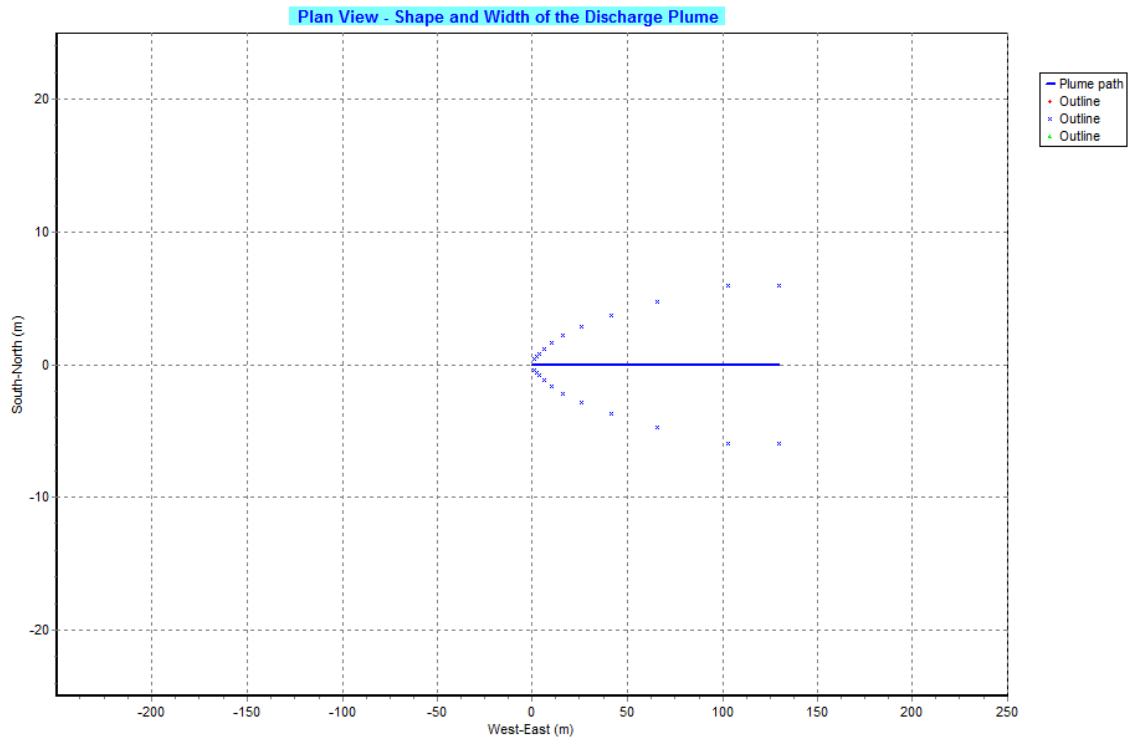

Figure 7-10: Plume Trajectory - SCR Room Cooling Water at Maximum Currents

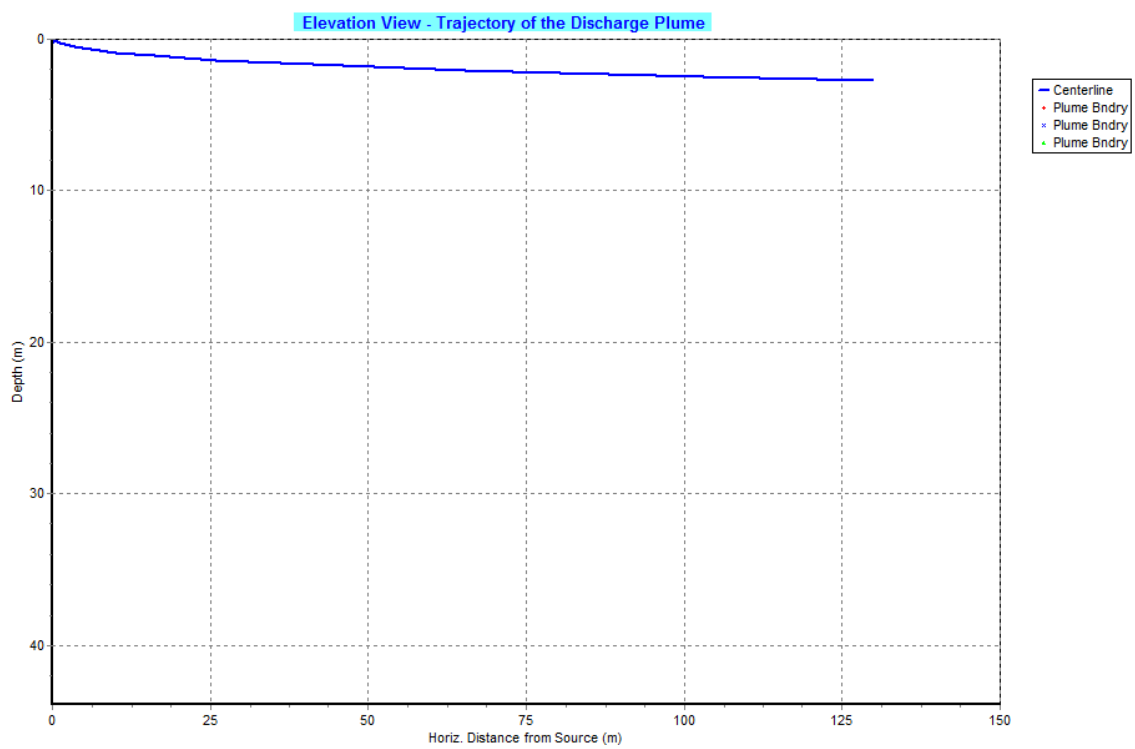

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Figure 7-11: Plume Dilution - SCR Room Cooling Water at Maximum Currents

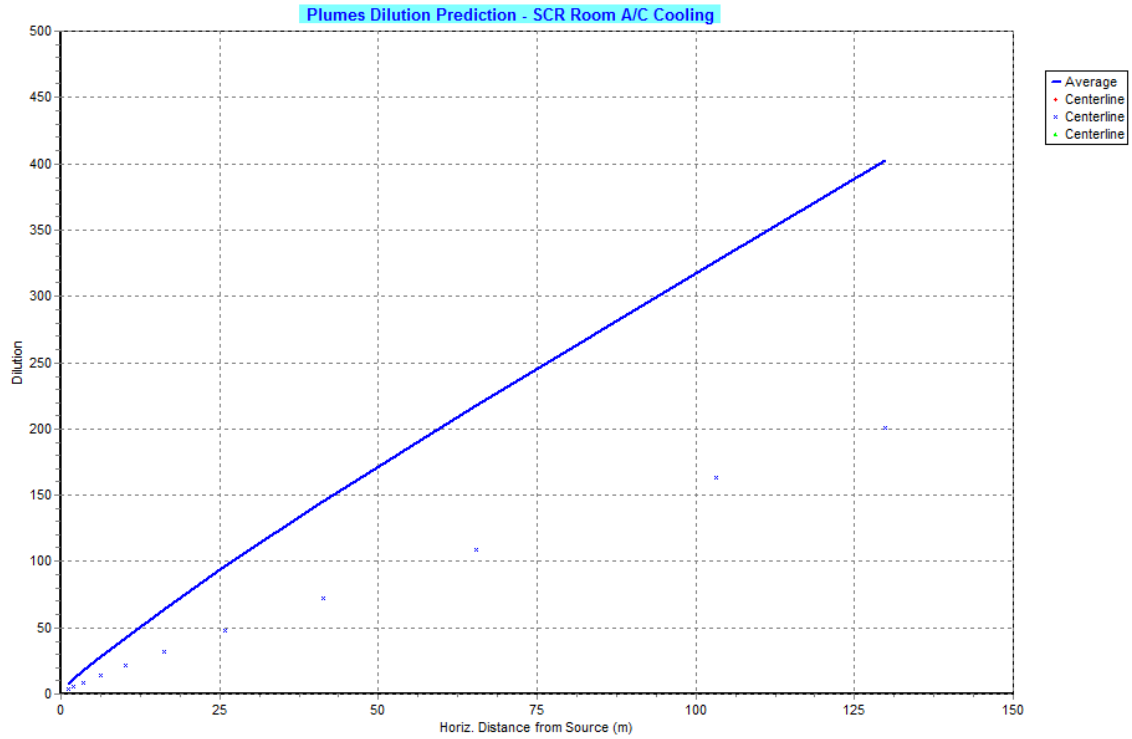

Figure 7-12: Plume Temperature Decay - SCR Room Cooling Water at Maximum Currents

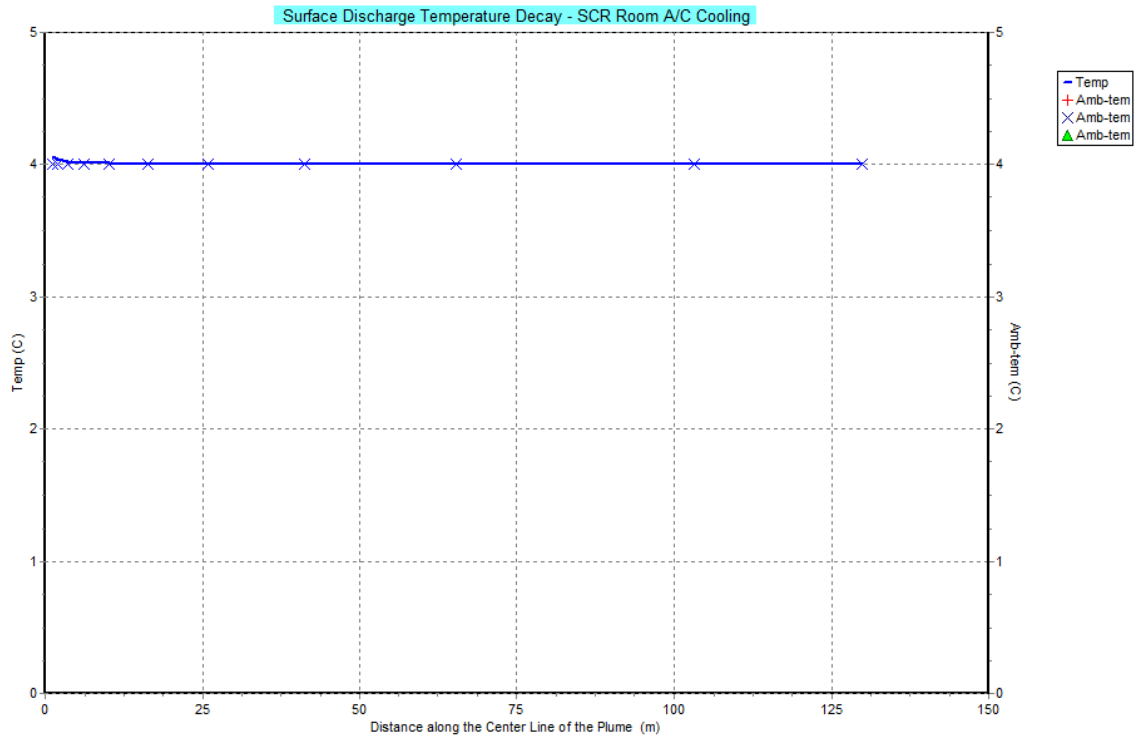

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Figure 7-13: Duration of Excess Temperature - SCR Room Cooling Water at Maximum Currents

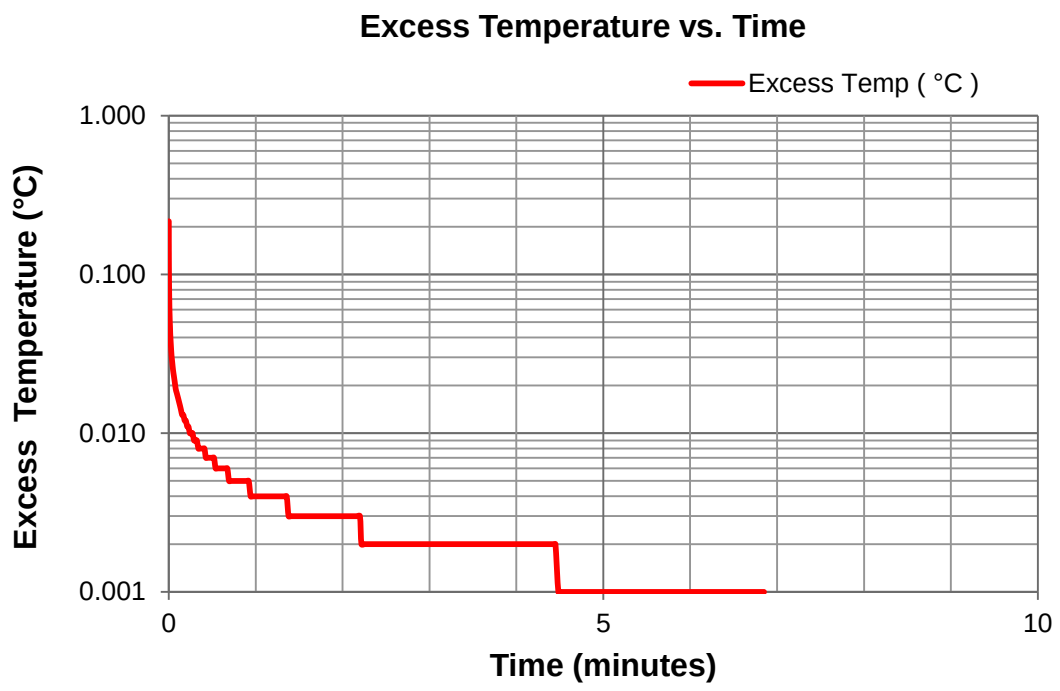
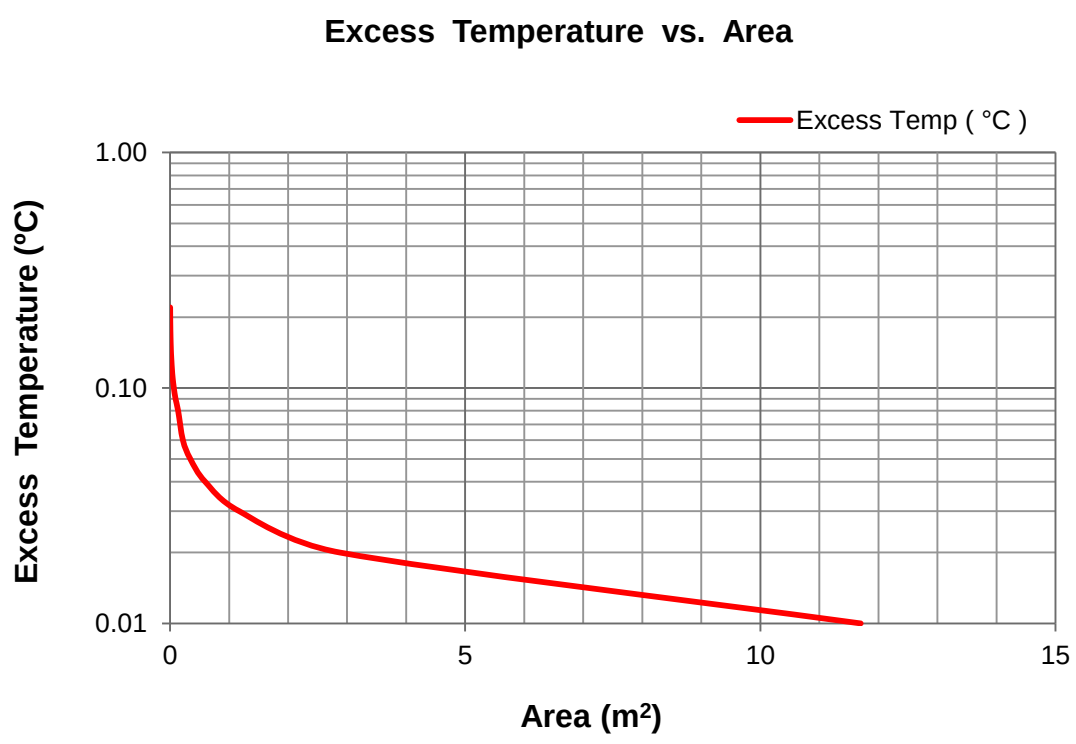


Figure 7-14: Area Affected by Excess Temperature - SCR Room Cooling Water at Mean Currents



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Section 8: Thermal Dispersion Modeling – Main Deck

The volume of the non-contact cooling water discharge from the ***Halliburton cement unit,*** located in main deck at the middle of the ship is **342.86** bbls/day. The duration of the discharge is between **18** and **24** hours/day. The temperature and salinity of the effluent are **12.0** °C and **30** psu, respectively. The discharge occurs from a **4.0**-inch internal diameter pipe at or near the sea surface. The direction of the discharge is assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**). Thermal dispersion numeric simulations were performed both for the mean and maximum currents. The model results both for the mean and maximum currents are described below.

8.1 Non-contact Cooling Water from Main Deck at Mean Currents

The Visual Plumes model results at the mean currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 8-1, 8-2, 8-3, 8-4,** and **8-5** respectively. **Figures 8-6** and **8-7** present the duration of the excess temperature and the area affected.

Figure 8-1: Ambient and Plume Properties – Main Deck Cooling Water at Mean Currents

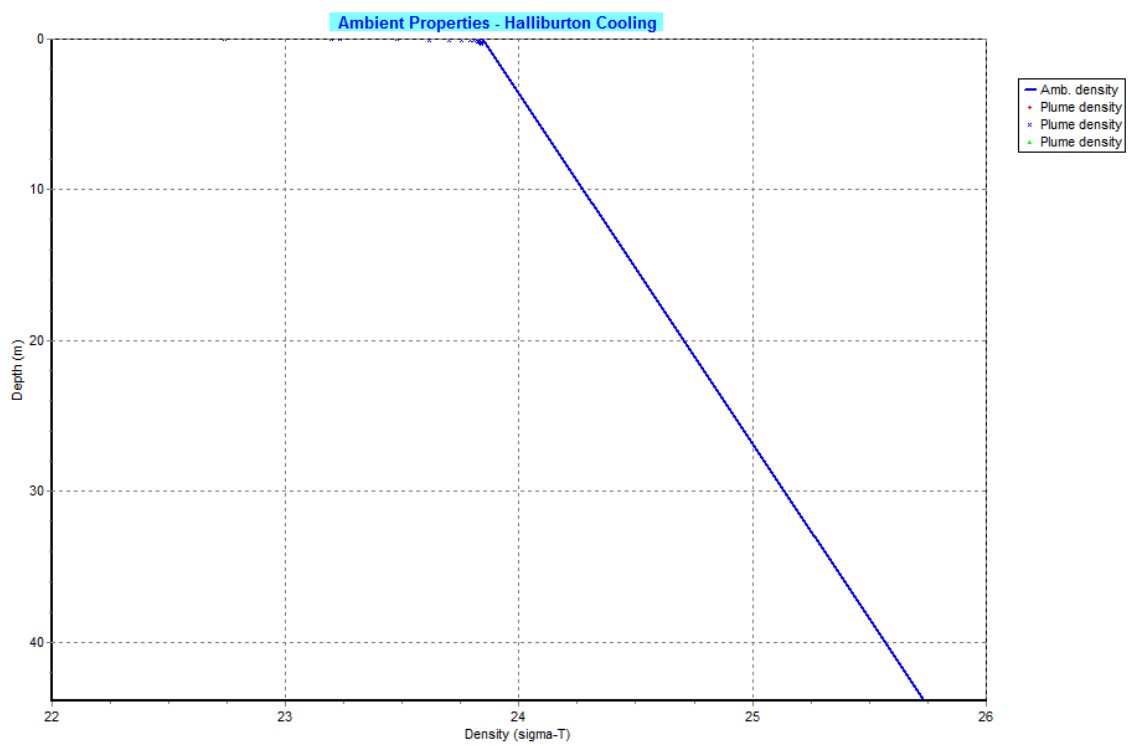

Figure 8-1 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the weak initial discharge momentum causes the effluent (σ_T = **22.69** kg/m^3) plume to sink into the ambient only to a depth of approximately **0.3** m. **Figure 8-2** presents the width of the plume. The maximum width of the plume is approximately **7** m at a distance of approximately **80** m from the source. The plume trajectory presented in **Figure 8-3**

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also shows that the plume reaches a depth of approximately **0.3** m at a distance of approximately **80** m from the source and attains an average dilution factor of **400** as seen in **Figure 8-4**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 8-5** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **65** m from the source. It takes approximately **15** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 8-6**. The area affected by the excess temperature of **0.05** ^{o}C is limited to approximately **320** square meters as seen in **Figure 8-7.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **320** square meters only.

Figure 8-2: Plume Path - Main Deck Cooling Water at Mean Currents

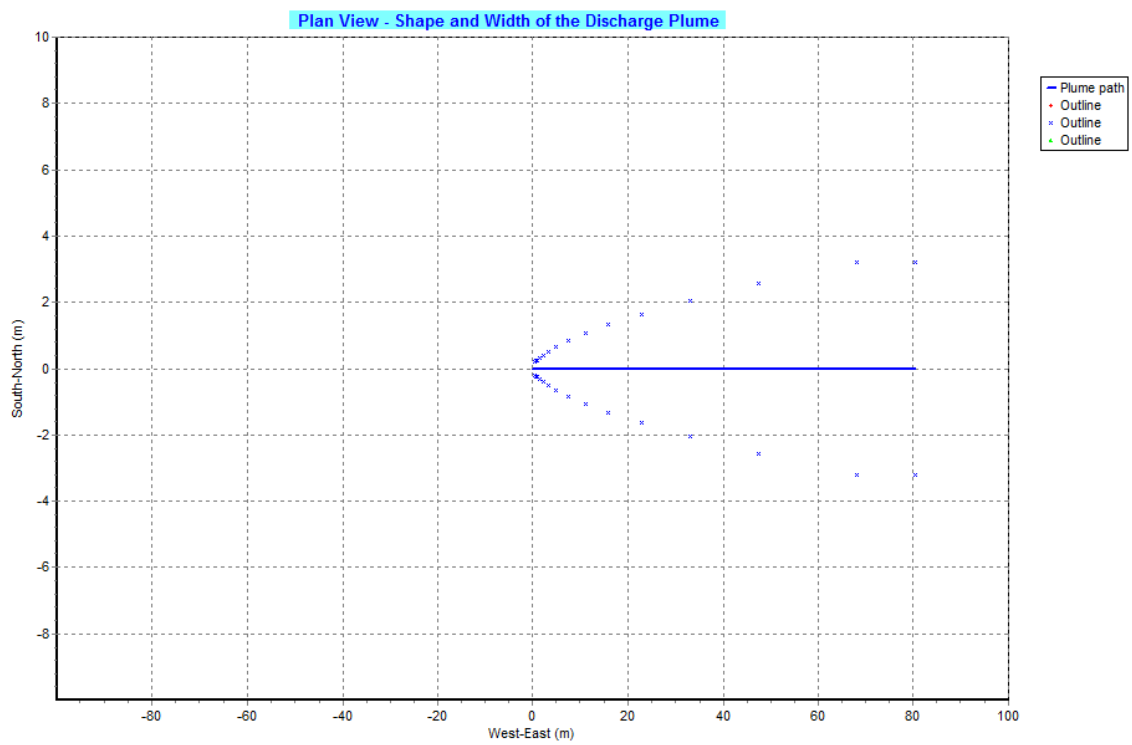

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Figure 8-3: Plume Trajectory - Main Deck Cooling Water at Mean Currents

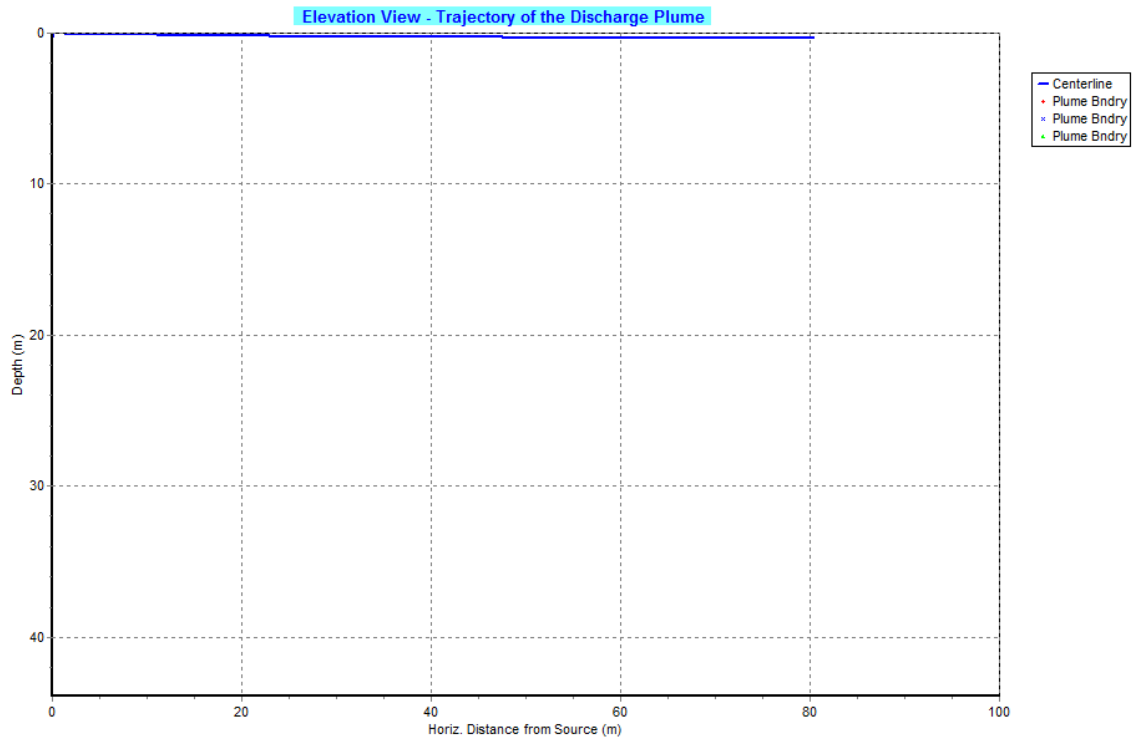

Figure 8-4: Plume Dilution - Main Deck Cooling Water at Mean Currents

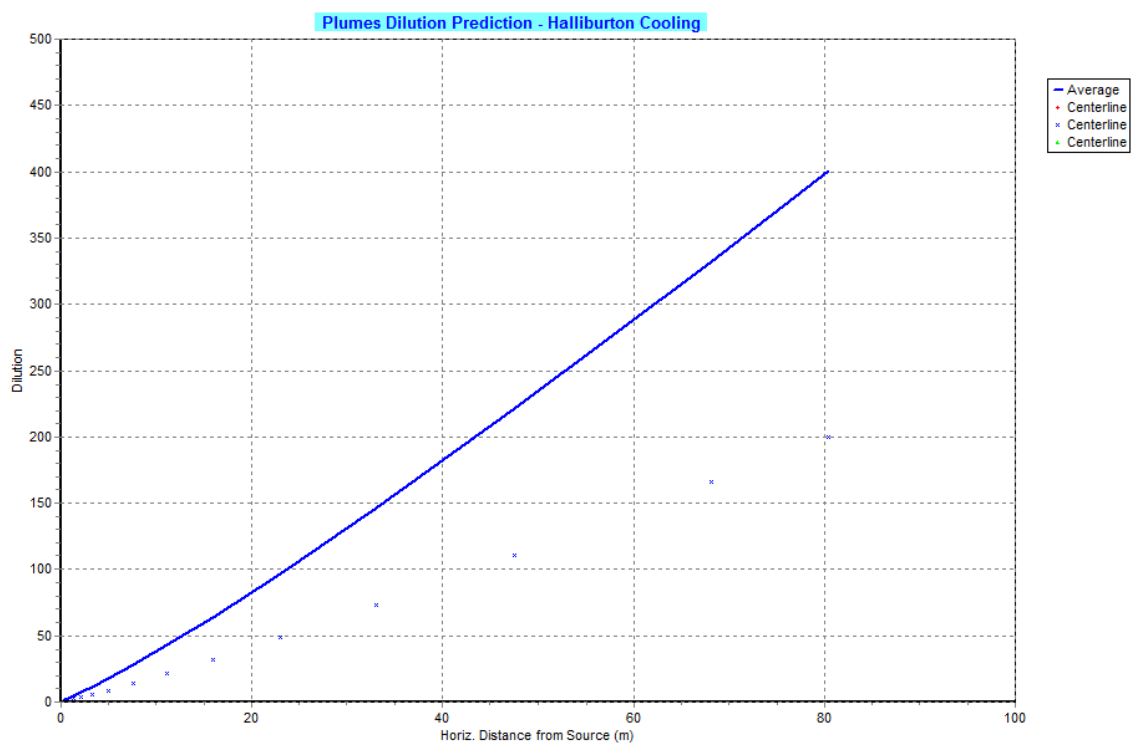

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Figure 8-5: Plume Temperature Decay - Main Deck Cooling Water at Mean Currents

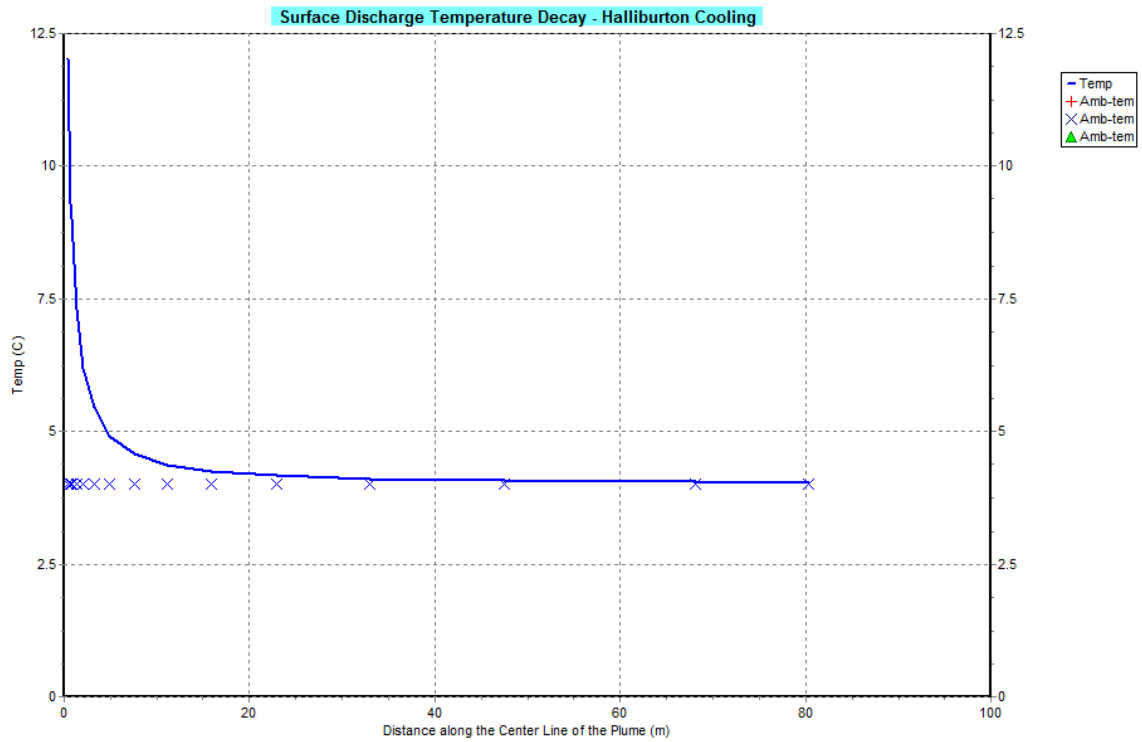

Figure 8-6: Duration of Excess Temperature - Main Deck Cooling Water at Mean Currents

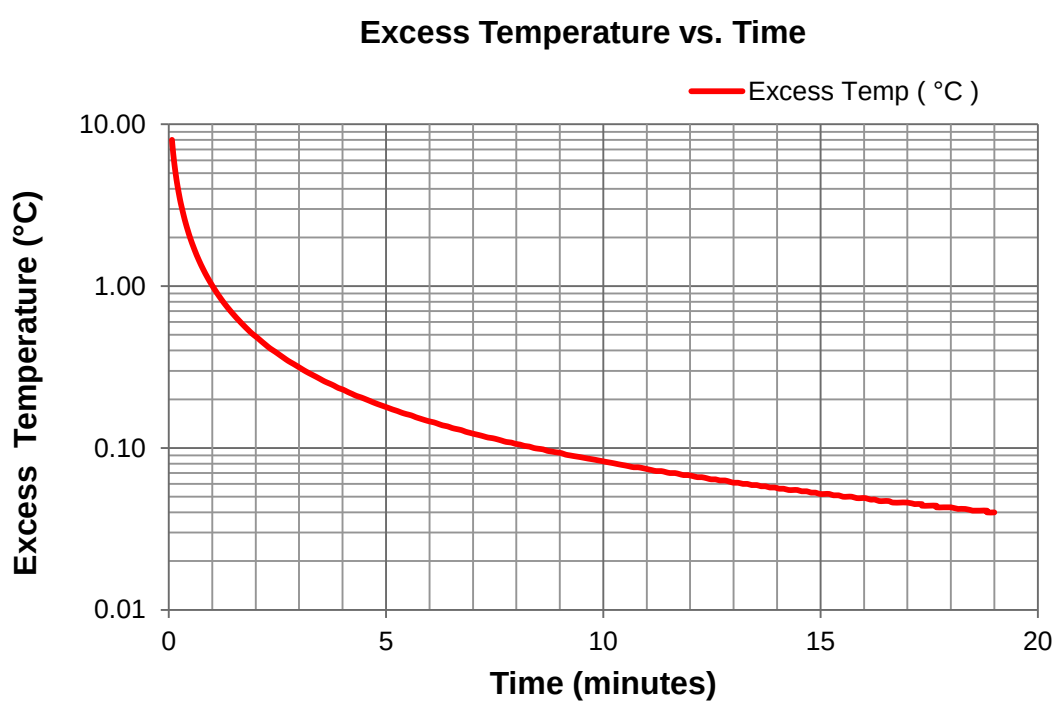

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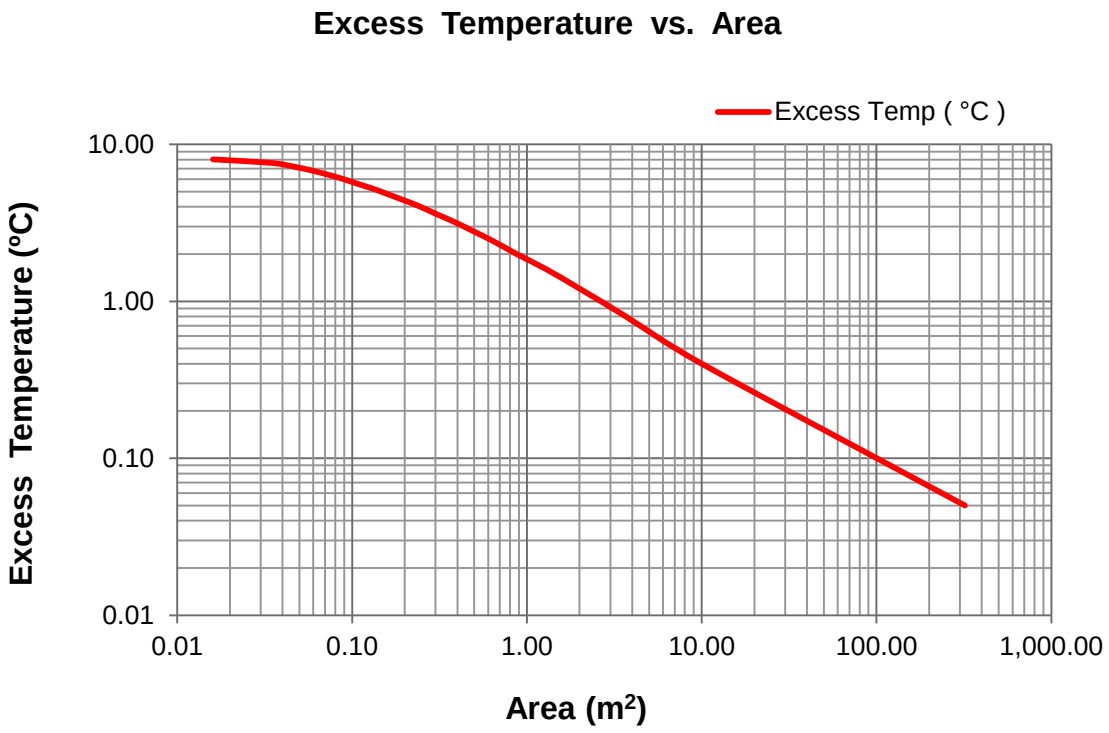
Figure 8-7: Area Affected by Excess Temperature - Main Deck Cooling Water at Mean Currents



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8.2 Non-contact Cooling Water from Main Deck at Maximum Currents

The Visual Plumes model results at the maximum currents for: ambient and plume properties; plume path; plume trajectory; plume dilution; and plume temperature decay are presented in **Figures 8-8, 8-9, 8-10, 8-11,** and **8-12** respectively. **Figures 8-13** and **8-14** present the duration of the excess temperature and the area affected.

Figure 8-8: Ambient and Plume Properties – Main Deck Cooling Water at Maximum Currents

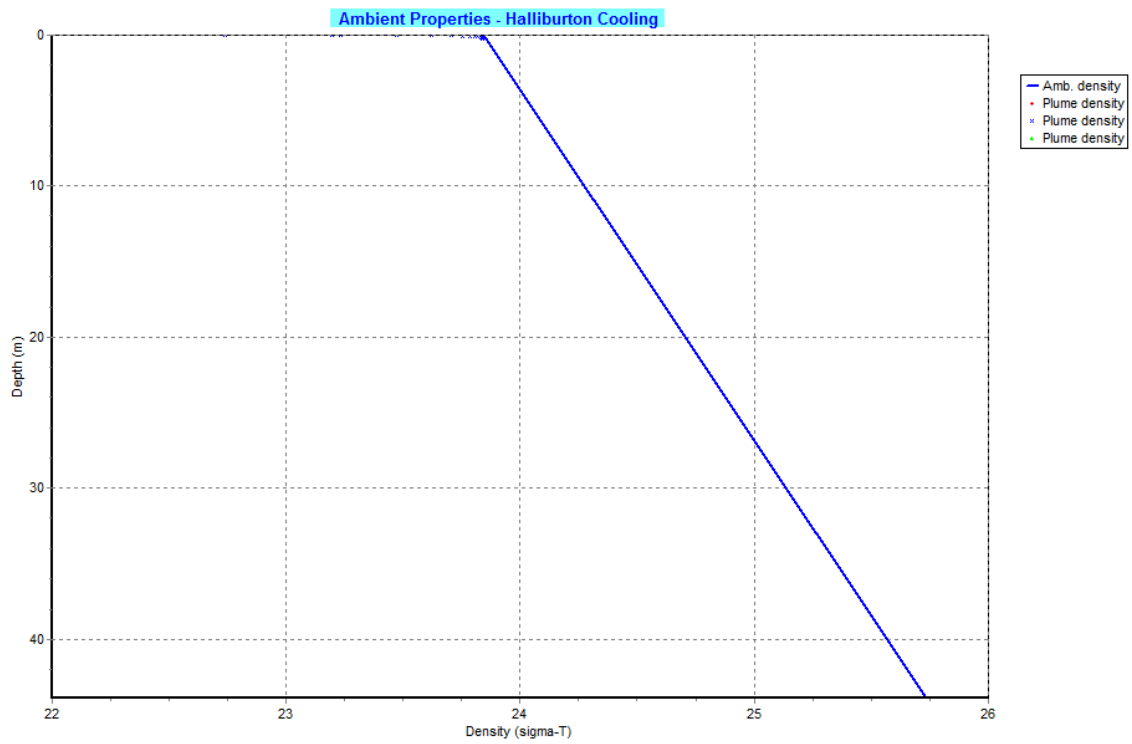

Figure 8-8 presents the ambient and plume densities (σ_T) versus the depth from the sea surface. The ambient density (σ_T) varies from **23.80** kg/m^3 at the surface to **25.77** kg/m^3 at the bottom. As seen above, the thermal plume is released near the sea surface and the weak initial discharge momentum causes the effluent (σ_T = **22.69** kg/m^3) plume to sink into the ambient only to a depth of approximately **0.2** m. **Figure 8-9** presents the width of the plume. The maximum width of the plume is approximately **3** m at a distance of approximately **105** m from the source. The plume trajectory presented in **Figure 8-10** also shows that the plume reaches a depth of approximately **0.2** m at a distance of approximately **105** m from the source and attains an average dilution factor of **400** as seen in **Figure 8-11**. The plume center line dilution factor is **200**. The plume temperature decay presented in **Figure 8-12** shows that it has cooled to within **0.05** ^{o}C of the ambient temperature (**4** ^{o}C) at a distance of approximately **85** m from the source. It takes approximately **5.5** minutes after the cessation of the discharge for the plume to cool to within **0.05** °C of the ambient as presented in **Figure 8-13**. The area affected by the excess temperature of **0.05** ^{o}C is limited to approximately **115** square meters as seen in **Figure 8-14.** Based on these findings, the impact of this release of the non-contact cooling water on the ambient is low and limited to an area of **115** square meters only.

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Figure 8-9: Plume Path - Main Deck Cooling Water at Maximum Currents

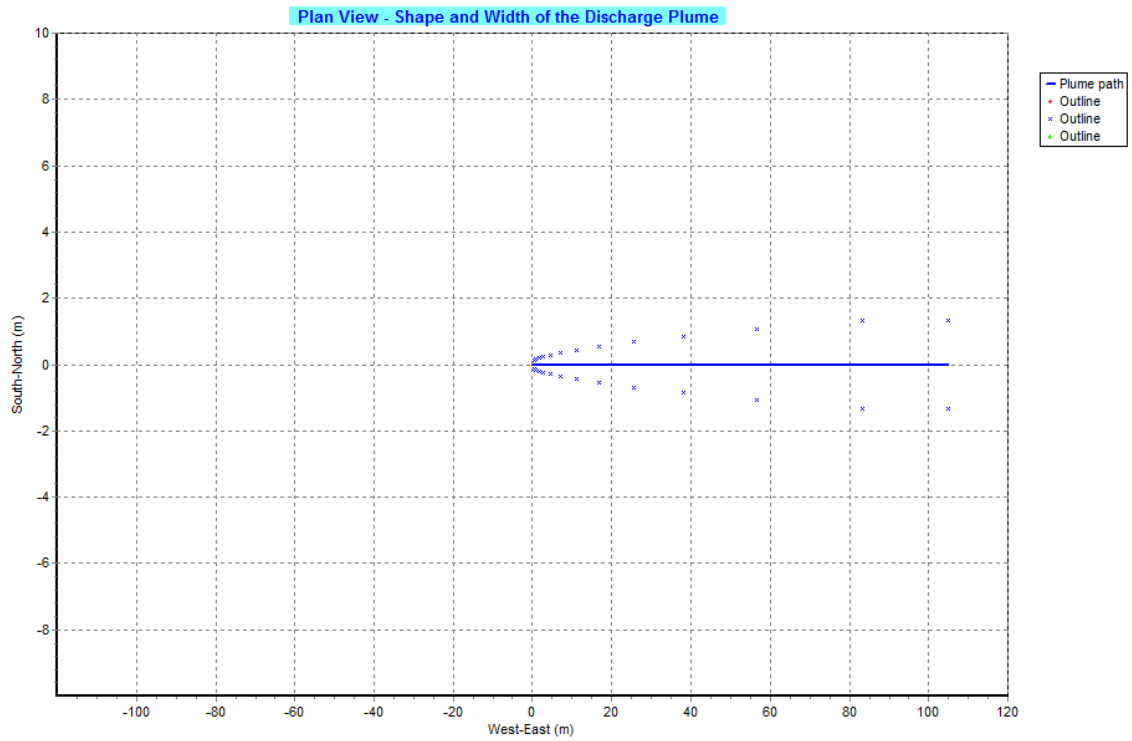

Figure 8-10: Plume Trajectory - Main Deck Cooling Water at Maximum Currents

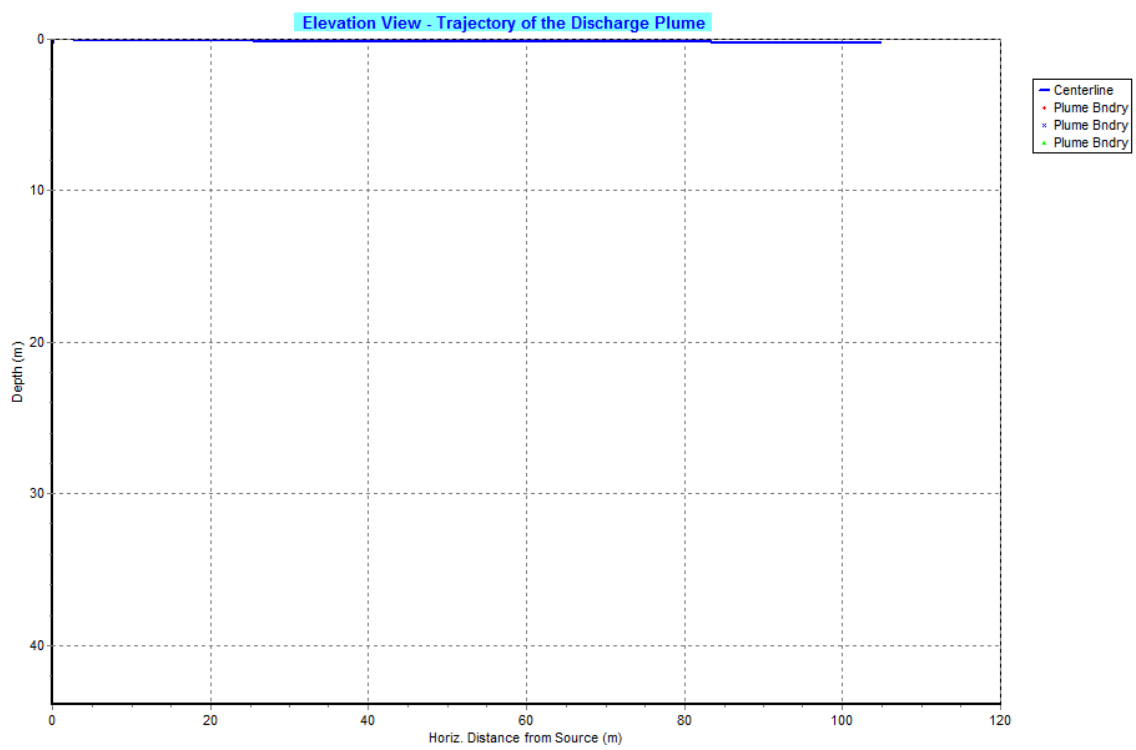

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Figure 8-11: Plume Dilution - Main Deck Cooling Water at Maximum Currents

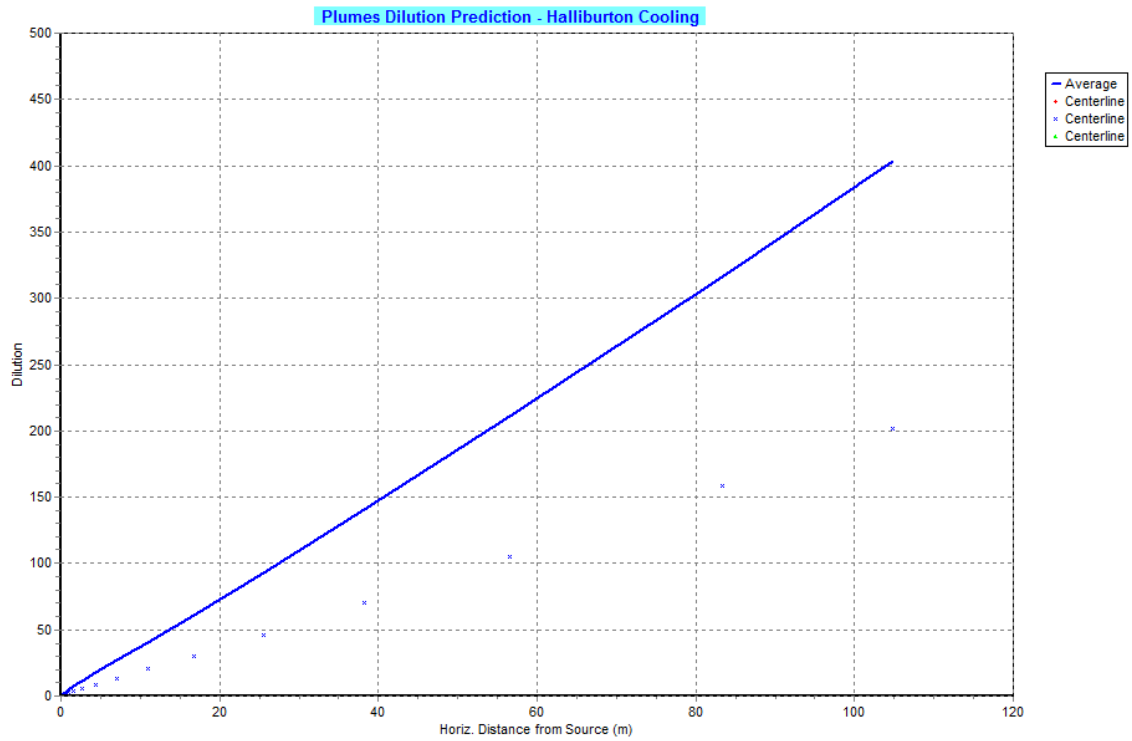

Figure 8-12: Plume Temperature Decay - Main Deck Cooling Water at Maximum Currents

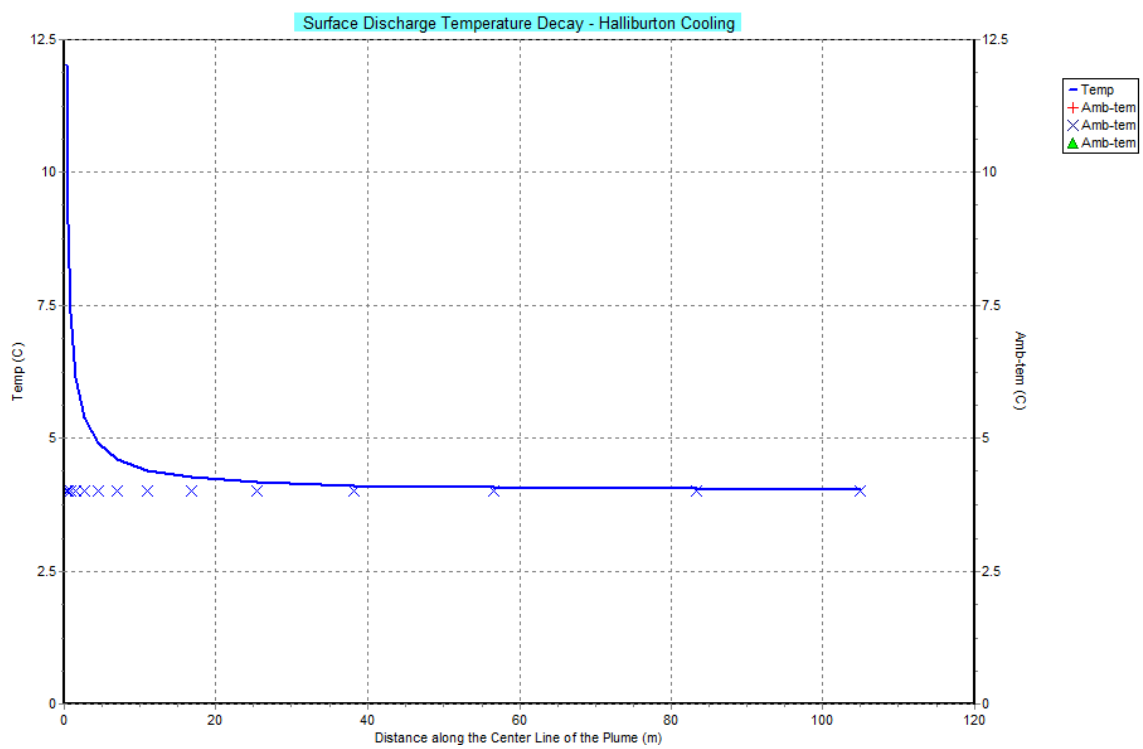

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Figure 8-13: Duration of Excess Temperature - Main Deck Cooling Water at Maximum Currents

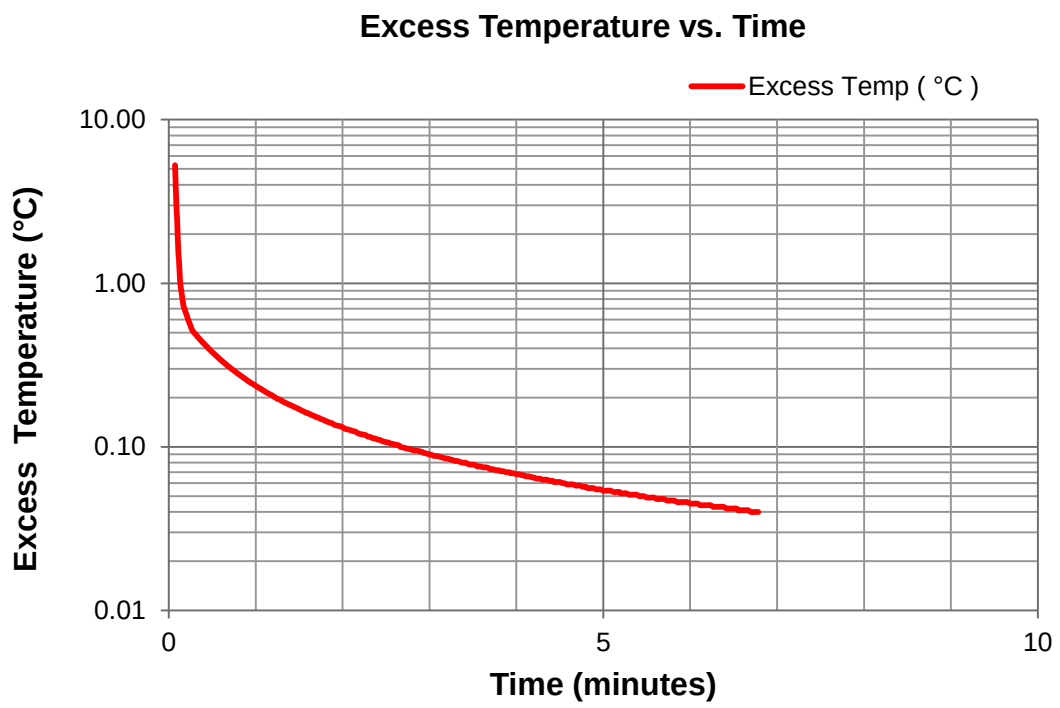
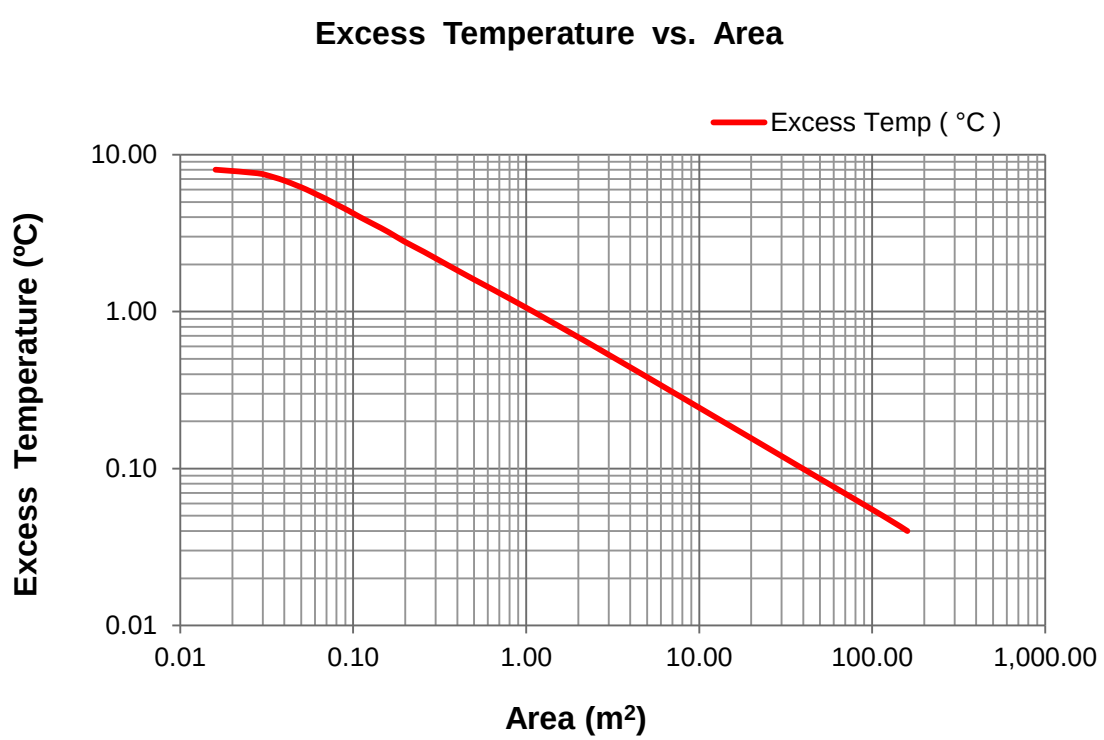


Figure 8-14: Area Affected by Excess Temperature - Main Deck Cooling Water at Maximum Currents



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Section 9: Summary and Conclusion

9.1 Objective

The primary objective of this environmental numeric modeling was to conduct an assessments of the temperature associated with the non-contact cooling water discharges from the drilling operations to be performed by the drill ship the **Noble Discoverer** in the burger field, located in the Chuckchi Sea, by SHELL Alaska Venture. The drill ship Noble Discoverer will discharge approximately **107,314.29** barrels (bbls) per day (bbls/day) of the non-contact cooling water from six (**6**) different outlets located on this drill ship. This constitutes the discharge described in the Permit No.: **AKG-28-8100** as **Discharge 009** (non-contact cooling water).

9.2 Modeling Assessments

Numeric modeling for the thermal dispersion were conducted using the **US EPA Visual Plumes Model** to characterize the temperature associated with the non-contact cooling water discharges (**Discharge 009)** both for the mean and maximum currents speed from the drilling operations to be conducted in the burger field by the drill rig Noble Discoverer. This provides a sensitivity analysis of the numeric model results to the model input parameter: currents speed. The numeric simulations were conducted for six (**6**) point discharge sources from the drill rig Noble Discoverer. The six point discharge sources are identified as: engine room, motor control center (MCC) room, generator room (diesel generator I), generator room (diesel generator II), silicon controlled rectifier (SCR) room, and main deck. The volumes of the non-contact cooling water discharges from the engine room, MCC room, diesel generator I (generator room), diesel generator II (generator room), SCR room, and main deck are approximately: **34,285.71**, **17,142.86**, **17,485.71**, **17,485.71**, **20,571.43**, and **342.86** bbls/day, respectively. The total non-contact cooling water discharges (**Discharge 009)** from these six sources is **107,314.29** bbls/day.

The thermal dispersion simulations were performed using the effluent and ambient data for the planned drilling period. The planned drilling period is within the open water season of July thru October. The direction of the discharge was assumed to be aligned with the ambient flow direction for the modeling purpose since the current bends the plume in the direction of flow (Frick **2003**).

The potential impact assessments of the excess temperature of **0.05** °C on the ambient water quality based on the US EPA Visual Plumes thermal dispersion numeric simulations both for the mean and maximum currents speed are presented in **Table 3**. The discharge plume sinks deeper into the ambient and also wider at mean currents. It travels farther at the maximum currents. The higher ambient flow velocity induces enhanced mixing of the plume at the maximum currents. Hence, the plume cools to within **0.05** °C of the ambient sooner after the cessation of the discharge at the maximum currents speed than at the mean currents speed. The areas affected by the excess temperature of **0.05** ^{o}C at the maximum currents speed are generally less than those at the mean currents speed. Therefore, mean currents speed represents the worst case scenario.

The Visual Plumes model estimates: maximum plume depth is **5.0** m; maximum plume width is **54.0** m; maximum distance from the source is **218.0** m; maximum duration for the plume to cool within **0.05** °C of the ambient after the cessation of the discharge is **56.0** minutes; and total area affected is **1.34** hectares (ha). These estimates indicate **low** impacts on the ambient water quality from the temperature associated with the Discharge **009** (non-contact cooling water) of approximately **107**,**314**.**29** barrels (bbls) per day from the six (**6**) different outlets located on the drill ship Noble Discoverer.

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Table 3: Impact Assessments of Discharge 009 on the Ambient Water Quality

Discharge Type (Number)	Discharge Source		Notes	Volume Discharged (bbls/day)	Discharge Duration (hours/day)	Effluent Properties		Impact Assessments on the Ambient Water Quality based on the US EPA Visual Plumes Thermal Dispersion Model Predictions							
	Description	Location				Temp (°C)	Salinity (psu)	Excess Temperature (°C)	Currents Speed	Plume Depth (m)	Plume Width (m)	Distance from Source (m)	Duration (minutes)	Affected Area (m^2)	Impacts
Non-Contact Cooling Water (009)	A/C Cooling Water	Engine Room	Shared	34,285.7	24	5.1	30	0.05	Mean	5.0	40.0	180.0	1.0	50.0	Low
	HVAC A/C Cooling Water								Max	3.0	20.0	200.0	0.5	30.0	
	Hydraulic Unit, Compressor Chiller & Rig Brake Cooling Water	MCC Room		17,142.9	24	4.2	30		Mean	4.2	24.0	114.0	1.0	0.5	
									Max	2.5	12.5	133.0	1.0	0.5	
	Diesel Generators I Cooling Water	Generator Room		17,485.7	24	16.1	30		Mean	2.0	54.0	216.0	56.0	6500.0	
									Max	1.5	21.5	218.0	18.0	2850.0	
	Diesel Generators II Cooling Water	Generator Room	Shared	17,485.7	24	16.1	30		Mean	2.0	54.0	216.0	56.0	6500.0	
	Diesel Generators II Re-circulation Cooling Water								Max	1.5	21.5	218.0	18.0	2850.0	
	SCR Room A/C Cooling Water	SCR Room		20,571.4	24	4.2	30		Mean	5.0	25.0	112.0	1.0	0.5	
									Max	2.8	13.5	130.0	1.0	0.5	
	Halliburton Cement Unit Cooling Water	Main Deck	Intermittent flows	342.9	18 - 24	12.0	30		Mean	0.3	7.0	80.0	15.0	320.0	
									Max	0.2	3.0	105.0	5.5	115.0	
Total Discharge =		107,314.29			bbls/day;			Total Maximum Area Affected =					1.34	Hectares	Low

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Section 10: References

Frick, W.E., et al., **2003**. Dilution Models for Effluent Discharges, **4**th Edition (Visual Plumes): US EPA's Ecosystems Research Division, National Exposure Research Laboratory, U.S. Environmental Protection Agency, Athens, Georgia.

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APPENDICES

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Appendix A: Model Input Data

Table A.1: Input Data for Discharge 009 from Noble Discoverer, the Burger Field, Chukchi Sea

Discharge Type	Discharge Number	Discharge Source		Notes	Volume Discharged		Discharge Duration, hours/day	Internal Diameter (inches)	Effluent Characteristics	
		Description	Location		gpm	bbls/day			Temp (°C)	Salinity (psu)
Non-Contact Cooling Water	009	A/C Cooling Water HVAC A/C Cooling Water	Engine Room (Starboard)	Shared	1,000	34,285.71	24	6.00	5.1	30
		Hydraulic Unit, Compressor Chiller & Rig Brake Cooling Water	MCC Room (Port)		500	17,142.86	24	4.00	4.2	30
		Diesel Generators I Cooling Water	Generator Room (Forward M/C Space (Port))		510	17,485.71	24	8.00	16.1	30
		Diesel Generators II Cooling Water Diesel Generators II Re-circulation Cooling Water	Generator Room (Forward M/C Space (Starboard))	Shared	510	17,485.71	24	8.00	16.1	30
		SCR Room A/C Cooling Water	SCR Room (Starboard /Mid Ship)		600	20,571.43	24	4.00	4.2	30
		Halliburton Cement Unit Cooling Water	Main Deck (Port)	Intermittent flows	10	342.86	18 - 24	4.00	12.0	30
					Total	107,314.29	bbls/day			

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Table A.2: Input Data for the Ambient, July – October, the Burger Field, Chukchi Sea

Water Depth	Temperature	Salinity	Mean Currents		Maximum Currents	
m	°C	psu	Speed (m/s)	Direction	Speed (m/s)	Direction
0	4	30	0.07	to the East	0.25	to the East
43.9-45.7	-0.5	32	0.07	to the East	0.25	to the East

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Appendix B: Model Outputs for Engine Room

Table B.1: Visual Plumes Model Output Data for Engine Room at Mean Currents

-	FLOATING	WARM	WATER	JETS	--	June	1999PAGE	1	
1	:	case	#						
AMBIENT	CONDITIONS	:	TEMP.	TA=	4	DEG.	C	,;	VEL.
HEAT	CONVECTION	=	2					0.07	M/S
DISCHARGE	CONDITIONS	:	TEMP.	=	5.1	C;	DEPTH	=	0.14 M.
ANGLE	0	DEG	;	DISCHARGE	RATE	=	0.06	CU-M/S	
DISCHARGE	DENSIMENTRIC	FROUDE	NO.	=	228.29				
;	WIDTH	=	0.13	M.					

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.12	0	1.116	3.23E-02	2	1	0.21	0.21
0.13	0	1.087	3.51E-02	2.05	1.03	0.21	0.22
0.14	0	1.06	3.81E-02	2.11	1.05	0.21	0.22
0.15	0	1.035	4.11E-02	2.16	1.08	0.21	0.23
0.16	0	1.012	4.41E-02	2.21	1.1	0.22	0.24
0.17	0	0.99	4.73E-02	2.25	1.13	0.22	0.25
0.18	0	0.97	5.05E-02	2.3	1.15	0.22	0.26
0.2	0	0.932	5.71E-02	2.39	1.2	0.22	0.28
0.22	0	0.898	6.39E-02	2.48	1.24	0.22	0.3
0.24	0	0.868	7.10E-02	2.57	1.29	0.23	0.31
0.26	0	0.84	7.84E-02	2.66	1.33	0.23	0.33
0.3	0	0.791	9.37E-02	2.82	1.41	0.23	0.36
0.34	0	0.749	1.10E-01	2.98	1.49	0.24	0.4
0.38	0	0.712	1.27E-01	3.14	1.57	0.24	0.43
0.43	0	0.679	1.45E-01	3.29	1.64	0.25	0.46
0.51	0	0.623	1.83E-01	3.58	1.79	0.26	0.52
0.59	0	0.577	2.24E-01	3.87	1.93	0.27	0.58
0.67	0	0.539	2.69E-01	4.15	2.07	0.28	0.63
0.75	0	0.505	3.16E-01	4.42	2.21	0.29	0.69
0.92	0	0.451	4.19E-01	4.96	2.48	0.32	0.8
1.08	0	0.408	5.33E-01	5.49	2.74	0.34	0.9
1.25	0	0.373	6.58E-01	6.01	3	0.36	1.01
1.41	0	0.343	7.94E-01	6.52	3.26	0.38	1.11
1.58	0	0.318	9.40E-01	7.03	3.52	0.4	1.21

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1.74	0	0.297	1.10E+00	7.54	3.77	0.43	1.31
2.07	0	0.262	1.44E+00	8.55	4.27	0.47	1.5
2.4	0	0.235	1.82E+00	9.55	4.77	0.51	1.69
2.73	0	0.213	2.24E+00	10.54	5.27	0.55	1.87
3.06	0	0.195	2.70E+00	11.53	5.76	0.59	2.05
3.39	0	0.179	3.19E+00	12.51	6.25	0.63	2.23
3.72	0	0.166	3.72E+00	13.48	6.74	0.67	2.41
4.37	0	0.146	4.89E+00	15.42	7.71	0.75	2.75
5.03	0	0.13	6.18E+00	17.34	8.67	0.82	3.09
5.69	0	0.117	7.61E+00	19.25	9.62	0.89	3.42
6.35	0	0.106	9.16E+00	21.14	10.57	0.95	3.74
7.01	0	0.098	1.08E+01	23.01	11.51	1.01	4.05
7.66	0	0.09	1.26E+01	24.88	12.44	1.07	4.36
8.32	0	0.084	1.45E+01	26.73	13.36	1.13	4.66
8.98	0	0.079	1.65E+01	28.57	14.28	1.19	4.96
9.64	0	0.074	1.86E+01	30.4	15.2	1.24	5.25
10.3	0	0.07	2.08E+01	32.22	16.11	1.29	5.53
10.95	0	0.066	2.31E+01	34.02	17.01	1.34	5.82
11.61	0	0.063	2.55E+01	35.82	17.91	1.39	6.09
12.27	0	0.06	2.80E+01	37.61	18.8	1.44	6.37
12.93	0	0.057	3.06E+01	39.39	19.69	1.49	6.64
13.58	0	0.055	3.33E+01	41.16	20.58	1.53	6.9
14.24	0	0.052	3.60E+01	42.92	21.46	1.57	7.17
14.9	0	0.05	3.89E+01	44.67	22.33	1.61	7.42
15.56	0	0.048	4.18E+01	46.41	23.21	1.65	7.68
16.22	0	0.047	4.47E+01	48.15	24.07	1.69	7.93
16.87	0	0.045	4.78E+01	49.88	24.94	1.73	8.18
17.53	0	0.043	5.09E+01	51.6	25.8	1.77	8.43
18.19	0	0.042	5.41E+01	53.31	26.66	1.81	8.67
18.85	0	0.041	5.74E+01	55.02	27.51	1.84	8.91
19.51	0	0.04	6.07E+01	56.72	28.36	1.88	9.15
20.16	0	0.038	6.41E+01	58.41	29.2	1.91	9.38
20.82	0	0.037	6.76E+01	60.09	30.05	1.94	9.62
21.48	0	0.036	7.11E+01	61.77	30.89	1.98	9.85
22.14	0	0.035	7.47E+01	63.45	31.72	2.01	10.07
22.8	0	0.034	7.84E+01	65.12	32.56	2.04	10.3
23.45	0	0.034	8.21E+01	66.78	33.39	2.07	10.52
24.11	0	0.033	8.58E+01	68.43	34.22	2.1	10.74
24.77	0	0.032	8.96E+01	70.08	35.04	2.13	10.96
25.43	0	0.031	9.35E+01	71.73	35.86	2.16	11.18
26.09	0	0.031	9.74E+01	73.37	36.68	2.18	11.4
26.74	0	0.03	1.01E+02	75	37.5	2.21	11.61
27.4	0	0.029	1.05E+02	76.63	38.32	2.24	11.82

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28.06	0	0.029	1.09E+02	78.26	39.13	2.26	12.03
28.72	0	0.028	1.14E+02	79.88	39.94	2.29	12.24
29.38	0	0.027	1.18E+02	81.49	40.75	2.32	12.45
30.03	0	0.027	1.22E+02	83.1	41.55	2.34	12.65
30.69	0	0.026	1.26E+02	84.71	42.35	2.37	12.85
31.35	0	0.026	1.31E+02	86.31	43.15	2.39	13.05
32.01	0	0.025	1.35E+02	87.9	43.95	2.41	13.25
32.67	0	0.025	1.39E+02	89.5	44.75	2.44	13.45
33.32	0	0.025	1.44E+02	91.08	45.54	2.46	13.65
33.98	0	0.024	1.48E+02	92.67	46.33	2.48	13.84
34.64	0	0.024	1.53E+02	94.25	47.12	2.51	14.04
35.3	0	0.023	1.57E+02	95.82	47.91	2.53	14.23
35.96	0	0.023	1.62E+02	97.4	48.7	2.55	14.42
36.61	0	0.023	1.66E+02	98.96	49.48	2.57	14.61
37.27	0	0.022	1.71E+02	100.53	50.26	2.59	14.8
37.93	0	0.022	1.76E+02	102.09	51.05	2.61	14.99
38.59	0	0.022	1.81E+02	103.65	51.82	2.63	15.17
39.24	0	0.021	1.85E+02	105.2	52.6	2.65	15.36
39.9	0	0.021	1.90E+02	106.75	53.38	2.67	15.54
40.56	0	0.021	1.95E+02	108.3	54.15	2.69	15.72
41.22	0	0.02	2.00E+02	109.84	54.92	2.71	15.9
41.88	0	0.02	2.05E+02	111.39	55.69	2.73	16.08
42.53	0	0.02	2.10E+02	112.92	56.46	2.75	16.26
43.19	0	0.02	2.15E+02	114.46	57.23	2.77	16.44
43.85	0	0.019	2.20E+02	115.99	57.99	2.79	16.62
44.51	0	0.019	2.25E+02	117.52	58.76	2.81	16.79
45.17	0	0.019	2.30E+02	119.04	59.52	2.83	16.97
45.82	0	0.019	2.35E+02	120.57	60.28	2.84	17.14
46.48	0	0.018	2.40E+02	122.09	61.04	2.86	17.31
47.14	0	0.018	2.45E+02	123.6	61.8	2.88	17.48
47.8	0	0.018	2.50E+02	125.12	62.56	2.9	17.66
48.46	0	0.018	2.56E+02	126.63	63.31	2.91	17.83
49.11	0	0.017	2.61E+02	128.14	64.07	2.93	17.99
49.77	0	0.017	2.66E+02	129.64	64.82	2.95	18.16
50.43	0	0.017	2.71E+02	131.15	65.57	2.96	18.33
51.09	0	0.017	2.77E+02	132.65	66.32	2.98	18.5
51.75	0	0.017	2.82E+02	134.15	67.07	3	18.66
52.4	0	0.016	2.87E+02	135.64	67.82	3.01	18.82
53.06	0	0.016	2.93E+02	137.14	68.57	3.03	18.99
53.72	0	0.016	2.98E+02	138.63	69.31	3.04	19.15
54.38	0	0.016	3.04E+02	140.12	70.06	3.06	19.31
55.04	0	0.016	3.09E+02	141.6	70.8	3.08	19.47
55.69	0	0.016	3.15E+02	143.09	71.54	3.09	19.63

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56.35	0	0.015	3.20E+02	144.57	72.29	3.11	19.79
57.01	0	0.015	3.26E+02	146.05	73.03	3.12	19.95
57.67	0	0.015	3.31E+02	147.53	73.76	3.14	20.11
58.33	0	0.015	3.37E+02	149.01	74.5	3.15	20.27
58.98	0	0.015	3.42E+02	150.48	75.24	3.17	20.42
59.64	0	0.015	3.48E+02	151.95	75.98	3.18	20.58
60.3	0	0.015	3.54E+02	153.42	76.71	3.19	20.74
60.96	0	0.014	3.59E+02	154.89	77.44	3.21	20.89
61.62	0	0.014	3.65E+02	156.36	78.18	3.22	21.04
62.27	0	0.014	3.71E+02	157.82	78.91	3.24	21.2
62.93	0	0.014	3.77E+02	159.28	79.64	3.25	21.35
63.59	0	0.014	3.82E+02	160.74	80.37	3.26	21.5
64.25	0	0.014	3.88E+02	162.2	81.1	3.28	21.65
64.9	0	0.014	3.94E+02	163.66	81.83	3.29	21.8
65.56	0	0.013	4.00E+02	165.11	82.56	3.31	21.95
66.22	0	0.013	4.06E+02	166.57	83.28	3.32	22.1
66.88	0	0.013	4.11E+02	168.02	84.01	3.33	22.25
67.54	0	0.013	4.17E+02	169.47	84.73	3.35	22.4
68.19	0	0.013	4.23E+02	170.92	85.46	3.36	22.54
68.85	0	0.013	4.29E+02	172.36	86.18	3.37	22.69
69.51	0	0.013	4.35E+02	173.81	86.9	3.38	22.84
70.17	0	0.013	4.41E+02	175.25	87.62	3.4	22.98
70.83	0	0.013	4.47E+02	176.69	88.35	3.41	23.13
71.48	0	0.012	4.53E+02	178.13	89.07	3.42	23.27
72.14	0	0.012	4.59E+02	179.57	89.79	3.44	23.41
72.8	0	0.012	4.65E+02	181.01	90.5	3.45	23.56
73.46	0	0.012	4.71E+02	182.44	91.22	3.46	23.7
74.12	0	0.012	4.77E+02	183.88	91.94	3.47	23.84
74.77	0	0.012	4.83E+02	185.31	92.66	3.48	23.98
75.43	0	0.012	4.89E+02	186.74	93.37	3.5	24.13
76.09	0	0.012	4.95E+02	188.17	94.09	3.51	24.27
76.75	0	0.012	5.02E+02	189.6	94.8	3.52	24.41
77.41	0	0.012	5.08E+02	191.03	95.51	3.53	24.55
78.06	0	0.012	5.14E+02	192.45	96.23	3.54	24.68
78.72	0	0.011	5.20E+02	193.88	96.94	3.56	24.82
79.38	0	0.011	5.26E+02	195.3	97.65	3.57	24.96
80.04	0	0.011	5.32E+02	196.72	98.36	3.58	25.1
80.7	0	0.011	5.39E+02	198.14	99.07	3.59	25.24
81.35	0	0.011	5.45E+02	199.56	99.78	3.6	25.37
82.01	0	0.011	5.51E+02	200.98	100.49	3.61	25.51
82.67	0	0.011	5.57E+02	202.4	101.2	3.63	25.64
83.33	0	0.011	5.64E+02	203.82	101.91	3.64	25.78
83.99	0	0.011	5.70E+02	205.23	102.62	3.65	25.91

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84.64	0	0.011	5.76E+02	206.64	103.32	3.66	26.05
85.3	0	0.011	5.83E+02	208.06	104.03	3.67	26.18
85.96	0	0.011	5.89E+02	209.47	104.73	3.68	26.31
86.62	0	0.011	5.95E+02	210.88	105.44	3.69	26.45
87.27	0	0.01	6.02E+02	212.29	106.14	3.7	26.58
87.93	0	0.01	6.08E+02	213.7	106.85	3.71	26.71
88.59	0	0.01	6.14E+02	215.1	107.55	3.73	26.84
89.25	0	0.01	6.21E+02	216.51	108.25	3.74	26.97
89.91	0	0.01	6.27E+02	217.91	108.96	3.75	27.1
90.56	0	0.01	6.34E+02	219.32	109.66	3.76	27.24
91.22	0	0.01	6.40E+02	220.72	110.36	3.77	27.37
91.88	0	0.01	6.47E+02	222.12	111.06	3.78	27.49
92.54	0	0.01	6.53E+02	223.52	111.76	3.79	27.62
93.2	0	0.01	6.60E+02	224.92	112.46	3.8	27.75
93.85	0	0.01	6.66E+02	226.32	113.16	3.81	27.88
94.51	0	0.01	6.73E+02	227.72	113.86	3.82	28.01
95.17	0	0.01	6.79E+02	229.12	114.56	3.83	28.14
95.83	0	0.01	6.86E+02	230.51	115.26	3.84	28.26
96.49	0	0.01	6.92E+02	231.91	115.95	3.85	28.39
97.14	0	0.01	6.99E+02	233.3	116.65	3.86	28.52
97.8	0	0.009	7.05E+02	234.7	117.35	3.87	28.64
98.46	0	0.009	7.12E+02	236.09	118.05	3.88	28.77
99.12	0	0.009	7.19E+02	237.48	118.74	3.89	28.89
99.78	0	0.009	7.25E+02	238.87	119.44	3.9	29.02
100.43	0	0.009	7.32E+02	240.26	120.13	3.91	29.14
101.09	0	0.009	7.38E+02	241.65	120.83	3.92	29.27
101.75	0	0.009	7.45E+02	243.04	121.52	3.93	29.39
102.41	0	0.009	7.52E+02	244.43	122.22	3.94	29.51
103.07	0	0.009	7.58E+02	245.82	122.91	3.95	29.64
103.72	0	0.009	7.65E+02	247.2	123.6	3.96	29.76
104.38	0	0.009	7.72E+02	248.59	124.29	3.97	29.88
105.04	0	0.009	7.78E+02	249.97	124.99	3.98	30
105.7	0	0.009	7.85E+02	251.36	125.68	3.99	30.13
106.36	0	0.009	7.92E+02	252.74	126.37	4	30.25
107.01	0	0.009	7.99E+02	254.12	127.06	4.01	30.37
107.67	0	0.009	8.05E+02	255.51	127.75	4.02	30.49
108.33	0	0.009	8.12E+02	256.89	128.44	4.03	30.61
108.99	0	0.009	8.19E+02	258.27	129.13	4.04	30.73
109.65	0	0.009	8.26E+02	259.65	129.82	4.05	30.85
110.3	0	0.008	8.32E+02	261.03	130.51	4.05	30.97
110.96	0	0.008	8.39E+02	262.41	131.2	4.06	31.09
111.62	0	0.008	8.46E+02	263.78	131.89	4.07	31.21
112.28	0	0.008	8.53E+02	265.16	132.58	4.08	31.33

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112.93	0	0.008	8.60E+02	266.54	133.27	4.09	31.44
113.59	0	0.008	8.66E+02	267.91	133.96	4.1	31.56
114.25	0	0.008	8.73E+02	269.29	134.64	4.11	31.68
114.91	0	0.008	8.80E+02	270.66	135.33	4.12	31.8
115.57	0	0.008	8.87E+02	272.04	136.02	4.13	31.91
116.22	0	0.008	8.94E+02	273.41	136.71	4.14	32.03
116.88	0	0.008	9.01E+02	274.79	137.39	4.15	32.15
117.54	0	0.008	9.08E+02	276.16	138.08	4.15	32.26
118.2	0	0.008	9.15E+02	277.53	138.76	4.16	32.38
118.86	0	0.008	9.21E+02	278.9	139.45	4.17	32.5
119.51	0	0.008	9.28E+02	280.27	140.14	4.18	32.61
120.17	0	0.008	9.35E+02	281.64	140.82	4.19	32.73
120.83	0	0.008	9.42E+02	283.01	141.51	4.2	32.84
121.49	0	0.008	9.49E+02	284.38	142.19	4.21	32.96
122.15	0	0.008	9.56E+02	285.75	142.88	4.22	33.07
122.8	0	0.008	9.63E+02	287.12	143.56	4.23	33.18
123.46	0	0.008	9.70E+02	288.49	144.24	4.23	33.3
124.12	0	0.008	9.77E+02	289.85	144.93	4.24	33.41
124.78	0	0.008	9.84E+02	291.22	145.61	4.25	33.52
125.44	0	0.008	9.91E+02	292.59	146.29	4.26	33.64
126.09	0	0.008	9.98E+02	293.95	146.98	4.27	33.75
126.75	0	0.007	1.00E+03	295.32	147.66	4.28	33.86
127.41	0	0.007	1.01E+03	296.68	148.34	4.28	33.97
128.07	0	0.007	1.02E+03	298.05	149.02	4.29	34.09
128.73	0	0.007	1.03E+03	299.41	149.71	4.3	34.2
129.38	0	0.007	1.03E+03	300.77	150.39	4.31	34.31
130.04	0	0.007	1.04E+03	302.14	151.07	4.32	34.42
130.7	0	0.007	1.05E+03	303.5	151.75	4.33	34.53
131.36	0	0.007	1.05E+03	304.86	152.43	4.34	34.64
132.02	0	0.007	1.06E+03	306.22	153.11	4.34	34.75
132.67	0	0.007	1.07E+03	307.59	153.79	4.35	34.86
133.33	0	0.007	1.08E+03	308.95	154.47	4.36	34.97
133.99	0	0.007	1.08E+03	310.31	155.15	4.37	35.08
134.65	0	0.007	1.09E+03	311.67	155.83	4.38	35.19
135.3	0	0.007	1.10E+03	313.03	156.51	4.38	35.3
135.96	0	0.007	1.10E+03	314.39	157.19	4.39	35.41
136.62	0	0.007	1.11E+03	315.75	157.87	4.4	35.52
137.28	0	0.007	1.12E+03	317.11	158.55	4.41	35.63
137.94	0	0.007	1.13E+03	318.46	159.23	4.42	35.74
138.59	0	0.007	1.13E+03	319.82	159.91	4.43	35.84
139.25	0	0.007	1.14E+03	321.18	160.59	4.43	35.95
139.91	0	0.007	1.15E+03	322.54	161.27	4.44	36.06
140.57	0	0.007	1.15E+03	323.89	161.95	4.45	36.17

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141.23	0	0.007	1.16E+03	325.25	162.63	4.46	36.27
141.88	0	0.007	1.17E+03	326.61	163.3	4.47	36.38
142.54	0	0.007	1.18E+03	327.96	163.98	4.47	36.49
143.2	0	0.007	1.18E+03	329.32	164.66	4.48	36.59
143.86	0	0.007	1.19E+03	330.68	165.34	4.49	36.7
144.52	0	0.007	1.20E+03	332.03	166.02	4.5	36.81
145.17	0	0.007	1.20E+03	333.39	166.69	4.5	36.91
145.83	0	0.007	1.21E+03	334.74	167.37	4.51	37.02
146.49	0	0.007	1.22E+03	336.09	168.05	4.52	37.12
147.15	0	0.007	1.23E+03	337.45	168.72	4.53	37.23
147.81	0	0.007	1.23E+03	338.8	169.4	4.54	37.33
148.46	0	0.006	1.24E+03	340.16	170.08	4.54	37.44
149.12	0	0.006	1.25E+03	341.51	170.75	4.55	37.54
149.78	0	0.006	1.26E+03	342.86	171.43	4.56	37.65
150.44	0	0.006	1.26E+03	344.21	172.11	4.57	37.75
151.1	0	0.006	1.27E+03	345.57	172.78	4.57	37.85
151.75	0	0.006	1.28E+03	346.92	173.46	4.58	37.96
152.41	0	0.006	1.28E+03	348.27	174.14	4.59	38.06
153.07	0	0.006	1.29E+03	349.62	174.81	4.6	38.17
153.73	0	0.006	1.30E+03	350.97	175.49	4.6	38.27
154.39	0	0.006	1.31E+03	352.33	176.16	4.61	38.37
155.04	0	0.006	1.31E+03	353.68	176.84	4.62	38.47
155.7	0	0.006	1.32E+03	355.03	177.51	4.63	38.58
156.36	0	0.006	1.33E+03	356.38	178.19	4.63	38.68
157.02	0	0.006	1.34E+03	357.73	178.86	4.64	38.78
157.68	0	0.006	1.34E+03	359.08	179.54	4.65	38.88
158.33	0	0.006	1.35E+03	360.43	180.21	4.66	38.99
158.99	0	0.006	1.36E+03	361.78	180.89	4.66	39.09
159.65	0	0.006	1.36E+03	363.13	181.56	4.67	39.19
160.31	0	0.006	1.37E+03	364.48	182.24	4.68	39.29
160.97	0	0.006	1.38E+03	365.83	182.91	4.69	39.39
161.62	0	0.006	1.39E+03	367.18	183.59	4.69	39.49
162.28	0	0.006	1.39E+03	368.52	184.26	4.7	39.59
162.94	0	0.006	1.40E+03	369.87	184.94	4.71	39.69
163.6	0	0.006	1.41E+03	371.22	185.61	4.72	39.79
164.25	0	0.006	1.42E+03	372.57	186.28	4.72	39.89
164.91	0	0.006	1.42E+03	373.92	186.96	4.73	39.99
165.57	0	0.006	1.43E+03	375.26	187.63	4.74	40.09
166.23	0	0.006	1.44E+03	376.61	188.31	4.74	40.19
166.89	0	0.006	1.45E+03	377.96	188.98	4.75	40.29
167.54	0	0.006	1.45E+03	379.31	189.65	4.76	40.39
168.2	0	0.006	1.46E+03	380.65	190.33	4.77	40.49
168.86	0	0.006	1.47E+03	382	191	4.77	40.59

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169.52	0	0.006	1.48E+03	383.35	191.67	4.78	40.69
170.18	0	0.006	1.48E+03	384.7	192.35	4.79	40.79
170.83	0	0.006	1.49E+03	386.04	193.02	4.8	40.89
171.49	0	0.006	1.50E+03	387.39	193.69	4.8	40.98
172.15	0	0.006	1.51E+03	388.73	194.37	4.81	41.08
172.81	0	0.006	1.51E+03	390.08	195.04	4.82	41.18
173.47	0	0.006	1.52E+03	391.43	195.71	4.82	41.28
174.12	0	0.006	1.53E+03	392.77	196.39	4.83	41.38
174.78	0	0.006	1.54E+03	394.12	197.06	4.84	41.47

A R E A S OF E X C E
1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.06	3.05E+01
0.11	7.10E+00
0.17	2.81E+00
0.22	1.45E+00
0.28	8.40E-01
0.33	5.14E-01
0.39	3.35E-01
0.45	2.26E-01
0.5	1.58E-01
0.56	1.12E-01
0.61	8.21E-02
0.67	6.14E-02
0.73	4.52E-02
0.78	3.49E-02
0.84	2.70E-02
0.89	2.12E-02
0.95	1.69E-02
1	1.36E-02
1.06	1.09E-02
1.12	7.53E-03

(DEG. C) AREA (SQ. M)

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Table B.2: Visual Plumes Model Output Data for Engine Room at Maximum Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,; VEL. 0.25 M
HEAT CONVECTION = 2

DISCHARGE CONDITIONS : TEMP. = 5.1 C; DEPTH = 0.14 M.
; WIDTH = 0.13 M.

ANGLE 0 DEG ; DISCHARGE RATE = 0.06 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 228.29

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.12	0	1.116	3.23E-02	2	1	0.21	0.2
0.13	0	1.087	3.51E-02	2.05	1.03	0.21	0.21
0.14	0	1.061	3.80E-02	2.1	1.05	0.21	0.22
0.15	0	1.037	4.10E-02	2.15	1.08	0.21	0.23
0.16	0	1.014	4.41E-02	2.2	1.1	0.21	0.24
0.17	0	0.992	4.72E-02	2.25	1.12	0.21	0.24
0.18	0	0.972	5.04E-02	2.3	1.15	0.21	0.25
0.2	0	0.935	5.69E-02	2.39	1.19	0.21	0.27
0.22	0	0.902	6.37E-02	2.47	1.24	0.22	0.28
0.24	0	0.872	7.06E-02	2.56	1.28	0.22	0.3
0.26	0	0.844	7.78E-02	2.64	1.32	0.22	0.31
0.3	0	0.796	9.28E-02	2.8	1.4	0.22	0.34
0.34	0	0.754	1.09E-01	2.96	1.48	0.23	0.37
0.38	0	0.717	1.25E-01	3.11	1.56	0.23	0.4
0.43	0	0.685	1.42E-01	3.26	1.63	0.24	0.43
0.51	0	0.63	1.79E-01	3.54	1.77	0.25	0.48
0.59	0	0.584	2.18E-01	3.82	1.91	0.26	0.53
0.67	0	0.546	2.60E-01	4.09	2.04	0.26	0.58
0.75	0	0.513	3.04E-01	4.35	2.18	0.27	0.62
0.92	0	0.46	3.99E-01	4.87	2.43	0.29	0.71
1.08	0	0.417	5.04E-01	5.37	2.68	0.31	0.8
1.25	0	0.382	6.16E-01	5.86	2.93	0.32	0.88
1.41	0	0.353	7.37E-01	6.34	3.17	0.34	0.96
1.58	0	0.328	8.65E-01	6.82	3.41	0.35	1.03

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1.74	0	0.307	1.00E+00	7.3	3.65	0.37	1.11
2.07	0	0.272	1.29E+00	8.23	4.12	0.4	1.25
2.4	0	0.245	1.61E+00	9.15	4.58	0.43	1.38
2.73	0	0.223	1.95E+00	10.06	5.03	0.46	1.51
3.06	0	0.205	2.32E+00	10.96	5.48	0.48	1.63
3.39	0	0.189	2.71E+00	11.85	5.92	0.51	1.75
3.72	0	0.176	3.12E+00	12.73	6.37	0.53	1.87
4.37	0	0.155	4.00E+00	14.47	7.24	0.57	2.09
5.03	0	0.139	4.94E+00	16.19	8.09	0.62	2.29
5.69	0	0.126	5.96E+00	17.88	8.94	0.66	2.49
6.35	0	0.115	7.03E+00	19.56	9.78	0.69	2.68
7.01	0	0.106	8.16E+00	21.21	10.61	0.73	2.86
7.66	0	0.098	9.34E+00	22.85	11.43	0.76	3.03
8.32	0	0.092	1.06E+01	24.48	12.24	0.79	3.19
8.98	0	0.086	1.18E+01	26.09	13.04	0.82	3.35
9.64	0	0.081	1.31E+01	27.69	13.84	0.85	3.51
10.3	0	0.077	1.45E+01	29.27	14.64	0.88	3.66
10.95	0	0.073	1.59E+01	30.85	15.42	0.9	3.81
11.61	0	0.069	1.73E+01	32.41	16.2	0.93	3.95
12.27	0	0.066	1.87E+01	33.96	16.98	0.95	4.09
12.93	0	0.063	2.02E+01	35.51	17.75	0.98	4.22
13.58	0	0.061	2.17E+01	37.04	18.52	1	4.35
14.24	0	0.058	2.33E+01	38.57	19.29	1.02	4.48
14.9	0	0.056	2.48E+01	40.09	20.04	1.04	4.61
15.56	0	0.054	2.64E+01	41.6	20.8	1.07	4.73
16.22	0	0.052	2.80E+01	43.11	21.55	1.09	4.85
16.87	0	0.05	2.96E+01	44.6	22.3	1.11	4.97
17.53	0	0.049	3.13E+01	46.09	23.05	1.12	5.09
18.19	0	0.047	3.29E+01	47.58	23.79	1.14	5.2
18.85	0	0.046	3.46E+01	49.06	24.53	1.16	5.32
19.51	0	0.044	3.63E+01	50.53	25.26	1.18	5.43
20.16	0	0.043	3.80E+01	52	26	1.2	5.54
20.82	0	0.042	3.98E+01	53.46	26.73	1.21	5.64
21.48	0	0.041	4.15E+01	54.91	27.46	1.23	5.75
22.14	0	0.04	4.33E+01	56.37	28.18	1.25	5.85
22.8	0	0.039	4.51E+01	57.81	28.91	1.26	5.96
23.45	0	0.038	4.69E+01	59.25	29.63	1.28	6.06
24.11	0	0.037	4.87E+01	60.69	30.35	1.29	6.16
24.77	0	0.036	5.05E+01	62.12	31.06	1.31	6.26
25.43	0	0.035	5.24E+01	63.55	31.78	1.32	6.35
26.09	0	0.034	5.42E+01	64.98	32.49	1.34	6.45
26.74	0	0.034	5.61E+01	66.4	33.2	1.35	6.54
27.4	0	0.033	5.80E+01	67.81	33.91	1.37	6.64

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28.06	0	0.032	5.98E+01	69.23	34.61	1.38	6.73
28.72	0	0.032	6.17E+01	70.63	35.32	1.4	6.82
29.38	0	0.031	6.36E+01	72.04	36.02	1.41	6.91
30.03	0	0.03	6.56E+01	73.44	36.72	1.42	7
30.69	0	0.03	6.75E+01	74.84	37.42	1.44	7.09
31.35	0	0.029	6.94E+01	76.24	38.12	1.45	7.18
32.01	0	0.029	7.14E+01	77.63	38.81	1.46	7.27
32.67	0	0.028	7.33E+01	79.02	39.51	1.47	7.35
33.32	0	0.028	7.53E+01	80.4	40.2	1.49	7.44
33.98	0	0.027	7.73E+01	81.79	40.89	1.5	7.52
34.64	0	0.027	7.92E+01	83.17	41.58	1.51	7.61
35.3	0	0.026	8.12E+01	84.54	42.27	1.52	7.69
35.96	0	0.026	8.32E+01	85.92	42.96	1.53	7.77
36.61	0	0.026	8.52E+01	87.29	43.64	1.55	7.86
37.27	0	0.025	8.72E+01	88.66	44.33	1.56	7.94
37.93	0	0.025	8.93E+01	90.02	45.01	1.57	8.02
38.59	0	0.024	9.13E+01	91.39	45.69	1.58	8.1
39.24	0	0.024	9.33E+01	92.75	46.37	1.59	8.17
39.9	0	0.024	9.54E+01	94.11	47.05	1.6	8.25
40.56	0	0.023	9.74E+01	95.47	47.73	1.61	8.33
41.22	0	0.023	9.95E+01	96.82	48.41	1.62	8.41
41.88	0	0.023	1.02E+02	98.17	49.09	1.63	8.48
42.53	0	0.022	1.04E+02	99.52	49.76	1.64	8.56
43.19	0	0.022	1.06E+02	100.87	50.43	1.65	8.64
43.85	0	0.022	1.08E+02	102.21	51.11	1.66	8.71
44.51	0	0.022	1.10E+02	103.56	51.78	1.67	8.78
45.17	0	0.021	1.12E+02	104.9	52.45	1.68	8.86
45.82	0	0.021	1.14E+02	106.24	53.12	1.69	8.93
46.48	0	0.021	1.16E+02	107.58	53.79	1.7	9
47.14	0	0.021	1.18E+02	108.91	54.46	1.71	9.08
47.8	0	0.02	1.20E+02	110.24	55.12	1.72	9.15
48.46	0	0.02	1.22E+02	111.58	55.79	1.73	9.22
49.11	0	0.02	1.25E+02	112.91	56.45	1.74	9.29
49.77	0	0.02	1.27E+02	114.23	57.12	1.75	9.36
50.43	0	0.019	1.29E+02	115.56	57.78	1.76	9.43
51.09	0	0.019	1.31E+02	116.88	58.44	1.77	9.5
51.75	0	0.019	1.33E+02	118.21	59.1	1.78	9.57
52.4	0	0.019	1.35E+02	119.53	59.76	1.79	9.64
53.06	0	0.018	1.37E+02	120.85	60.42	1.8	9.7
53.72	0	0.018	1.40E+02	122.16	61.08	1.81	9.77
54.38	0	0.018	1.42E+02	123.48	61.74	1.82	9.84
55.04	0	0.018	1.44E+02	124.79	62.4	1.83	9.91
55.69	0	0.018	1.46E+02	126.11	63.05	1.83	9.97

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56.35	0	0.018	1.48E+02	127.42	63.71	1.84	10.04
57.01	0	0.017	1.50E+02	128.73	64.36	1.85	10.11
57.67	0	0.017	1.53E+02	130.04	65.02	1.86	10.17
58.33	0	0.017	1.55E+02	131.34	65.67	1.87	10.24
58.98	0	0.017	1.57E+02	132.65	66.32	1.88	10.3
59.64	0	0.017	1.59E+02	133.95	66.98	1.89	10.37
60.3	0	0.017	1.61E+02	135.26	67.63	1.89	10.43
60.96	0	0.016	1.63E+02	136.56	68.28	1.9	10.49
61.62	0	0.016	1.66E+02	137.86	68.93	1.91	10.56
62.27	0	0.016	1.68E+02	139.15	69.58	1.92	10.62
62.93	0	0.016	1.70E+02	140.45	70.23	1.93	10.68
63.59	0	0.016	1.72E+02	141.75	70.87	1.93	10.74
64.25	0	0.016	1.74E+02	143.04	71.52	1.94	10.81
64.9	0	0.015	1.77E+02	144.33	72.17	1.95	10.87
65.56	0	0.015	1.79E+02	145.63	72.81	1.96	10.93
66.22	0	0.015	1.81E+02	146.92	73.46	1.97	10.99
66.88	0	0.015	1.83E+02	148.21	74.1	1.97	11.05
67.54	0	0.015	1.86E+02	149.5	74.75	1.98	11.11
68.19	0	0.015	1.88E+02	150.78	75.39	1.99	11.17
68.85	0	0.015	1.90E+02	152.07	76.03	2	11.23
69.51	0	0.015	1.92E+02	153.35	76.68	2	11.29
70.17	0	0.014	1.95E+02	154.64	77.32	2.01	11.35
70.83	0	0.014	1.97E+02	155.92	77.96	2.02	11.41
71.48	0	0.014	1.99E+02	157.2	78.6	2.03	11.47
72.14	0	0.014	2.01E+02	158.48	79.24	2.03	11.53
72.8	0	0.014	2.04E+02	159.76	79.88	2.04	11.59
73.46	0	0.014	2.06E+02	161.04	80.52	2.05	11.65
74.12	0	0.014	2.08E+02	162.31	81.16	2.06	11.71
74.77	0	0.014	2.10E+02	163.59	81.8	2.06	11.76
75.43	0	0.014	2.13E+02	164.87	82.43	2.07	11.82
76.09	0	0.013	2.15E+02	166.14	83.07	2.08	11.88
76.75	0	0.013	2.17E+02	167.41	83.71	2.08	11.93
77.41	0	0.013	2.19E+02	168.68	84.34	2.09	11.99
78.06	0	0.013	2.22E+02	169.96	84.98	2.1	12.05
78.72	0	0.013	2.24E+02	171.23	85.61	2.11	12.1
79.38	0	0.013	2.26E+02	172.49	86.25	2.11	12.16
80.04	0	0.013	2.28E+02	173.76	86.88	2.12	12.22
80.7	0	0.013	2.31E+02	175.03	87.52	2.13	12.27
81.35	0	0.013	2.33E+02	176.3	88.15	2.13	12.33
82.01	0	0.013	2.35E+02	177.56	88.78	2.14	12.38
82.67	0	0.012	2.38E+02	178.83	89.41	2.15	12.44
83.33	0	0.012	2.40E+02	180.09	90.04	2.15	12.49
83.99	0	0.012	2.42E+02	181.35	90.68	2.16	12.55

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84.64	0	0.012	2.44E+02	182.61	91.31	2.17	12.6
85.3	0	0.012	2.47E+02	183.88	91.94	2.17	12.66
85.96	0	0.012	2.49E+02	185.14	92.57	2.18	12.71
86.62	0	0.012	2.51E+02	186.39	93.2	2.19	12.76
87.27	0	0.012	2.54E+02	187.65	93.83	2.19	12.82
87.93	0	0.012	2.56E+02	188.91	94.46	2.2	12.87
88.59	0	0.012	2.58E+02	190.17	95.08	2.21	12.92
89.25	0	0.012	2.60E+02	191.42	95.71	2.21	12.98
89.91	0	0.012	2.63E+02	192.68	96.34	2.22	13.03
90.56	0	0.011	2.65E+02	193.93	96.97	2.23	13.08
91.22	0	0.011	2.67E+02	195.19	97.59	2.23	13.14
91.88	0	0.011	2.70E+02	196.44	98.22	2.24	13.19
92.54	0	0.011	2.72E+02	197.69	98.85	2.25	13.24
93.2	0	0.011	2.74E+02	198.94	99.47	2.25	13.29
93.85	0	0.011	2.77E+02	200.19	100.1	2.26	13.34
94.51	0	0.011	2.79E+02	201.44	100.72	2.26	13.4
95.17	0	0.011	2.81E+02	202.69	101.35	2.27	13.45
95.83	0	0.011	2.84E+02	203.94	101.97	2.28	13.5
96.49	0	0.011	2.86E+02	205.19	102.59	2.28	13.55
97.14	0	0.011	2.88E+02	206.44	103.22	2.29	13.6
97.8	0	0.011	2.91E+02	207.68	103.84	2.29	13.65
98.46	0	0.011	2.93E+02	208.93	104.46	2.3	13.7
99.12	0	0.011	2.95E+02	210.17	105.09	2.31	13.75
99.78	0	0.011	2.98E+02	211.42	105.71	2.31	13.8
100.43	0	0.01	3.00E+02	212.66	106.33	2.32	13.85
101.09	0	0.01	3.02E+02	213.9	106.95	2.32	13.9
101.75	0	0.01	3.05E+02	215.15	107.57	2.33	13.95
102.41	0	0.01	3.07E+02	216.39	108.19	2.34	14
103.07	0	0.01	3.09E+02	217.63	108.81	2.34	14.05
103.72	0	0.01	3.12E+02	218.87	109.43	2.35	14.1
104.38	0	0.01	3.14E+02	220.11	110.05	2.35	14.15
105.04	0	0.01	3.16E+02	221.35	110.67	2.36	14.2
105.7	0	0.01	3.19E+02	222.59	111.29	2.37	14.25
106.36	0	0.01	3.21E+02	223.83	111.91	2.37	14.3
107.01	0	0.01	3.23E+02	225.06	112.53	2.38	14.35
107.67	0	0.01	3.26E+02	226.3	113.15	2.38	14.39
108.33	0	0.01	3.28E+02	227.54	113.77	2.39	14.44
108.99	0	0.01	3.30E+02	228.77	114.39	2.39	14.49
109.65	0	0.01	3.33E+02	230.01	115	2.4	14.54
110.3	0	0.01	3.35E+02	231.24	115.62	2.41	14.59
110.96	0	0.01	3.37E+02	232.47	116.24	2.41	14.64
111.62	0	0.01	3.40E+02	233.71	116.85	2.42	14.68
112.28	0	0.009	3.42E+02	234.94	117.47	2.42	14.73

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112.93	0	0.009	3.45E+02	236.17	118.09	2.43	14.78
113.59	0	0.009	3.47E+02	237.4	118.7	2.43	14.83
114.25	0	0.009	3.49E+02	238.63	119.32	2.44	14.87
114.91	0	0.009	3.52E+02	239.87	119.93	2.44	14.92
115.57	0	0.009	3.54E+02	241.1	120.55	2.45	14.97
116.22	0	0.009	3.56E+02	242.32	121.16	2.46	15.01
116.88	0	0.009	3.59E+02	243.55	121.78	2.46	15.06
117.54	0	0.009	3.61E+02	244.78	122.39	2.47	15.11
118.2	0	0.009	3.63E+02	246.01	123.01	2.47	15.15
118.86	0	0.009	3.66E+02	247.24	123.62	2.48	15.2
119.51	0	0.009	3.68E+02	248.46	124.23	2.48	15.25
120.17	0	0.009	3.71E+02	249.69	124.85	2.49	15.29
120.83	0	0.009	3.73E+02	250.92	125.46	2.49	15.34
121.49	0	0.009	3.75E+02	252.14	126.07	2.5	15.38
122.15	0	0.009	3.78E+02	253.37	126.68	2.5	15.43
122.8	0	0.009	3.80E+02	254.59	127.3	2.51	15.47
123.46	0	0.009	3.82E+02	255.82	127.91	2.52	15.52
124.12	0	0.009	3.85E+02	257.04	128.52	2.52	15.57
124.78	0	0.009	3.87E+02	258.26	129.13	2.53	15.61
125.44	0	0.009	3.90E+02	259.48	129.74	2.53	15.66
126.09	0	0.009	3.92E+02	260.71	130.35	2.54	15.7
126.75	0	0.008	3.94E+02	261.93	130.96	2.54	15.75
127.41	0	0.008	3.97E+02	263.15	131.57	2.55	15.79
128.07	0	0.008	3.99E+02	264.37	132.19	2.55	15.84
128.73	0	0.008	4.02E+02	265.59	132.8	2.56	15.88
129.38	0	0.008	4.04E+02	266.81	133.41	2.56	15.92
130.04	0	0.008	4.06E+02	268.03	134.02	2.57	15.97
130.7	0	0.008	4.09E+02	269.25	134.62	2.57	16.01
131.36	0	0.008	4.11E+02	270.47	135.23	2.58	16.06
132.02	0	0.008	4.14E+02	271.69	135.84	2.58	16.1
132.67	0	0.008	4.16E+02	272.9	136.45	2.59	16.15
133.33	0	0.008	4.18E+02	274.12	137.06	2.59	16.19
133.99	0	0.008	4.21E+02	275.34	137.67	2.6	16.23
134.65	0	0.008	4.23E+02	276.56	138.28	2.6	16.28
135.3	0	0.008	4.25E+02	277.77	138.89	2.61	16.32
135.96	0	0.008	4.28E+02	278.99	139.49	2.61	16.36
136.62	0	0.008	4.30E+02	280.2	140.1	2.62	16.41
137.28	0	0.008	4.33E+02	281.42	140.71	2.62	16.45
137.94	0	0.008	4.35E+02	282.63	141.32	2.63	16.49
138.59	0	0.008	4.38E+02	283.85	141.92	2.63	16.54
139.25	0	0.008	4.40E+02	285.06	142.53	2.64	16.58
139.91	0	0.008	4.42E+02	286.27	143.14	2.64	16.62
140.57	0	0.008	4.45E+02	287.49	143.74	2.65	16.66

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141.23	0	0.008	4.47E+02	288.7	144.35	2.65	16.71
141.88	0	0.008	4.50E+02	289.91	144.96	2.66	16.75
142.54	0	0.008	4.52E+02	291.12	145.56	2.66	16.79
143.2	0	0.008	4.54E+02	292.34	146.17	2.67	16.83
143.86	0	0.008	4.57E+02	293.55	146.77	2.67	16.88
144.52	0	0.008	4.59E+02	294.76	147.38	2.68	16.92
145.17	0	0.008	4.62E+02	295.97	147.98	2.68	16.96
145.83	0	0.007	4.64E+02	297.18	148.59	2.69	17
146.49	0	0.007	4.66E+02	298.39	149.19	2.69	17.05
147.15	0	0.007	4.69E+02	299.6	149.8	2.7	17.09
147.81	0	0.007	4.71E+02	300.81	150.4	2.7	17.13
148.46	0	0.007	4.74E+02	302.02	151.01	2.7	17.17
149.12	0	0.007	4.76E+02	303.22	151.61	2.71	17.21
149.78	0	0.007	4.78E+02	304.43	152.22	2.71	17.25
150.44	0	0.007	4.81E+02	305.64	152.82	2.72	17.3
151.1	0	0.007	4.83E+02	306.85	153.42	2.72	17.34
151.75	0	0.007	4.86E+02	308.05	154.03	2.73	17.38
152.41	0	0.007	4.88E+02	309.26	154.63	2.73	17.42
153.07	0	0.007	4.91E+02	310.47	155.23	2.74	17.46
153.73	0	0.007	4.93E+02	311.67	155.84	2.74	17.5
154.39	0	0.007	4.95E+02	312.88	156.44	2.75	17.54
155.04	0	0.007	4.98E+02	314.09	157.04	2.75	17.58
155.7	0	0.007	5.00E+02	315.29	157.65	2.76	17.62
156.36	0	0.007	5.03E+02	316.5	158.25	2.76	17.66
157.02	0	0.007	5.05E+02	317.7	158.85	2.77	17.71
157.68	0	0.007	5.08E+02	318.91	159.45	2.77	17.75
158.33	0	0.007	5.10E+02	320.11	160.05	2.77	17.79
158.99	0	0.007	5.12E+02	321.31	160.66	2.78	17.83
159.65	0	0.007	5.15E+02	322.52	161.26	2.78	17.87
160.31	0	0.007	5.17E+02	323.72	161.86	2.79	17.91
160.97	0	0.007	5.20E+02	324.92	162.46	2.79	17.95
161.62	0	0.007	5.22E+02	326.13	163.06	2.8	17.99
162.28	0	0.007	5.25E+02	327.33	163.66	2.8	18.03
162.94	0	0.007	5.27E+02	328.53	164.26	2.81	18.07
163.6	0	0.007	5.29E+02	329.73	164.87	2.81	18.11
164.25	0	0.007	5.32E+02	330.93	165.47	2.81	18.15
164.91	0	0.007	5.34E+02	332.13	166.07	2.82	18.19
165.57	0	0.007	5.37E+02	333.34	166.67	2.82	18.23
166.23	0	0.007	5.39E+02	334.54	167.27	2.83	18.27
166.89	0	0.007	5.42E+02	335.74	167.87	2.83	18.3
167.54	0	0.007	5.44E+02	336.94	168.47	2.84	18.34
168.2	0	0.007	5.46E+02	338.14	169.07	2.84	18.38
168.86	0	0.007	5.49E+02	339.34	169.67	2.85	18.42

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169.52	0	0.007	5.51E+02	340.54	170.27	2.85	18.46
170.18	0	0.006	5.54E+02	341.74	170.87	2.85	18.5
170.83	0	0.006	5.56E+02	342.93	171.47	2.86	18.54
171.49	0	0.006	5.59E+02	344.13	172.07	2.86	18.58
172.15	0	0.006	5.61E+02	345.33	172.67	2.87	18.62
172.81	0	0.006	5.64E+02	346.53	173.26	2.87	18.66
173.47	0	0.006	5.66E+02	347.73	173.86	2.88	18.7
174.12	0	0.006	5.68E+02	348.92	174.46	2.88	18.73
174.78	0	0.006	5.71E+02	350.12	175.06	2.88	18.77
175.44	0	0.006	5.73E+02	351.32	175.66	2.89	18.81
176.1	0	0.006	5.76E+02	352.52	176.26	2.89	18.85
176.76	0	0.006	5.78E+02	353.71	176.86	2.9	18.89
177.41	0	0.006	5.81E+02	354.91	177.45	2.9	18.93
178.07	0	0.006	5.83E+02	356.11	178.05	2.91	18.96
178.73	0	0.006	5.86E+02	357.3	178.65	2.91	19
179.39	0	0.006	5.88E+02	358.5	179.25	2.91	19.04
180.05	0	0.006	5.90E+02	359.69	179.85	2.92	19.08
180.7	0	0.006	5.93E+02	360.89	180.44	2.92	19.12
181.36	0	0.006	5.95E+02	362.08	181.04	2.93	19.16
182.02	0	0.006	5.98E+02	363.28	181.64	2.93	19.19
182.68	0	0.006	6.00E+02	364.47	182.24	2.94	19.23
183.34	0	0.006	6.03E+02	365.67	182.83	2.94	19.27
183.99	0	0.006	6.05E+02	366.86	183.43	2.94	19.31
184.65	0	0.006	6.08E+02	368.06	184.03	2.95	19.34
185.31	0	0.006	6.10E+02	369.25	184.63	2.95	19.38
185.97	0	0.006	6.12E+02	370.44	185.22	2.96	19.42
186.63	0	0.006	6.15E+02	371.64	185.82	2.96	19.46
187.28	0	0.006	6.17E+02	372.83	186.42	2.97	19.49
187.94	0	0.006	6.20E+02	374.02	187.01	2.97	19.53
188.6	0	0.006	6.22E+02	375.22	187.61	2.97	19.57
189.26	0	0.006	6.25E+02	376.41	188.2	2.98	19.61
189.91	0	0.006	6.27E+02	377.6	188.8	2.98	19.64
190.57	0	0.006	6.30E+02	378.79	189.4	2.99	19.68
191.23	0	0.006	6.32E+02	379.99	189.99	2.99	19.72
191.89	0	0.006	6.35E+02	381.18	190.59	2.99	19.75
192.55	0	0.006	6.37E+02	382.37	191.19	3	19.79
193.2	0	0.006	6.39E+02	383.56	191.78	3	19.83
193.86	0	0.006	6.42E+02	384.75	192.38	3.01	19.86
194.52	0	0.006	6.44E+02	385.94	192.97	3.01	19.9
195.18	0	0.006	6.47E+02	387.14	193.57	3.01	19.94
195.84	0	0.006	6.49E+02	388.33	194.16	3.02	19.97
196.49	0	0.006	6.52E+02	389.52	194.76	3.02	20.01
197.15	0	0.006	6.54E+02	390.71	195.35	3.03	20.05

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197.81	0	0.006	6.57E+02	391.9	195.95	3.03	20.08
198.47	0	0.006	6.59E+02	393.09	196.54	3.03	20.12
199.13	0	0.006	6.62E+02	394.28	197.14	3.04	20.16
199.78	0	0.006	6.64E+02	395.47	197.73	3.04	20.19
200.44	0	0.006	6.67E+02	396.66	198.33	3.05	20.23
201.1	0	0.006	6.69E+02	397.85	198.92	3.05	20.27

A R E A S OF E X C E S S

1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.06	2.65E+01
0.11	6.54E+00
0.17	2.74E+00
0.22	1.35E+00
0.28	7.87E-01
0.33	4.91E-01
0.39	3.20E-01
0.45	2.22E-01
0.5	1.57E-01
0.56	1.09E-01
0.61	8.05E-02
0.67	6.04E-02
0.73	4.42E-02
0.78	3.44E-02
0.84	2.69E-02
0.89	2.10E-02
0.95	1.67E-02
1	1.35E-02
1.06	1.09E-02
1.12	7.53E-03

(DEG. C) AREA (SQ. M)

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Appendix C: Model Outputs for MCC Room

Table C.1: Visual Plumes Model Output Data for MCC Room at Mean Currents

PDSWIN - FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,; \
HEAT CONVECTION = 2

DISCHARGE CONDITIONS : TEMP. = 4.2 C; DEPTH =
ANGLE 0 DEG ; DISCHARGE RATE = 0.03 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 697.63

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.05	0	0.216	1.32E-02	2	1	0.14	0.14
0.06	0	0.213	1.41E-02	2.03	1.01	0.14	0.14
0.06	0	0.21	1.49E-02	2.05	1.03	0.14	0.14
0.06	0	0.207	1.58E-02	2.08	1.04	0.14	0.15
0.07	0	0.205	1.67E-02	2.11	1.05	0.14	0.15
0.07	0	0.202	1.75E-02	2.13	1.07	0.14	0.15
0.07	0	0.2	1.84E-02	2.16	1.08	0.14	0.16
0.08	0	0.195	2.03E-02	2.21	1.1	0.14	0.16
0.09	0	0.191	2.21E-02	2.26	1.13	0.15	0.17
0.1	0	0.187	2.40E-02	2.3	1.15	0.15	0.17
0.1	0	0.183	2.60E-02	2.35	1.18	0.15	0.18
0.12	0	0.176	3.00E-02	2.44	1.22	0.15	0.19
0.13	0	0.17	3.41E-02	2.53	1.27	0.15	0.2
0.14	0	0.165	3.84E-02	2.62	1.31	0.15	0.21
0.16	0	0.159	4.28E-02	2.71	1.35	0.16	0.22
0.18	0	0.15	5.21E-02	2.87	1.44	0.16	0.25
0.21	0	0.142	6.19E-02	3.03	1.52	0.16	0.27
0.24	0	0.135	7.22E-02	3.19	1.59	0.17	0.29
0.27	0	0.129	8.30E-02	3.34	1.67	0.17	0.31
0.32	0	0.118	1.06E-01	3.64	1.82	0.18	0.35
0.38	0	0.11	1.31E-01	3.93	1.96	0.19	0.39
0.43	0	0.102	1.58E-01	4.21	2.11	0.19	0.42
0.49	0	0.096	1.86E-01	4.49	2.25	0.2	0.46
0.6	0	0.086	2.48E-01	5.04	2.52	0.22	0.53
0.71	0	0.078	3.17E-01	5.57	2.79	0.24	0.6
0.81	0	0.071	3.93E-01	6.1	3.05	0.25	0.67
0.92	0	0.065	4.74E-01	6.62	3.31	0.27	0.73
1.14	0	0.057	6.57E-01	7.66	3.83	0.3	0.86
1.36	0	0.05	8.63E-01	8.68	4.34	0.33	0.99
1.58	0	0.045	1.09E+00	9.69	4.85	0.36	1.11
1.8	0	0.041	1.35E+00	10.7	5.35	0.39	1.23

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2.02	0	0.037	1.63E+00	11.7	5.85	0.42	1.35
2.24	0	0.034	1.93E+00	12.69	6.35	0.45	1.47
2.68	0	0.03	2.59E+00	14.67	7.33	0.51	1.69
3.12	0	0.026	3.34E+00	16.63	8.31	0.56	1.91
3.56	0	0.024	4.17E+00	18.57	9.28	0.61	2.12
3.99	0	0.021	5.07E+00	20.5	10.25	0.66	2.33
4.43	0	0.02	6.06E+00	22.42	11.21	0.71	2.53
4.87	0	0.018	7.11E+00	24.32	12.16	0.76	2.72
5.31	0	0.017	8.24E+00	26.22	13.11	0.81	2.92
5.75	0	0.016	9.43E+00	28.1	14.05	0.85	3.1
6.19	0	0.015	1.07E+01	29.97	14.99	0.9	3.29
6.63	0	0.014	1.20E+01	31.84	15.92	0.94	3.47
7.06	0	0.013	1.34E+01	33.69	16.85	0.98	3.64
7.5	0	0.012	1.49E+01	35.53	17.77	1.02	3.82
7.94	0	0.012	1.64E+01	37.37	18.69	1.06	3.99
8.38	0	0.011	1.79E+01	39.2	19.6	1.1	4.15
8.82	0	0.011	1.95E+01	41.02	20.51	1.13	4.32
9.26	0	0.01	2.12E+01	42.83	21.41	1.17	4.48
9.7	0	0.01	2.29E+01	44.63	22.32	1.21	4.64
10.13	0	0.009	2.47E+01	46.43	23.21	1.24	4.8
10.57	0	0.009	2.66E+01	48.22	24.11	1.27	4.95
11.01	0	0.009	2.84E+01	50	25	1.31	5.1
11.45	0	0.008	3.03E+01	51.78	25.89	1.34	5.25
11.89	0	0.008	3.23E+01	53.54	26.77	1.37	5.4
12.33	0	0.008	3.43E+01	55.31	27.65	1.4	5.55
12.77	0	0.008	3.64E+01	57.06	28.53	1.43	5.69
13.2	0	0.007	3.85E+01	58.81	29.41	1.46	5.83
13.64	0	0.007	4.06E+01	60.56	30.28	1.49	5.97
14.08	0	0.007	4.28E+01	62.3	31.15	1.52	6.11
14.52	0	0.007	4.50E+01	64.03	32.01	1.55	6.25
14.96	0	0.007	4.73E+01	65.76	32.88	1.58	6.38
15.4	0	0.006	4.96E+01	67.48	33.74	1.6	6.52
15.84	0	0.006	5.19E+01	69.2	34.6	1.63	6.65
16.28	0	0.006	5.43E+01	70.91	35.45	1.66	6.78
16.71	0	0.006	5.67E+01	72.62	36.31	1.68	6.91
17.15	0	0.006	5.91E+01	74.32	37.16	1.71	7.04
17.59	0	0.006	6.16E+01	76.02	38.01	1.73	7.17
18.03	0	0.006	6.41E+01	77.71	38.85	1.76	7.29
18.47	0	0.006	6.67E+01	79.4	39.7	1.78	7.42
18.91	0	0.005	6.92E+01	81.08	40.54	1.81	7.54
19.35	0	0.005	7.19E+01	82.76	41.38	1.83	7.66
19.78	0	0.005	7.45E+01	84.44	42.22	1.85	7.78
20.22	0	0.005	7.72E+01	86.11	43.05	1.88	7.9
20.66	0	0.005	7.99E+01	87.77	43.89	1.9	8.02
21.1	0	0.005	8.26E+01	89.44	44.72	1.92	8.14
21.54	0	0.005	8.53E+01	91.1	45.55	1.94	8.25
21.98	0	0.005	8.81E+01	92.75	46.38	1.96	8.37
22.42	0	0.005	9.09E+01	94.4	47.2	1.98	8.48
22.85	0	0.005	9.38E+01	96.05	48.03	2.01	8.6
23.29	0	0.004	9.66E+01	97.69	48.85	2.03	8.71

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23.73	0	0.004	9.95E+01	99.34	49.67	2.05	8.82
24.17	0	0.004	1.02E+02	100.97	50.49	2.07	8.93
24.61	0	0.004	1.05E+02	102.61	51.3	2.09	9.04
25.05	0	0.004	1.08E+02	104.24	52.12	2.11	9.15
25.49	0	0.004	1.11E+02	105.86	52.93	2.13	9.26
25.92	0	0.004	1.14E+02	107.49	53.74	2.15	9.36
26.36	0	0.004	1.17E+02	109.11	54.55	2.16	9.47
26.8	0	0.004	1.20E+02	110.72	55.36	2.18	9.58
27.24	0	0.004	1.24E+02	112.34	56.17	2.2	9.68
27.68	0	0.004	1.27E+02	113.95	56.97	2.22	9.79
28.12	0	0.004	1.30E+02	115.56	57.78	2.24	9.89
28.56	0	0.004	1.33E+02	117.16	58.58	2.26	9.99
28.99	0	0.004	1.36E+02	118.77	59.38	2.27	10.09
29.43	0	0.004	1.39E+02	120.36	60.18	2.29	10.2
29.87	0	0.004	1.43E+02	121.96	60.98	2.31	10.3
30.31	0	0.004	1.46E+02	123.55	61.78	2.33	10.4
30.75	0	0.003	1.49E+02	125.15	62.57	2.34	10.5
31.19	0	0.003	1.52E+02	126.73	63.37	2.36	10.59
31.63	0	0.003	1.56E+02	128.32	64.16	2.38	10.69
32.06	0	0.003	1.59E+02	129.9	64.95	2.39	10.79
32.5	0	0.003	1.62E+02	131.48	65.74	2.41	10.89
32.94	0	0.003	1.66E+02	133.06	66.53	2.43	10.98
33.38	0	0.003	1.69E+02	134.64	67.32	2.44	11.08
33.82	0	0.003	1.72E+02	136.21	68.1	2.46	11.17
34.26	0	0.003	1.76E+02	137.78	68.89	2.48	11.27
34.7	0	0.003	1.79E+02	139.35	69.67	2.49	11.36
35.13	0	0.003	1.83E+02	140.91	70.46	2.51	11.46
35.57	0	0.003	1.86E+02	142.48	71.24	2.52	11.55
36.01	0	0.003	1.90E+02	144.04	72.02	2.54	11.64
36.45	0	0.003	1.93E+02	145.6	72.8	2.55	11.73
36.89	0	0.003	1.97E+02	147.15	73.58	2.57	11.83
37.33	0	0.003	2.00E+02	148.71	74.35	2.58	11.92
37.77	0	0.003	2.04E+02	150.26	75.13	2.6	12.01
38.2	0	0.003	2.07E+02	151.81	75.9	2.61	12.1
38.64	0	0.003	2.11E+02	153.36	76.68	2.63	12.19
39.08	0	0.003	2.14E+02	154.9	77.45	2.64	12.28
39.52	0	0.003	2.18E+02	156.44	78.22	2.65	12.36
39.96	0	0.003	2.22E+02	157.99	78.99	2.67	12.45
40.4	0	0.003	2.25E+02	159.53	79.76	2.68	12.54
40.84	0	0.003	2.29E+02	161.06	80.53	2.7	12.63
41.27	0	0.003	2.33E+02	162.6	81.3	2.71	12.71
41.71	0	0.003	2.36E+02	164.13	82.07	2.72	12.8
42.15	0	0.003	2.40E+02	165.66	82.83	2.74	12.89
42.59	0	0.003	2.44E+02	167.19	83.6	2.75	12.97
43.03	0	0.003	2.47E+02	168.72	84.36	2.77	13.06
43.47	0	0.003	2.51E+02	170.25	85.12	2.78	13.14
43.91	0	0.003	2.55E+02	171.77	85.88	2.79	13.23
44.34	0	0.003	2.59E+02	173.29	86.65	2.81	13.31
44.78	0	0.002	2.62E+02	174.81	87.41	2.82	13.39
45.22	0	0.002	2.66E+02	176.33	88.17	2.83	13.48

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45.66	0	0.002	2.70E+02	177.85	88.92	2.84	13.56
46.1	0	0.002	2.74E+02	179.36	89.68	2.86	13.64
46.54	0	0.002	2.78E+02	180.88	90.44	2.87	13.72
46.98	0	0.002	2.81E+02	182.39	91.19	2.88	13.81
47.41	0	0.002	2.85E+02	183.9	91.95	2.89	13.89
47.85	0	0.002	2.89E+02	185.4	92.7	2.91	13.97
48.29	0	0.002	2.93E+02	186.91	93.46	2.92	14.05
48.73	0	0.002	2.97E+02	188.42	94.21	2.93	14.13
49.17	0	0.002	3.01E+02	189.92	94.96	2.94	14.21
49.61	0	0.002	3.05E+02	191.42	95.71	2.96	14.29
50.05	0	0.002	3.09E+02	192.92	96.46	2.97	14.37
50.48	0	0.002	3.13E+02	194.42	97.21	2.98	14.45
50.92	0	0.002	3.16E+02	195.92	97.96	2.99	14.53
51.36	0	0.002	3.20E+02	197.41	98.71	3	14.6
51.8	0	0.002	3.24E+02	198.9	99.45	3.02	14.68
52.24	0	0.002	3.28E+02	200.4	100.2	3.03	14.76
52.68	0	0.002	3.32E+02	201.89	100.94	3.04	14.84
53.12	0	0.002	3.36E+02	203.38	101.69	3.05	14.92
53.55	0	0.002	3.40E+02	204.86	102.43	3.06	14.99
53.99	0	0.002	3.44E+02	206.35	103.17	3.07	15.07
54.43	0	0.002	3.48E+02	207.83	103.92	3.08	15.14
54.87	0	0.002	3.52E+02	209.32	104.66	3.1	15.22
55.31	0	0.002	3.57E+02	210.8	105.4	3.11	15.3
55.75	0	0.002	3.61E+02	212.28	106.14	3.12	15.37
56.19	0	0.002	3.65E+02	213.76	106.88	3.13	15.45
56.63	0	0.002	3.69E+02	215.24	107.62	3.14	15.52
57.06	0	0.002	3.73E+02	216.71	108.36	3.15	15.6
57.5	0	0.002	3.77E+02	218.19	109.09	3.16	15.67
57.94	0	0.002	3.81E+02	219.66	109.83	3.17	15.74
58.38	0	0.002	3.85E+02	221.13	110.57	3.18	15.82
58.82	0	0.002	3.89E+02	222.61	111.3	3.19	15.89
59.26	0	0.002	3.93E+02	224.07	112.04	3.21	15.97
59.7	0	0.002	3.98E+02	225.54	112.77	3.22	16.04
60.13	0	0.002	4.02E+02	227.01	113.51	3.23	16.11
60.57	0	0.002	4.06E+02	228.48	114.24	3.24	16.18
61.01	0	0.002	4.10E+02	229.94	114.97	3.25	16.26
61.45	0	0.002	4.14E+02	231.4	115.7	3.26	16.33
61.89	0	0.002	4.18E+02	232.87	116.43	3.27	16.4
62.33	0	0.002	4.23E+02	234.33	117.16	3.28	16.47
62.77	0	0.002	4.27E+02	235.79	117.89	3.29	16.54
63.2	0	0.002	4.31E+02	237.24	118.62	3.3	16.61
63.64	0	0.002	4.35E+02	238.7	119.35	3.31	16.68
64.08	0	0.002	4.40E+02	240.16	120.08	3.32	16.75
64.52	0	0.002	4.44E+02	241.61	120.81	3.33	16.83
64.96	0	0.002	4.48E+02	243.07	121.53	3.34	16.9
65.4	0	0.002	4.52E+02	244.52	122.26	3.35	16.97
65.84	0	0.002	4.57E+02	245.97	122.99	3.36	17.03
66.27	0	0.002	4.61E+02	247.42	123.71	3.37	17.1
66.71	0	0.002	4.65E+02	248.87	124.43	3.38	17.17
67.15	0	0.002	4.69E+02	250.32	125.16	3.39	17.24

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67.59	0	0.002	4.74E+02	251.76	125.88	3.4	17.31
68.03	0	0.002	4.78E+02	253.21	126.6	3.41	17.38
68.47	0	0.002	4.82E+02	254.65	127.33	3.42	17.45
68.91	0	0.002	4.87E+02	256.1	128.05	3.43	17.52
69.34	0	0.002	4.91E+02	257.54	128.77	3.44	17.58
69.78	0	0.002	4.95E+02	258.98	129.49	3.45	17.65
70.22	0	0.002	5.00E+02	260.42	130.21	3.45	17.72
70.66	0	0.002	5.04E+02	261.86	130.93	3.46	17.79
71.1	0	0.002	5.08E+02	263.3	131.65	3.47	17.85
71.54	0	0.002	5.13E+02	264.74	132.37	3.48	17.92
71.98	0	0.002	5.17E+02	266.17	133.09	3.49	17.99
72.41	0	0.002	5.21E+02	267.61	133.8	3.5	18.05
72.85	0	0.002	5.26E+02	269.04	134.52	3.51	18.12
73.29	0	0.002	5.30E+02	270.47	135.24	3.52	18.19
73.73	0	0.002	5.35E+02	271.91	135.95	3.53	18.25
74.17	0	0.002	5.39E+02	273.34	136.67	3.54	18.32
74.61	0	0.002	5.44E+02	274.77	137.38	3.55	18.38
75.05	0	0.002	5.48E+02	276.2	138.1	3.56	18.45
75.48	0	0.002	5.52E+02	277.63	138.81	3.56	18.52
75.92	0	0.002	5.57E+02	279.05	139.53	3.57	18.58
76.36	0	0.002	5.61E+02	280.48	140.24	3.58	18.65
76.8	0	0.002	5.66E+02	281.9	140.95	3.59	18.71
77.24	0	0.002	5.70E+02	283.33	141.66	3.6	18.77
77.68	0	0.002	5.75E+02	284.75	142.38	3.61	18.84
78.12	0	0.002	5.79E+02	286.17	143.09	3.62	18.9
78.55	0	0.002	5.84E+02	287.6	143.8	3.63	18.97
78.99	0	0.001	5.88E+02	289.02	144.51	3.63	19.03
79.43	0	0.001	5.93E+02	290.44	145.22	3.64	19.1
79.87	0	0.001	5.97E+02	291.85	145.93	3.65	19.16
80.31	0	0.001	6.02E+02	293.27	146.64	3.66	19.22
80.75	0	0.001	6.06E+02	294.69	147.34	3.67	19.29
81.19	0	0.001	6.11E+02	296.1	148.05	3.68	19.35
81.62	0	0.001	6.15E+02	297.52	148.76	3.69	19.41
82.06	0	0.001	6.20E+02	298.93	149.47	3.69	19.47
82.5	0	0.001	6.24E+02	300.35	150.17	3.7	19.54
82.94	0	0.001	6.29E+02	301.76	150.88	3.71	19.6
83.38	0	0.001	6.33E+02	303.17	151.59	3.72	19.66
83.82	0	0.001	6.38E+02	304.58	152.29	3.73	19.72
84.26	0	0.001	6.42E+02	305.99	153	3.74	19.79
84.69	0	0.001	6.47E+02	307.4	153.7	3.74	19.85
85.13	0	0.001	6.51E+02	308.81	154.41	3.75	19.91
85.57	0	0.001	6.56E+02	310.22	155.11	3.76	19.97
86.01	0	0.001	6.61E+02	311.62	155.81	3.77	20.03
86.45	0	0.001	6.65E+02	313.03	156.51	3.78	20.09
86.89	0	0.001	6.70E+02	314.43	157.22	3.79	20.15
87.33	0	0.001	6.74E+02	315.84	157.92	3.79	20.21
87.76	0	0.001	6.79E+02	317.24	158.62	3.8	20.28
88.2	0	0.001	6.84E+02	318.65	159.32	3.81	20.34
88.64	0	0.001	6.88E+02	320.05	160.02	3.82	20.4
89.08	0	0.001	6.93E+02	321.45	160.72	3.83	20.46

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89.52	0	0.001	6.97E+02	322.85	161.42	3.83	20.52
89.96	0	0.001	7.02E+02	324.25	162.12	3.84	20.58
90.4	0	0.001	7.07E+02	325.65	162.82	3.85	20.64
90.83	0	0.001	7.11E+02	327.04	163.52	3.86	20.7
91.27	0	0.001	7.16E+02	328.44	164.22	3.86	20.76
91.71	0	0.001	7.21E+02	329.84	164.92	3.87	20.82
92.15	0	0.001	7.25E+02	331.23	165.62	3.88	20.88
92.59	0	0.001	7.30E+02	332.63	166.31	3.89	20.93
93.03	0	0.001	7.35E+02	334.02	167.01	3.9	20.99
93.47	0	0.001	7.39E+02	335.42	167.71	3.9	21.05
93.9	0	0.001	7.44E+02	336.81	168.4	3.91	21.11
94.34	0	0.001	7.49E+02	338.2	169.1	3.92	21.17
94.78	0	0.001	7.53E+02	339.59	169.8	3.93	21.23
95.22	0	0.001	7.58E+02	340.98	170.49	3.93	21.29
95.66	0	0.001	7.63E+02	342.37	171.19	3.94	21.34
96.1	0	0.001	7.67E+02	343.76	171.88	3.95	21.4
96.54	0	0.001	7.72E+02	345.15	172.57	3.96	21.46
96.98	0	0.001	7.77E+02	346.54	173.27	3.96	21.52
97.41	0	0.001	7.81E+02	347.92	173.96	3.97	21.58
97.85	0	0.001	7.86E+02	349.31	174.65	3.98	21.63
98.29	0	0.001	7.91E+02	350.69	175.35	3.99	21.69
98.73	0	0.001	7.96E+02	352.08	176.04	3.99	21.75
99.17	0	0.001	8.00E+02	353.46	176.73	4	21.81
99.61	0	0.001	8.05E+02	354.85	177.42	4.01	21.86
100.05	0	0.001	8.10E+02	356.23	178.11	4.02	21.92
100.48	0	0.001	8.14E+02	357.61	178.81	4.02	21.98
100.92	0	0.001	8.19E+02	358.99	179.5	4.03	22.03
101.36	0	0.001	8.24E+02	360.37	180.19	4.04	22.09
101.8	0	0.001	8.29E+02	361.75	180.88	4.04	22.15
102.24	0	0.001	8.33E+02	363.13	181.57	4.05	22.2
102.68	0	0.001	8.38E+02	364.51	182.26	4.06	22.26
103.12	0	0.001	8.43E+02	365.89	182.94	4.07	22.32
103.55	0	0.001	8.48E+02	367.27	183.63	4.07	22.37
103.99	0	0.001	8.53E+02	368.64	184.32	4.08	22.43
104.43	0	0.001	8.57E+02	370.02	185.01	4.09	22.49
104.87	0	0.001	8.62E+02	371.39	185.7	4.09	22.54
105.31	0	0.001	8.67E+02	372.77	186.38	4.1	22.6
105.75	0	0.001	8.72E+02	374.14	187.07	4.11	22.65
106.19	0	0.001	8.77E+02	375.52	187.76	4.12	22.71
106.62	0	0.001	8.81E+02	376.89	188.45	4.12	22.76
107.06	0	0.001	8.86E+02	378.26	189.13	4.13	22.82
107.5	0	0.001	8.91E+02	379.63	189.82	4.14	22.87
107.94	0	0.001	8.96E+02	381.01	190.5	4.14	22.93
108.38	0	0.001	9.01E+02	382.38	191.19	4.15	22.98
108.82	0	0.001	9.05E+02	383.75	191.87	4.16	23.04
109.26	0	0.001	9.10E+02	385.12	192.56	4.16	23.09
109.69	0	0.001	9.15E+02	386.48	193.24	4.17	23.15
110.13	0	0.001	9.20E+02	387.85	193.93	4.18	23.2
110.57	0	0.001	9.25E+02	389.22	194.61	4.18	23.26
111.01	0	0.001	9.30E+02	390.59	195.29	4.19	23.31

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111.45	0	0.001	9.34E+02	391.95	195.98	4.2	23.36
111.89	0	0.001	9.39E+02	393.32	196.66	4.2	23.42
112.33	0	0.001	9.44E+02	394.68	197.34	4.21	23.47
112.76	0	0.001	9.49E+02	396.05	198.02	4.22	23.53
113.2	0	0.001	9.54E+02	397.41	198.71	4.23	23.58
113.64	0	0.001	9.59E+02	398.78	199.39	4.23	23.63
114.08	0	0.001	9.64E+02	400.14	200.07	4.24	23.69

A R E A S OF E X C E
1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.01	1.30E+01
0.02	3.01E+00
0.03	1.26E+00
0.04	6.28E-01
0.05	3.60E-01
0.06	2.21E-01
0.08	1.42E-01
0.09	9.10E-02
0.1	6.41E-02
0.11	4.62E-02
0.12	3.18E-02
0.13	2.36E-02
0.14	1.77E-02
0.15	1.29E-02
0.16	9.87E-03
0.17	7.49E-03
0.18	5.73E-03
0.19	4.45E-03
0.2	3.43E-03
0.22	2.31E-03

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Table C.2: Visual Plumes Model Output Data for MCC Room at Maximum Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,; VEL. 0.25 M
HEAT CONVECTION = 2

DISCHARGE CONDITIONS : TEMP. = 4.2 C; DEPTH = 0.09 M.
; WIDTH = 0.09 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0.03 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 697.63

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.05	0	0.216	1.32E-02	2	1	0.14	0.13
0.06	0	0.21	1.49E-02	2.05	1.03	0.14	0.14
0.07	0	0.205	1.67E-02	2.1	1.05	0.14	0.15
0.07	0	0.2	1.84E-02	2.15	1.08	0.14	0.15
0.08	0	0.196	2.02E-02	2.2	1.1	0.14	0.16
0.09	0	0.192	2.21E-02	2.25	1.13	0.14	0.16
0.1	0	0.188	2.40E-02	2.3	1.15	0.14	0.17
0.11	0	0.18	2.79E-02	2.39	1.2	0.14	0.18
0.12	0	0.174	3.19E-02	2.48	1.24	0.15	0.19
0.14	0	0.168	3.60E-02	2.57	1.28	0.15	0.2
0.15	0	0.163	4.03E-02	2.65	1.33	0.15	0.21
0.18	0	0.153	4.93E-02	2.82	1.41	0.15	0.23
0.2	0	0.145	5.87E-02	2.98	1.49	0.16	0.25
0.23	0	0.138	6.86E-02	3.13	1.56	0.16	0.27
0.26	0	0.132	7.89E-02	3.28	1.64	0.16	0.28
0.31	0	0.121	1.01E-01	3.57	1.79	0.17	0.32
0.37	0	0.112	1.24E-01	3.85	1.93	0.18	0.35
0.42	0	0.105	1.50E-01	4.13	2.06	0.18	0.38
0.48	0	0.098	1.76E-01	4.39	2.2	0.19	0.42
0.59	0	0.088	2.34E-01	4.92	2.46	0.2	0.47
0.7	0	0.08	2.97E-01	5.43	2.72	0.21	0.53
0.81	0	0.073	3.65E-01	5.93	2.97	0.23	0.59
0.92	0	0.067	4.38E-01	6.43	3.21	0.24	0.64
1.14	0	0.059	5.99E-01	7.4	3.7	0.26	0.74
1.36	0	0.052	7.77E-01	8.36	4.18	0.28	0.83
1.58	0	0.047	9.72E-01	9.3	4.65	0.3	0.92

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1.79	0	0.043	1.18E+00	10.22	5.11	0.32	1.01
2.01	0	0.039	1.41E+00	11.14	5.57	0.34	1.09
2.23	0	0.036	1.65E+00	12.05	6.03	0.36	1.17
2.67	0	0.032	2.17E+00	13.85	6.92	0.4	1.32
3.11	0	0.028	2.73E+00	15.61	7.81	0.43	1.46
3.55	0	0.025	3.34E+00	17.36	8.68	0.46	1.6
3.99	0	0.023	4.00E+00	19.08	9.54	0.49	1.72
4.43	0	0.021	4.68E+00	20.78	10.39	0.52	1.84
4.86	0	0.02	5.41E+00	22.47	11.23	0.55	1.96
5.3	0	0.018	6.16E+00	24.14	12.07	0.57	2.07
5.74	0	0.017	6.95E+00	25.8	12.9	0.6	2.17
6.18	0	0.016	7.76E+00	27.44	13.72	0.62	2.28
6.62	0	0.015	8.60E+00	29.07	14.53	0.64	2.38
7.06	0	0.014	9.47E+00	30.69	15.34	0.66	2.47
7.5	0	0.014	1.04E+01	32.29	16.15	0.68	2.57
7.94	0	0.013	1.13E+01	33.89	16.94	0.7	2.66
8.37	0	0.012	1.22E+01	35.48	17.74	0.72	2.74
8.81	0	0.012	1.31E+01	37.05	18.53	0.74	2.83
9.25	0	0.011	1.41E+01	38.62	19.31	0.76	2.91
9.69	0	0.011	1.51E+01	40.18	20.09	0.78	3
10.13	0	0.01	1.61E+01	41.74	20.87	0.8	3.08
10.57	0	0.01	1.71E+01	43.28	21.64	0.81	3.15
11.01	0	0.01	1.81E+01	44.82	22.41	0.83	3.23
11.44	0	0.009	1.92E+01	46.35	23.17	0.85	3.31
11.88	0	0.009	2.03E+01	47.87	23.94	0.86	3.38
12.32	0	0.009	2.13E+01	49.39	24.7	0.88	3.45
12.76	0	0.009	2.24E+01	50.9	25.45	0.89	3.52
13.2	0	0.008	2.35E+01	52.41	26.2	0.91	3.59
13.64	0	0.008	2.46E+01	53.91	26.95	0.92	3.66
14.08	0	0.008	2.57E+01	55.4	27.7	0.93	3.73
14.51	0	0.008	2.69E+01	56.89	28.45	0.95	3.79
14.95	0	0.007	2.80E+01	58.38	29.19	0.96	3.86
15.39	0	0.007	2.92E+01	59.86	29.93	0.97	3.92
15.83	0	0.007	3.03E+01	61.33	30.67	0.99	3.99
16.27	0	0.007	3.15E+01	62.8	31.4	1	4.05
16.71	0	0.007	3.27E+01	64.27	32.13	1.01	4.11
17.15	0	0.007	3.39E+01	65.73	32.86	1.03	4.17
17.58	0	0.007	3.51E+01	67.19	33.59	1.04	4.23
18.02	0	0.006	3.63E+01	68.64	34.32	1.05	4.29
18.46	0	0.006	3.75E+01	70.09	35.04	1.06	4.35
18.9	0	0.006	3.87E+01	71.54	35.77	1.07	4.41
19.34	0	0.006	4.00E+01	72.98	36.49	1.08	4.46
19.78	0	0.006	4.12E+01	74.41	37.21	1.1	4.52

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20.22	0	0.006	4.24E+01	75.85	37.92	1.11	4.58
20.65	0	0.006	4.37E+01	77.28	38.64	1.12	4.63
21.09	0	0.006	4.50E+01	78.71	39.35	1.13	4.69
21.53	0	0.005	4.62E+01	80.13	40.07	1.14	4.74
21.97	0	0.005	4.75E+01	81.55	40.78	1.15	4.79
22.41	0	0.005	4.88E+01	82.97	41.49	1.16	4.85
22.85	0	0.005	5.01E+01	84.39	42.19	1.17	4.9
23.29	0	0.005	5.13E+01	85.8	42.9	1.18	4.95
23.72	0	0.005	5.26E+01	87.21	43.6	1.19	5
24.16	0	0.005	5.39E+01	88.62	44.31	1.2	5.05
24.6	0	0.005	5.52E+01	90.02	45.01	1.21	5.1
25.04	0	0.005	5.66E+01	91.42	45.71	1.22	5.15
25.48	0	0.005	5.79E+01	92.82	46.41	1.23	5.2
25.92	0	0.005	5.92E+01	94.21	47.11	1.24	5.25
26.36	0	0.005	6.05E+01	95.61	47.8	1.25	5.3
26.79	0	0.005	6.18E+01	97	48.5	1.26	5.35
27.23	0	0.004	6.32E+01	98.39	49.19	1.27	5.4
27.67	0	0.004	6.45E+01	99.77	49.89	1.28	5.44
28.11	0	0.004	6.59E+01	101.16	50.58	1.28	5.49
28.55	0	0.004	6.72E+01	102.54	51.27	1.29	5.54
28.99	0	0.004	6.86E+01	103.92	51.96	1.3	5.58
29.43	0	0.004	6.99E+01	105.29	52.65	1.31	5.63
29.86	0	0.004	7.13E+01	106.67	53.33	1.32	5.67
30.3	0	0.004	7.26E+01	108.04	54.02	1.33	5.72
30.74	0	0.004	7.40E+01	109.41	54.7	1.34	5.76
31.18	0	0.004	7.54E+01	110.78	55.39	1.35	5.81
31.62	0	0.004	7.67E+01	112.14	56.07	1.35	5.85
32.06	0	0.004	7.81E+01	113.51	56.75	1.36	5.9
32.5	0	0.004	7.95E+01	114.87	57.44	1.37	5.94
32.93	0	0.004	8.09E+01	116.23	58.12	1.38	5.98
33.37	0	0.004	8.23E+01	117.59	58.8	1.39	6.03
33.81	0	0.004	8.37E+01	118.95	59.47	1.39	6.07
34.25	0	0.004	8.51E+01	120.3	60.15	1.4	6.11
34.69	0	0.004	8.65E+01	121.66	60.83	1.41	6.15
35.13	0	0.004	8.79E+01	123.01	61.5	1.42	6.19
35.57	0	0.004	8.93E+01	124.36	62.18	1.43	6.24
36	0	0.003	9.07E+01	125.7	62.85	1.43	6.28
36.44	0	0.003	9.21E+01	127.05	63.53	1.44	6.32
36.88	0	0.003	9.35E+01	128.4	64.2	1.45	6.36
37.32	0	0.003	9.49E+01	129.74	64.87	1.46	6.4
37.76	0	0.003	9.63E+01	131.08	65.54	1.46	6.44
38.2	0	0.003	9.78E+01	132.42	66.21	1.47	6.48
38.64	0	0.003	9.92E+01	133.76	66.88	1.48	6.52

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39.07	0	0.003	1.01E+02	135.09	67.55	1.49	6.56
39.51	0	0.003	1.02E+02	136.43	68.21	1.49	6.6
39.95	0	0.003	1.03E+02	137.76	68.88	1.5	6.64
40.39	0	0.003	1.05E+02	139.1	69.55	1.51	6.68
40.83	0	0.003	1.06E+02	140.43	70.21	1.51	6.72
41.27	0	0.003	1.08E+02	141.76	70.88	1.52	6.75
41.71	0	0.003	1.09E+02	143.08	71.54	1.53	6.79
42.14	0	0.003	1.11E+02	144.41	72.21	1.53	6.83
42.58	0	0.003	1.12E+02	145.74	72.87	1.54	6.87
43.02	0	0.003	1.14E+02	147.06	73.53	1.55	6.91
43.46	0	0.003	1.15E+02	148.38	74.19	1.56	6.94
43.9	0	0.003	1.16E+02	149.7	74.85	1.56	6.98
44.34	0	0.003	1.18E+02	151.02	75.51	1.57	7.02
44.78	0	0.003	1.19E+02	152.34	76.17	1.58	7.05
45.21	0	0.003	1.21E+02	153.66	76.83	1.58	7.09
45.65	0	0.003	1.22E+02	154.98	77.49	1.59	7.13
46.09	0	0.003	1.24E+02	156.29	78.14	1.6	7.16
46.53	0	0.003	1.25E+02	157.6	78.8	1.6	7.2
46.97	0	0.003	1.27E+02	158.92	79.46	1.61	7.24
47.41	0	0.003	1.28E+02	160.23	80.11	1.61	7.27
47.85	0	0.003	1.30E+02	161.54	80.77	1.62	7.31
48.29	0	0.003	1.31E+02	162.85	81.42	1.63	7.34
48.72	0	0.003	1.33E+02	164.15	82.08	1.63	7.38
49.16	0	0.003	1.34E+02	165.46	82.73	1.64	7.41
49.6	0	0.003	1.36E+02	166.77	83.38	1.65	7.45
50.04	0	0.003	1.37E+02	168.07	84.04	1.65	7.48
50.48	0	0.003	1.39E+02	169.37	84.69	1.66	7.52
50.92	0	0.003	1.40E+02	170.68	85.34	1.67	7.55
51.36	0	0.003	1.42E+02	171.98	85.99	1.67	7.59
51.79	0	0.003	1.43E+02	173.28	86.64	1.68	7.62
52.23	0	0.002	1.45E+02	174.58	87.29	1.68	7.66
52.67	0	0.002	1.46E+02	175.87	87.94	1.69	7.69
53.11	0	0.002	1.47E+02	177.17	88.59	1.7	7.72
53.55	0	0.002	1.49E+02	178.47	89.23	1.7	7.76
53.99	0	0.002	1.50E+02	179.76	89.88	1.71	7.79
54.43	0	0.002	1.52E+02	181.06	90.53	1.71	7.82
54.86	0	0.002	1.53E+02	182.35	91.17	1.72	7.86
55.3	0	0.002	1.55E+02	183.64	91.82	1.73	7.89
55.74	0	0.002	1.56E+02	184.93	92.47	1.73	7.92
56.18	0	0.002	1.58E+02	186.22	93.11	1.74	7.96
56.62	0	0.002	1.59E+02	187.51	93.76	1.74	7.99
57.06	0	0.002	1.61E+02	188.8	94.4	1.75	8.02
57.5	0	0.002	1.63E+02	190.09	95.04	1.75	8.05

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57.93	0	0.002	1.64E+02	191.37	95.69	1.76	8.09
58.37	0	0.002	1.66E+02	192.66	96.33	1.77	8.12
58.81	0	0.002	1.67E+02	193.94	96.97	1.77	8.15
59.25	0	0.002	1.69E+02	195.23	97.61	1.78	8.18
59.69	0	0.002	1.70E+02	196.51	98.25	1.78	8.21
60.13	0	0.002	1.72E+02	197.79	98.9	1.79	8.25
60.57	0	0.002	1.73E+02	199.07	99.54	1.79	8.28
61	0	0.002	1.75E+02	200.35	100.18	1.8	8.31
61.44	0	0.002	1.76E+02	201.63	100.82	1.8	8.34
61.88	0	0.002	1.78E+02	202.91	101.45	1.81	8.37
62.32	0	0.002	1.79E+02	204.19	102.09	1.82	8.4
62.76	0	0.002	1.81E+02	205.46	102.73	1.82	8.43
63.2	0	0.002	1.82E+02	206.74	103.37	1.83	8.46
63.64	0	0.002	1.84E+02	208.01	104.01	1.83	8.5
64.07	0	0.002	1.85E+02	209.29	104.64	1.84	8.53
64.51	0	0.002	1.87E+02	210.56	105.28	1.84	8.56
64.95	0	0.002	1.88E+02	211.84	105.92	1.85	8.59
65.39	0	0.002	1.90E+02	213.11	106.55	1.85	8.62
65.83	0	0.002	1.91E+02	214.38	107.19	1.86	8.65
66.27	0	0.002	1.93E+02	215.65	107.82	1.86	8.68
66.71	0	0.002	1.95E+02	216.92	108.46	1.87	8.71
67.14	0	0.002	1.96E+02	218.19	109.09	1.87	8.74
67.58	0	0.002	1.98E+02	219.46	109.73	1.88	8.77
68.02	0	0.002	1.99E+02	220.72	110.36	1.88	8.8
68.46	0	0.002	2.01E+02	221.99	111	1.89	8.83
68.9	0	0.002	2.02E+02	223.26	111.63	1.89	8.86
69.34	0	0.002	2.04E+02	224.52	112.26	1.9	8.89
69.78	0	0.002	2.05E+02	225.79	112.89	1.9	8.92
70.21	0	0.002	2.07E+02	227.05	113.53	1.91	8.95
70.65	0	0.002	2.08E+02	228.31	114.16	1.91	8.98
71.09	0	0.002	2.10E+02	229.58	114.79	1.92	9
71.53	0	0.002	2.11E+02	230.84	115.42	1.92	9.03
71.97	0	0.002	2.13E+02	232.1	116.05	1.93	9.06
72.41	0	0.002	2.15E+02	233.36	116.68	1.93	9.09
72.85	0	0.002	2.16E+02	234.62	117.31	1.94	9.12
73.28	0	0.002	2.18E+02	235.88	117.94	1.94	9.15
73.72	0	0.002	2.19E+02	237.14	118.57	1.95	9.18
74.16	0	0.002	2.21E+02	238.39	119.2	1.95	9.21
74.6	0	0.002	2.22E+02	239.65	119.83	1.96	9.23
75.04	0	0.002	2.24E+02	240.91	120.45	1.96	9.26
75.48	0	0.002	2.25E+02	242.16	121.08	1.97	9.29
75.92	0	0.002	2.27E+02	243.42	121.71	1.97	9.32
76.35	0	0.002	2.29E+02	244.67	122.34	1.98	9.35

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76.79	0	0.002	2.30E+02	245.93	122.96	1.98	9.38
77.23	0	0.002	2.32E+02	247.18	123.59	1.99	9.4
77.67	0	0.002	2.33E+02	248.43	124.22	1.99	9.43
78.11	0	0.002	2.35E+02	249.68	124.84	2	9.46
78.55	0	0.002	2.36E+02	250.94	125.47	2	9.49
78.99	0	0.002	2.38E+02	252.19	126.09	2.01	9.51
79.42	0	0.002	2.39E+02	253.44	126.72	2.01	9.54
79.86	0	0.002	2.41E+02	254.69	127.34	2.02	9.57
80.3	0	0.002	2.43E+02	255.94	127.97	2.02	9.6
80.74	0	0.002	2.44E+02	257.18	128.59	2.03	9.62
81.18	0	0.002	2.46E+02	258.43	129.22	2.03	9.65
81.62	0	0.002	2.47E+02	259.68	129.84	2.03	9.68
82.06	0	0.002	2.49E+02	260.93	130.46	2.04	9.71
82.49	0	0.002	2.50E+02	262.17	131.09	2.04	9.73
82.93	0	0.002	2.52E+02	263.42	131.71	2.05	9.76
83.37	0	0.002	2.54E+02	264.66	132.33	2.05	9.79
83.81	0	0.002	2.55E+02	265.91	132.95	2.06	9.81
84.25	0	0.002	2.57E+02	267.15	133.57	2.06	9.84
84.69	0	0.002	2.58E+02	268.39	134.2	2.07	9.87
85.13	0	0.002	2.60E+02	269.64	134.82	2.07	9.89
85.56	0	0.002	2.61E+02	270.88	135.44	2.08	9.92
86	0	0.002	2.63E+02	272.12	136.06	2.08	9.95
86.44	0	0.002	2.65E+02	273.36	136.68	2.08	9.97
86.88	0	0.002	2.66E+02	274.6	137.3	2.09	10
87.32	0	0.002	2.68E+02	275.84	137.92	2.09	10.03
87.76	0	0.002	2.69E+02	277.08	138.54	2.1	10.05
88.2	0	0.002	2.71E+02	278.32	139.16	2.1	10.08
88.64	0	0.002	2.73E+02	279.56	139.78	2.11	10.1
89.07	0	0.002	2.74E+02	280.8	140.4	2.11	10.13
89.51	0	0.002	2.76E+02	282.03	141.02	2.12	10.16
89.95	0	0.002	2.77E+02	283.27	141.64	2.12	10.18
90.39	0	0.002	2.79E+02	284.51	142.25	2.12	10.21
90.83	0	0.002	2.80E+02	285.74	142.87	2.13	10.23
91.27	0	0.002	2.82E+02	286.98	143.49	2.13	10.26
91.71	0	0.002	2.84E+02	288.21	144.11	2.14	10.29
92.14	0	0.002	2.85E+02	289.45	144.72	2.14	10.31
92.58	0	0.001	2.87E+02	290.68	145.34	2.15	10.34
93.02	0	0.001	2.88E+02	291.91	145.96	2.15	10.36
93.46	0	0.001	2.90E+02	293.15	146.57	2.15	10.39
93.9	0	0.001	2.92E+02	294.38	147.19	2.16	10.41
94.34	0	0.001	2.93E+02	295.61	147.81	2.16	10.44
94.78	0	0.001	2.95E+02	296.84	148.42	2.17	10.46
95.21	0	0.001	2.96E+02	298.07	149.04	2.17	10.49

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95.65	0	0.001	2.98E+02	299.3	149.65	2.18	10.51
96.09	0	0.001	2.99E+02	300.53	150.27	2.18	10.54
96.53	0	0.001	3.01E+02	301.76	150.88	2.18	10.56
96.97	0	0.001	3.03E+02	302.99	151.5	2.19	10.59
97.41	0	0.001	3.04E+02	304.22	152.11	2.19	10.61
97.85	0	0.001	3.06E+02	305.45	152.73	2.2	10.64
98.28	0	0.001	3.07E+02	306.68	153.34	2.2	10.66
98.72	0	0.001	3.09E+02	307.91	153.95	2.2	10.69
99.16	0	0.001	3.11E+02	309.13	154.57	2.21	10.71
99.6	0	0.001	3.12E+02	310.36	155.18	2.21	10.74
100.04	0	0.001	3.14E+02	311.58	155.79	2.22	10.76
100.48	0	0.001	3.15E+02	312.81	156.41	2.22	10.79
100.92	0	0.001	3.17E+02	314.04	157.02	2.22	10.81
101.35	0	0.001	3.19E+02	315.26	157.63	2.23	10.83
101.79	0	0.001	3.20E+02	316.48	158.24	2.23	10.86
102.23	0	0.001	3.22E+02	317.71	158.85	2.24	10.88
102.67	0	0.001	3.23E+02	318.93	159.47	2.24	10.91
103.11	0	0.001	3.25E+02	320.15	160.08	2.24	10.93
103.55	0	0.001	3.27E+02	321.38	160.69	2.25	10.96
103.99	0	0.001	3.28E+02	322.6	161.3	2.25	10.98
104.42	0	0.001	3.30E+02	323.82	161.91	2.26	11
104.86	0	0.001	3.31E+02	325.04	162.52	2.26	11.03
105.3	0	0.001	3.33E+02	326.26	163.13	2.26	11.05
105.74	0	0.001	3.35E+02	327.48	163.74	2.27	11.08
106.18	0	0.001	3.36E+02	328.7	164.35	2.27	11.1
106.62	0	0.001	3.38E+02	329.92	164.96	2.28	11.12
107.06	0	0.001	3.39E+02	331.14	165.57	2.28	11.15
107.49	0	0.001	3.41E+02	332.36	166.18	2.28	11.17
107.93	0	0.001	3.43E+02	333.58	166.79	2.29	11.19
108.37	0	0.001	3.44E+02	334.8	167.4	2.29	11.22
108.81	0	0.001	3.46E+02	336.02	168.01	2.3	11.24
109.25	0	0.001	3.47E+02	337.23	168.62	2.3	11.27
109.69	0	0.001	3.49E+02	338.45	169.22	2.3	11.29
110.13	0	0.001	3.51E+02	339.67	169.83	2.31	11.31
110.56	0	0.001	3.52E+02	340.88	170.44	2.31	11.34
111	0	0.001	3.54E+02	342.1	171.05	2.32	11.36
111.44	0	0.001	3.56E+02	343.31	171.66	2.32	11.38
111.88	0	0.001	3.57E+02	344.53	172.26	2.32	11.41
112.32	0	0.001	3.59E+02	345.74	172.87	2.33	11.43
112.76	0	0.001	3.60E+02	346.96	173.48	2.33	11.45
113.2	0	0.001	3.62E+02	348.17	174.09	2.33	11.48
113.63	0	0.001	3.64E+02	349.38	174.69	2.34	11.5
114.07	0	0.001	3.65E+02	350.6	175.3	2.34	11.52

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114.51	0	0.001	3.67E+02	351.81	175.9	2.35	11.54
114.95	0	0.001	3.68E+02	353.02	176.51	2.35	11.57
115.39	0	0.001	3.70E+02	354.23	177.12	2.35	11.59
115.83	0	0.001	3.72E+02	355.45	177.72	2.36	11.61
116.27	0	0.001	3.73E+02	356.66	178.33	2.36	11.64
116.7	0	0.001	3.75E+02	357.87	178.93	2.36	11.66
117.14	0	0.001	3.77E+02	359.08	179.54	2.37	11.68
117.58	0	0.001	3.78E+02	360.29	180.14	2.37	11.7
118.02	0	0.001	3.80E+02	361.5	180.75	2.38	11.73
118.46	0	0.001	3.81E+02	362.71	181.35	2.38	11.75
118.9	0	0.001	3.83E+02	363.92	181.96	2.38	11.77
119.34	0	0.001	3.85E+02	365.12	182.56	2.39	11.79
119.77	0	0.001	3.86E+02	366.33	183.17	2.39	11.82
120.21	0	0.001	3.88E+02	367.54	183.77	2.39	11.84
120.65	0	0.001	3.89E+02	368.75	184.37	2.4	11.86
121.09	0	0.001	3.91E+02	369.96	184.98	2.4	11.88
121.53	0	0.001	3.93E+02	371.16	185.58	2.4	11.91
121.97	0	0.001	3.94E+02	372.37	186.18	2.41	11.93
122.41	0	0.001	3.96E+02	373.58	186.79	2.41	11.95
122.84	0	0.001	3.98E+02	374.78	187.39	2.42	11.97
123.28	0	0.001	3.99E+02	375.99	187.99	2.42	11.99
123.72	0	0.001	4.01E+02	377.19	188.6	2.42	12.02
124.16	0	0.001	4.02E+02	378.4	189.2	2.43	12.04
124.6	0	0.001	4.04E+02	379.6	189.8	2.43	12.06
125.04	0	0.001	4.06E+02	380.81	190.4	2.43	12.08
125.48	0	0.001	4.07E+02	382.01	191.01	2.44	12.1
125.91	0	0.001	4.09E+02	383.21	191.61	2.44	12.13
126.35	0	0.001	4.11E+02	384.42	192.21	2.44	12.15
126.79	0	0.001	4.12E+02	385.62	192.81	2.45	12.17
127.23	0	0.001	4.14E+02	386.82	193.41	2.45	12.19
127.67	0	0.001	4.15E+02	388.03	194.01	2.45	12.21
128.11	0	0.001	4.17E+02	389.23	194.61	2.46	12.24
128.55	0	0.001	4.19E+02	390.43	195.21	2.46	12.26
128.99	0	0.001	4.20E+02	391.63	195.82	2.47	12.28
129.42	0	0.001	4.22E+02	392.83	196.42	2.47	12.3
129.86	0	0.001	4.24E+02	394.03	197.02	2.47	12.32
130.3	0	0.001	4.25E+02	395.23	197.62	2.48	12.34
130.74	0	0.001	4.27E+02	396.43	198.22	2.48	12.37
131.18	0	0.001	4.28E+02	397.63	198.82	2.48	12.39
131.62	0	0.001	4.30E+02	398.83	199.42	2.49	12.41
132.06	0	0.001	4.32E+02	400.03	200.02	2.49	12.43
132.49	0	0.001	4.33E+02	401.23	200.62	2.49	12.45
132.93	0	0.001	4.35E+02	402.43	201.21	2.5	12.47

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A R E A S OF E X C E S S

1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.01	1.15E+01
0.02	2.83E+00
0.03	1.15E+00
0.04	5.88E-01
0.05	3.40E-01
0.06	2.17E-01
0.08	1.37E-01
0.09	9.32E-02
0.1	6.50E-02
0.11	4.51E-02
0.12	3.28E-02
0.13	2.41E-02
0.14	1.74E-02
0.15	1.31E-02
0.16	9.89E-03
0.17	7.46E-03
0.18	5.72E-03
0.19	4.42E-03
0.2	3.41E-03
0.22	2.31E-03

(DEG. C) AREA (SQ. M)

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Appendix D: Model Outputs for Diesel Generators I

Table D.1: Visual Plumes Model Output Data for Diesel Generators I at Mean Currents

PDSWIN - FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,;
HEAT CONVECTION = 2

DISCHARGE CONDITIONS : TEMP. = 16.1 C; DEPTH = M
; WIDTH = 0.17 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0.03 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 13.76

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.4	0	12.116	3.80E-01	2	1	0.21	0.35
0.41	0	11.894	3.93E-01	2.04	1.02	0.21	0.36
0.42	0	11.684	4.06E-01	2.07	1.04	0.21	0.38
0.44	0	11.486	4.20E-01	2.11	1.05	0.21	0.39
0.45	0	11.298	4.34E-01	2.14	1.07	0.21	0.4
0.46	0	11.119	4.48E-01	2.18	1.09	0.21	0.42
0.48	0	10.948	4.63E-01	2.21	1.11	0.21	0.43
0.51	0	10.628	4.92E-01	2.28	1.14	0.21	0.46
0.53	0	10.332	5.22E-01	2.35	1.17	0.21	0.48
0.56	0	10.058	5.53E-01	2.41	1.2	0.21	0.51
0.59	0	9.802	5.85E-01	2.47	1.24	0.21	0.53
0.64	0	9.337	6.50E-01	2.6	1.3	0.21	0.58
0.7	0	8.923	7.19E-01	2.72	1.36	0.21	0.62
0.75	0	8.55	7.90E-01	2.83	1.42	0.21	0.67
0.81	0	8.211	8.64E-01	2.95	1.48	0.21	0.71
0.92	0	7.618	1.02E+00	3.18	1.59	0.22	0.8
1.03	0	7.111	1.19E+00	3.41	1.7	0.22	0.88
1.14	0	6.672	1.36E+00	3.63	1.82	0.23	0.96
1.25	0	6.288	1.55E+00	3.85	1.93	0.24	1.04
1.36	0	5.948	1.75E+00	4.07	2.04	0.24	1.12
1.46	0	5.645	1.96E+00	4.29	2.15	0.25	1.19
1.57	0	5.373	2.17E+00	4.51	2.26	0.26	1.27
1.68	0	5.128	2.40E+00	4.73	2.36	0.26	1.35
1.9	0	4.703	2.87E+00	5.15	2.58	0.28	1.5
2.12	0	4.348	3.39E+00	5.57	2.79	0.29	1.64
2.34	0	4.046	3.94E+00	5.99	2.99	0.3	1.79
2.56	0	3.786	4.52E+00	6.4	3.2	0.31	1.93
3	0	3.364	5.77E+00	7.21	3.6	0.33	2.21
3.44	0	3.033	7.14E+00	7.99	4	0.35	2.48
3.88	0	2.768	8.63E+00	8.76	4.38	0.37	2.75

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4.32	0	2.549	1.02E+01	9.51	4.76	0.38	3.01
4.75	0	2.366	1.19E+01	10.25	5.12	0.4	3.27
5.19	0	2.211	1.37E+01	10.97	5.48	0.41	3.52
6.07	0	1.961	1.75E+01	12.38	6.19	0.44	4.01
6.95	0	1.767	2.17E+01	13.73	6.87	0.46	4.49
7.82	0	1.612	2.61E+01	15.06	7.53	0.48	4.95
8.7	0	1.484	3.08E+01	16.35	8.17	0.49	5.4
9.58	0	1.377	3.58E+01	17.62	8.81	0.51	5.83
10.46	0	1.286	4.10E+01	18.86	9.43	0.53	6.25
11.33	0	1.207	4.64E+01	20.1	10.05	0.54	6.67
12.21	0	1.137	5.20E+01	21.32	10.66	0.55	7.07
13.09	0	1.076	5.79E+01	22.53	11.27	0.57	7.47
13.96	0	1.021	6.38E+01	23.73	11.87	0.58	7.85
14.84	0	0.972	7.00E+01	24.93	12.47	0.59	8.23
15.72	0	0.928	7.63E+01	26.12	13.06	0.6	8.61
16.59	0	0.887	8.28E+01	27.31	13.66	0.61	8.97
17.47	0	0.85	8.95E+01	28.5	14.25	0.62	9.33
18.35	0	0.816	9.63E+01	29.69	14.84	0.63	9.68
19.23	0	0.784	1.03E+02	30.88	15.44	0.64	10.03
20.1	0	0.755	1.10E+02	32.06	16.03	0.65	10.37
20.98	0	0.728	1.17E+02	33.25	16.63	0.67	10.71
21.86	0	0.703	1.25E+02	34.45	17.22	0.68	11.05
22.73	0	0.679	1.32E+02	35.64	17.82	0.68	11.37
23.61	0	0.657	1.40E+02	36.84	18.42	0.69	11.7
24.49	0	0.636	1.47E+02	38.04	19.02	0.7	12.02
25.37	0	0.616	1.55E+02	39.24	19.62	0.71	12.34
26.24	0	0.598	1.63E+02	40.45	20.23	0.72	12.65
27.12	0	0.58	1.71E+02	41.66	20.83	0.73	12.96
28	0	0.564	1.79E+02	42.88	21.44	0.74	13.26
28.87	0	0.548	1.87E+02	44.1	22.05	0.75	13.57
29.75	0	0.533	1.95E+02	45.32	22.66	0.76	13.87
30.63	0	0.519	2.03E+02	46.55	23.27	0.77	14.16
31.51	0	0.506	2.12E+02	47.78	23.89	0.78	14.46
32.38	0	0.493	2.20E+02	49.01	24.51	0.79	14.75
33.26	0	0.481	2.29E+02	50.25	25.12	0.79	15.03
34.14	0	0.469	2.37E+02	51.49	25.75	0.8	15.32
35.01	0	0.458	2.46E+02	52.74	26.37	0.81	15.6
35.89	0	0.447	2.55E+02	53.99	26.99	0.82	15.88
36.77	0	0.437	2.64E+02	55.24	27.62	0.83	16.16
37.65	0	0.427	2.73E+02	56.5	28.25	0.84	16.44
38.52	0	0.418	2.82E+02	57.76	28.88	0.85	16.71
39.4	0	0.409	2.91E+02	59.03	29.51	0.85	16.98
40.28	0	0.4	3.00E+02	60.3	30.15	0.86	17.25
41.15	0	0.392	3.09E+02	61.57	30.79	0.87	17.52
42.03	0	0.384	3.18E+02	62.85	31.43	0.88	17.78
42.91	0	0.376	3.27E+02	64.13	32.07	0.89	18.05
43.78	0	0.369	3.37E+02	65.42	32.71	0.89	18.31
44.66	0	0.361	3.46E+02	66.71	33.36	0.9	18.57
45.54	0	0.354	3.55E+02	68.01	34.01	0.91	18.82
46.42	0	0.348	3.65E+02	69.31	34.66	0.92	19.08

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47.29	0	0.341	3.74E+02	70.62	35.31	0.92	19.33
48.17	0	0.335	3.84E+02	71.93	35.96	0.93	19.59
49.05	0	0.329	3.94E+02	73.24	36.62	0.94	19.84
49.92	0	0.323	4.03E+02	74.56	37.28	0.95	20.09
50.8	0	0.317	4.13E+02	75.88	37.94	0.95	20.33
51.68	0	0.312	4.23E+02	77.21	38.6	0.96	20.58
52.56	0	0.307	4.32E+02	78.54	39.27	0.97	20.82
53.43	0	0.301	4.42E+02	79.88	39.94	0.98	21.07
54.31	0	0.296	4.52E+02	81.22	40.61	0.98	21.31
55.19	0	0.292	4.62E+02	82.56	41.28	0.99	21.55
56.06	0	0.287	4.72E+02	83.91	41.96	1	21.79
56.94	0	0.282	4.82E+02	85.27	42.63	1.01	22.02
57.82	0	0.278	4.92E+02	86.63	43.31	1.01	22.26
58.7	0	0.273	5.02E+02	87.99	44	1.02	22.49
59.57	0	0.269	5.12E+02	89.36	44.68	1.03	22.73
60.45	0	0.265	5.22E+02	90.73	45.37	1.04	22.96
61.33	0	0.261	5.33E+02	92.11	46.05	1.04	23.19
62.2	0	0.257	5.43E+02	93.49	46.74	1.05	23.42
63.08	0	0.253	5.53E+02	94.88	47.44	1.06	23.65
63.96	0	0.25	5.63E+02	96.27	48.13	1.06	23.88
64.84	0	0.246	5.74E+02	97.66	48.83	1.07	24.1
65.71	0	0.243	5.84E+02	99.06	49.53	1.08	24.33
66.59	0	0.239	5.94E+02	100.46	50.23	1.09	24.55
67.47	0	0.236	6.05E+02	101.87	50.94	1.09	24.78
68.34	0	0.233	6.15E+02	103.28	51.64	1.1	25
69.22	0	0.229	6.26E+02	104.7	52.35	1.11	25.22
70.1	0	0.226	6.36E+02	106.12	53.06	1.11	25.44
70.97	0	0.223	6.47E+02	107.55	53.77	1.12	25.66
71.85	0	0.22	6.57E+02	108.98	54.49	1.13	25.87
72.73	0	0.217	6.68E+02	110.41	55.21	1.13	26.09
73.61	0	0.215	6.78E+02	111.85	55.93	1.14	26.31
74.48	0	0.212	6.89E+02	113.3	56.65	1.15	26.52
75.36	0	0.209	7.00E+02	114.74	57.37	1.15	26.74
76.24	0	0.207	7.10E+02	116.2	58.1	1.16	26.95
77.11	0	0.204	7.21E+02	117.65	58.83	1.17	27.16
77.99	0	0.201	7.32E+02	119.11	59.56	1.17	27.37
78.87	0	0.199	7.42E+02	120.58	60.29	1.18	27.58
79.75	0	0.197	7.53E+02	122.05	61.02	1.19	27.79
80.62	0	0.194	7.64E+02	123.52	61.76	1.19	28
81.5	0	0.192	7.75E+02	125	62.5	1.2	28.21
82.38	0	0.19	7.86E+02	126.48	63.24	1.21	28.42
83.25	0	0.187	7.96E+02	127.97	63.98	1.21	28.62
84.13	0	0.185	8.07E+02	129.46	64.73	1.22	28.83
85.01	0	0.183	8.18E+02	130.95	65.48	1.23	29.03
85.89	0	0.181	8.29E+02	132.45	66.22	1.23	29.24
86.76	0	0.179	8.40E+02	133.95	66.98	1.24	29.44
87.64	0	0.177	8.51E+02	135.46	67.73	1.25	29.64
88.52	0	0.175	8.62E+02	136.97	68.48	1.25	29.85
89.39	0	0.173	8.73E+02	138.48	69.24	1.26	30.05
90.27	0	0.171	8.84E+02	140	70	1.27	30.25

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91.15	0	0.169	8.95E+02	141.53	70.76	1.27	30.45
92.03	0	0.167	9.06E+02	143.06	71.53	1.28	30.65
92.9	0	0.166	9.17E+02	144.59	72.29	1.29	30.84
93.78	0	0.164	9.28E+02	146.12	73.06	1.29	31.04
94.66	0	0.162	9.39E+02	147.66	73.83	1.3	31.24
95.53	0	0.16	9.50E+02	149.21	74.6	1.31	31.43
96.41	0	0.159	9.62E+02	150.75	75.38	1.31	31.63
97.29	0	0.157	9.73E+02	152.3	76.15	1.32	31.82
98.16	0	0.156	9.84E+02	153.86	76.93	1.33	32.02
99.04	0	0.154	9.95E+02	155.42	77.71	1.33	32.21
99.92	0	0.152	1.01E+03	156.98	78.49	1.34	32.4
100.8	0	0.151	1.02E+03	158.55	79.27	1.34	32.6
101.67	0	0.149	1.03E+03	160.12	80.06	1.35	32.79
102.55	0	0.148	1.04E+03	161.69	80.85	1.36	32.98
103.43	0	0.146	1.05E+03	163.27	81.64	1.36	33.17
104.3	0	0.145	1.06E+03	164.86	82.43	1.37	33.36
105.18	0	0.144	1.07E+03	166.44	83.22	1.38	33.55
106.06	0	0.142	1.08E+03	168.03	84.02	1.38	33.74
106.94	0	0.141	1.10E+03	169.63	84.81	1.39	33.93
107.81	0	0.14	1.11E+03	171.22	85.61	1.39	34.11
108.69	0	0.138	1.12E+03	172.82	86.41	1.4	34.3
109.57	0	0.137	1.13E+03	174.43	87.21	1.41	34.49
110.44	0	0.136	1.14E+03	176.04	88.02	1.41	34.67
111.32	0	0.134	1.15E+03	177.65	88.83	1.42	34.86
112.2	0	0.133	1.16E+03	179.27	89.63	1.43	35.04
113.08	0	0.132	1.18E+03	180.89	90.44	1.43	35.23
113.95	0	0.131	1.19E+03	182.51	91.26	1.44	35.41
114.83	0	0.13	1.20E+03	184.14	92.07	1.44	35.59
115.71	0	0.129	1.21E+03	185.77	92.88	1.45	35.78
116.58	0	0.127	1.22E+03	187.4	93.7	1.46	35.96
117.46	0	0.126	1.23E+03	189.04	94.52	1.46	36.14
118.34	0	0.125	1.24E+03	190.68	95.34	1.47	36.32
119.22	0	0.124	1.26E+03	192.33	96.16	1.47	36.5
120.09	0	0.123	1.27E+03	193.97	96.99	1.48	36.68
120.97	0	0.122	1.28E+03	195.63	97.81	1.49	36.86
121.85	0	0.121	1.29E+03	197.28	98.64	1.49	37.04
122.72	0	0.12	1.30E+03	198.94	99.47	1.5	37.22
123.6	0	0.119	1.31E+03	200.6	100.3	1.5	37.4
124.48	0	0.118	1.32E+03	202.27	101.13	1.51	37.58
125.35	0	0.117	1.34E+03	203.94	101.97	1.52	37.76
126.23	0	0.116	1.35E+03	205.61	102.81	1.52	37.93
127.11	0	0.115	1.36E+03	207.29	103.64	1.53	38.11
127.99	0	0.114	1.37E+03	208.97	104.48	1.53	38.28
128.86	0	0.113	1.38E+03	210.65	105.32	1.54	38.46
129.74	0	0.112	1.39E+03	212.33	106.17	1.55	38.64
130.62	0	0.111	1.41E+03	214.02	107.01	1.55	38.81
131.49	0	0.111	1.42E+03	215.72	107.86	1.56	38.98
132.37	0	0.11	1.43E+03	217.41	108.71	1.56	39.16
133.25	0	0.109	1.44E+03	219.11	109.56	1.57	39.33
134.13	0	0.108	1.45E+03	220.82	110.41	1.58	39.5

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135	0	0.107	1.46E+03	222.52	111.26	1.58	39.68
135.88	0	0.106	1.48E+03	224.23	112.12	1.59	39.85
136.76	0	0.105	1.49E+03	225.94	112.97	1.59	40.02
137.63	0	0.105	1.50E+03	227.66	113.83	1.6	40.19
138.51	0	0.104	1.51E+03	229.38	114.69	1.6	40.36
139.39	0	0.103	1.52E+03	231.1	115.55	1.61	40.53
140.27	0	0.102	1.53E+03	232.82	116.41	1.62	40.7
141.14	0	0.102	1.55E+03	234.55	117.28	1.62	40.87
142.02	0	0.101	1.56E+03	236.28	118.14	1.63	41.04
142.9	0	0.1	1.57E+03	238.02	119.01	1.63	41.21
143.77	0	0.099	1.58E+03	239.76	119.88	1.64	41.38
144.65	0	0.099	1.59E+03	241.5	120.75	1.64	41.55
145.53	0	0.098	1.60E+03	243.24	121.62	1.65	41.72
146.41	0	0.097	1.62E+03	244.99	122.49	1.66	41.89
147.28	0	0.096	1.63E+03	246.74	123.37	1.66	42.05
148.16	0	0.096	1.64E+03	248.49	124.24	1.67	42.22
149.04	0	0.095	1.65E+03	250.25	125.12	1.67	42.39
149.91	0	0.094	1.66E+03	252	126	1.68	42.55
150.79	0	0.094	1.67E+03	253.77	126.88	1.68	42.72
151.67	0	0.093	1.69E+03	255.53	127.77	1.69	42.88
152.54	0	0.092	1.70E+03	257.3	128.65	1.7	43.05
153.42	0	0.092	1.71E+03	259.07	129.54	1.7	43.21
154.3	0	0.091	1.72E+03	260.84	130.42	1.71	43.38
155.18	0	0.091	1.73E+03	262.62	131.31	1.71	43.54
156.05	0	0.09	1.75E+03	264.4	132.2	1.72	43.7
156.93	0	0.089	1.76E+03	266.18	133.09	1.72	43.87
157.81	0	0.089	1.77E+03	267.97	133.98	1.73	44.03
158.68	0	0.088	1.78E+03	269.76	134.88	1.74	44.19
159.56	0	0.088	1.79E+03	271.55	135.77	1.74	44.36
160.44	0	0.087	1.80E+03	273.34	136.67	1.75	44.52
161.32	0	0.086	1.82E+03	275.14	137.57	1.75	44.68
162.19	0	0.086	1.83E+03	276.94	138.47	1.76	44.84
163.07	0	0.085	1.84E+03	278.74	139.37	1.76	45
163.95	0	0.085	1.85E+03	280.55	140.27	1.77	45.16
164.82	0	0.084	1.86E+03	282.36	141.18	1.77	45.32
165.7	0	0.084	1.88E+03	284.17	142.08	1.78	45.48
166.58	0	0.083	1.89E+03	285.98	142.99	1.79	45.64
167.46	0	0.083	1.90E+03	287.8	143.9	1.79	45.8
168.33	0	0.082	1.91E+03	289.62	144.81	1.8	45.96
169.21	0	0.082	1.92E+03	291.44	145.72	1.8	46.12
170.09	0	0.081	1.94E+03	293.26	146.63	1.81	46.28
170.96	0	0.08	1.95E+03	295.09	147.55	1.81	46.44
171.84	0	0.08	1.96E+03	296.92	148.46	1.82	46.6
172.72	0	0.079	1.97E+03	298.75	149.38	1.82	46.75
173.6	0	0.079	1.98E+03	300.59	150.29	1.83	46.91
174.47	0	0.079	2.00E+03	302.43	151.21	1.83	47.07
175.35	0	0.078	2.01E+03	304.27	152.13	1.84	47.22
176.23	0	0.078	2.02E+03	306.11	153.06	1.85	47.38
177.1	0	0.077	2.03E+03	307.96	153.98	1.85	47.54
177.98	0	0.077	2.04E+03	309.81	154.9	1.86	47.69

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178.86	0	0.076	2.05E+03	311.66	155.83	1.86	47.85
179.73	0	0.076	2.07E+03	313.51	156.76	1.87	48
180.61	0	0.075	2.08E+03	315.37	157.68	1.87	48.16
181.49	0	0.075	2.09E+03	317.23	158.61	1.88	48.31
182.37	0	0.074	2.10E+03	319.09	159.54	1.88	48.47
183.24	0	0.074	2.11E+03	320.95	160.48	1.89	48.62
184.12	0	0.073	2.13E+03	322.82	161.41	1.89	48.78
185	0	0.073	2.14E+03	324.69	162.34	1.9	48.93
185.87	0	0.073	2.15E+03	326.56	163.28	1.9	49.08
186.75	0	0.072	2.16E+03	328.43	164.22	1.91	49.24
187.63	0	0.072	2.17E+03	330.31	165.16	1.92	49.39
188.51	0	0.071	2.19E+03	332.19	166.1	1.92	49.54
189.38	0	0.071	2.20E+03	334.07	167.04	1.93	49.69
190.26	0	0.071	2.21E+03	335.96	167.98	1.93	49.85
191.14	0	0.07	2.22E+03	337.84	168.92	1.94	50
192.01	0	0.07	2.23E+03	339.73	169.87	1.94	50.15
192.89	0	0.069	2.25E+03	341.62	170.81	1.95	50.3
193.77	0	0.069	2.26E+03	343.52	171.76	1.95	50.45
194.65	0	0.069	2.27E+03	345.41	172.71	1.96	50.6
195.52	0	0.068	2.28E+03	347.31	173.66	1.96	50.75
196.4	0	0.068	2.30E+03	349.21	174.61	1.97	50.9
197.28	0	0.067	2.31E+03	351.12	175.56	1.97	51.05
198.15	0	0.067	2.32E+03	353.02	176.51	1.98	51.2
199.03	0	0.067	2.33E+03	354.93	177.47	1.98	51.35
199.91	0	0.066	2.34E+03	356.84	178.42	1.99	51.5
200.78	0	0.066	2.36E+03	358.75	179.38	1.99	51.65
201.66	0	0.066	2.37E+03	360.67	180.33	2	51.8
202.54	0	0.065	2.38E+03	362.59	181.29	2	51.95
203.42	0	0.065	2.39E+03	364.51	182.25	2.01	52.1
204.29	0	0.065	2.40E+03	366.43	183.21	2.01	52.25
205.17	0	0.064	2.42E+03	368.35	184.18	2.02	52.39
206.05	0	0.064	2.43E+03	370.28	185.14	2.03	52.54
206.92	0	0.064	2.44E+03	372.21	186.11	2.03	52.69
207.8	0	0.063	2.45E+03	374.14	187.07	2.04	52.84
208.68	0	0.063	2.46E+03	376.08	188.04	2.04	52.98
209.56	0	0.063	2.48E+03	378.01	189.01	2.05	53.13
210.43	0	0.062	2.49E+03	379.95	189.97	2.05	53.28
211.31	0	0.062	2.50E+03	381.89	190.94	2.06	53.42
212.19	0	0.062	2.51E+03	383.83	191.92	2.06	53.57
213.06	0	0.061	2.52E+03	385.78	192.89	2.07	53.72
213.94	0	0.061	2.54E+03	387.72	193.86	2.07	53.86
214.82	0	0.061	2.55E+03	389.67	194.84	2.08	54.01
215.7	0	0.06	2.56E+03	391.63	195.81	2.08	54.15

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EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.61	1.11E+02
1.21	2.34E+01
1.82	8.94E+00
2.42	4.44E+00
3.03	2.52E+00
3.63	1.65E+00
4.24	1.08E+00
4.85	7.50E-01
5.45	5.36E-01
6.06	3.96E-01
6.66	2.97E-01
7.27	2.29E-01
7.88	1.80E-01
8.48	1.42E-01
9.09	1.14E-01
9.69	9.37E-02
10.3	7.65E-02
10.9	6.34E-02
11.51	5.15E-02
12.12	3.38E-02

(DEG. C) AREA (SQ. M)

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Table D.2: Visual Plumes Model Output Data for Diesel Generators I at Maximum Currents

PDSWIN	FLOATING	WARM	WATER	JETS	--	June	1999PAGE	1
1	:	case	#					
AMBIENT	CONDITIONS	:	TEMP.	TA=	4	DEG.	C	,;
HEAT	CONVECTION	=	2			VEL.	0.25	M/S
DISCHARGE	CONDITIONS	:	TEMP.	=	16.1	C;		
DEPTH	=	0.18	M.	;	WIDTH	=	0.17	M.
ANGLE	0	DEG	;	DISCHARGE	RATE	=	0.03	CU-M/S
DISCHARGE	DENSIMENTRIC	FROUDE	NO.	=	13.76			

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.4	0	12.116	3.79E-01	2	1	0.2	0.32
0.41	0	11.913	3.92E-01	2.03	1.02	0.19	0.33
0.42	0	11.722	4.05E-01	2.07	1.03	0.19	0.34
0.44	0	11.54	4.19E-01	2.1	1.05	0.19	0.35
0.45	0	11.368	4.33E-01	2.13	1.07	0.19	0.37
0.46	0	11.203	4.47E-01	2.16	1.08	0.19	0.38
0.48	0	11.045	4.61E-01	2.19	1.1	0.19	0.39
0.51	0	10.748	4.89E-01	2.25	1.13	0.19	0.4
0.53	0	10.474	5.18E-01	2.31	1.16	0.19	0.42
0.56	0	10.22	5.47E-01	2.37	1.19	0.19	0.44
0.59	0	9.981	5.78E-01	2.43	1.21	0.19	0.46
0.64	0	9.547	6.39E-01	2.54	1.27	0.19	0.49
0.7	0	9.159	7.03E-01	2.65	1.32	0.19	0.53
0.75	0	8.809	7.68E-01	2.75	1.38	0.19	0.56
0.81	0	8.49	8.35E-01	2.85	1.43	0.19	0.59
0.92	0	7.928	9.75E-01	3.06	1.53	0.19	0.65
1.03	0	7.445	1.12E+00	3.25	1.63	0.19	0.71
1.14	0	7.024	1.27E+00	3.45	1.73	0.19	0.76
1.25	0	6.652	1.43E+00	3.64	1.82	0.2	0.81
1.36	0	6.321	1.59E+00	3.83	1.92	0.2	0.86
1.46	0	6.024	1.76E+00	4.02	2.01	0.2	0.91
1.57	0	5.755	1.93E+00	4.21	2.11	0.21	0.96
1.68	0	5.511	2.11E+00	4.4	2.2	0.21	1
1.9	0	5.083	2.48E+00	4.77	2.38	0.21	1.09
2.12	0	4.721	2.86E+00	5.13	2.57	0.22	1.18
2.34	0	4.409	3.26E+00	5.5	2.75	0.23	1.26

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2.56	0	4.138	3.68E+00	5.86	2.93	0.23	1.34
3	0	3.69	4.55E+00	6.57	3.28	0.24	1.49
3.44	0	3.334	5.47E+00	7.27	3.64	0.25	1.63
3.88	0	3.043	6.43E+00	7.97	3.98	0.26	1.77
4.32	0	2.8	7.42E+00	8.66	4.33	0.27	1.9
4.75	0	2.595	8.46E+00	9.34	4.67	0.28	2.02
5.19	0	2.419	9.52E+00	10.02	5.01	0.29	2.14
6.07	0	2.134	1.17E+01	11.37	5.68	0.31	2.37
6.95	0	1.91	1.40E+01	12.7	6.35	0.32	2.59
7.82	0	1.729	1.64E+01	14.03	7.02	0.34	2.8
8.7	0	1.58	1.89E+01	15.35	7.68	0.35	2.99
9.58	0	1.455	2.14E+01	16.67	8.34	0.36	3.18
10.46	0	1.348	2.40E+01	17.99	8.99	0.37	3.37
11.33	0	1.256	2.66E+01	19.31	9.65	0.38	3.54
12.21	0	1.176	2.93E+01	20.63	10.32	0.4	3.71
13.09	0	1.105	3.20E+01	21.95	10.98	0.41	3.88
13.96	0	1.041	3.48E+01	23.28	11.64	0.42	4.04
14.84	0	0.985	3.76E+01	24.61	12.31	0.43	4.19
15.72	0	0.934	4.04E+01	25.95	12.98	0.44	4.35
16.59	0	0.888	4.32E+01	27.29	13.65	0.45	4.5
17.47	0	0.846	4.61E+01	28.64	14.32	0.46	4.64
18.35	0	0.808	4.90E+01	29.99	15	0.47	4.79
19.23	0	0.773	5.19E+01	31.35	15.68	0.47	4.93
20.1	0	0.741	5.49E+01	32.71	16.36	0.48	5.06
20.98	0	0.711	5.78E+01	34.08	17.04	0.49	5.2
21.86	0	0.683	6.08E+01	35.46	17.73	0.5	5.33
22.73	0	0.658	6.38E+01	36.84	18.42	0.51	5.46
23.61	0	0.634	6.68E+01	38.23	19.11	0.52	5.59
24.49	0	0.611	6.99E+01	39.62	19.81	0.53	5.72
25.37	0	0.591	7.29E+01	41.01	20.51	0.54	5.84
26.24	0	0.571	7.60E+01	42.42	21.21	0.54	5.97
27.12	0	0.553	7.90E+01	43.83	21.91	0.55	6.09
28	0	0.535	8.21E+01	45.24	22.62	0.56	6.21
28.87	0	0.519	8.52E+01	46.66	23.33	0.57	6.33
29.75	0	0.504	8.83E+01	48.08	24.04	0.58	6.44
30.63	0	0.489	9.15E+01	49.51	24.75	0.58	6.56
31.51	0	0.475	9.46E+01	50.94	25.47	0.59	6.67
32.38	0	0.462	9.77E+01	52.37	26.19	0.6	6.78
33.26	0	0.45	1.01E+02	53.81	26.91	0.61	6.9
34.14	0	0.438	1.04E+02	55.26	27.63	0.61	7.01
35.01	0	0.427	1.07E+02	56.7	28.35	0.62	7.12
35.89	0	0.416	1.10E+02	58.16	29.08	0.63	7.22
36.77	0	0.406	1.14E+02	59.61	29.81	0.63	7.33

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37.65	0	0.396	1.17E+02	61.07	30.54	0.64	7.44
38.52	0	0.387	1.20E+02	62.53	31.27	0.65	7.54
39.4	0	0.378	1.23E+02	64	32	0.66	7.65
40.28	0	0.37	1.26E+02	65.47	32.73	0.66	7.75
41.15	0	0.361	1.30E+02	66.94	33.47	0.67	7.85
42.03	0	0.354	1.33E+02	68.42	34.21	0.68	7.95
42.91	0	0.346	1.36E+02	69.9	34.95	0.68	8.05
43.78	0	0.339	1.39E+02	71.38	35.69	0.69	8.15
44.66	0	0.332	1.42E+02	72.86	36.43	0.69	8.25
45.54	0	0.325	1.46E+02	74.35	37.18	0.7	8.35
46.42	0	0.319	1.49E+02	75.84	37.92	0.71	8.45
47.29	0	0.313	1.52E+02	77.34	38.67	0.71	8.54
48.17	0	0.307	1.55E+02	78.84	39.42	0.72	8.64
49.05	0	0.301	1.59E+02	80.33	40.17	0.73	8.73
49.92	0	0.295	1.62E+02	81.84	40.92	0.73	8.83
50.8	0	0.29	1.65E+02	83.34	41.67	0.74	8.92
51.68	0	0.285	1.69E+02	84.85	42.43	0.75	9.01
52.56	0	0.28	1.72E+02	86.36	43.18	0.75	9.11
53.43	0	0.275	1.75E+02	87.87	43.94	0.76	9.2
54.31	0	0.27	1.78E+02	89.39	44.69	0.76	9.29
55.19	0	0.266	1.82E+02	90.91	45.45	0.77	9.38
56.06	0	0.262	1.85E+02	92.43	46.21	0.77	9.47
56.94	0	0.257	1.88E+02	93.95	46.97	0.78	9.56
57.82	0	0.253	1.92E+02	95.47	47.74	0.79	9.65
58.7	0	0.249	1.95E+02	97	48.5	0.79	9.74
59.57	0	0.245	1.98E+02	98.53	49.27	0.8	9.82
60.45	0	0.242	2.02E+02	100.06	50.03	0.8	9.91
61.33	0	0.238	2.05E+02	101.6	50.8	0.81	10
62.2	0	0.234	2.08E+02	103.13	51.57	0.81	10.08
63.08	0	0.231	2.11E+02	104.67	52.34	0.82	10.17
63.96	0	0.227	2.15E+02	106.21	53.11	0.83	10.26
64.84	0	0.224	2.18E+02	107.76	53.88	0.83	10.34
65.71	0	0.221	2.21E+02	109.3	54.65	0.84	10.42
66.59	0	0.218	2.25E+02	110.85	55.42	0.84	10.51
67.47	0	0.215	2.28E+02	112.4	56.2	0.85	10.59
68.34	0	0.212	2.31E+02	113.95	56.97	0.85	10.67
69.22	0	0.209	2.35E+02	115.5	57.75	0.86	10.76
70.1	0	0.206	2.38E+02	117.06	58.53	0.86	10.84
70.97	0	0.204	2.41E+02	118.61	59.31	0.87	10.92
71.85	0	0.201	2.45E+02	120.17	60.09	0.87	11
72.73	0	0.198	2.48E+02	121.73	60.87	0.88	11.08
73.61	0	0.196	2.51E+02	123.29	61.65	0.88	11.16
74.48	0	0.193	2.55E+02	124.86	62.43	0.89	11.24

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75.36	0	0.191	2.58E+02	126.42	63.21	0.89	11.32
76.24	0	0.189	2.62E+02	127.99	64	0.9	11.4
77.11	0	0.186	2.65E+02	129.56	64.78	0.9	11.48
77.99	0	0.184	2.68E+02	131.13	65.57	0.91	11.56
78.87	0	0.182	2.72E+02	132.71	66.35	0.91	11.64
79.75	0	0.18	2.75E+02	134.28	67.14	0.92	11.72
80.62	0	0.178	2.78E+02	135.86	67.93	0.92	11.79
81.5	0	0.176	2.82E+02	137.44	68.72	0.93	11.87
82.38	0	0.174	2.85E+02	139.02	69.51	0.93	11.95
83.25	0	0.172	2.88E+02	140.6	70.3	0.94	12.03
84.13	0	0.17	2.92E+02	142.18	71.09	0.94	12.1
85.01	0	0.168	2.95E+02	143.77	71.88	0.95	12.18
85.89	0	0.166	2.99E+02	145.35	72.68	0.95	12.25
86.76	0	0.164	3.02E+02	146.94	73.47	0.96	12.33
87.64	0	0.162	3.05E+02	148.53	74.26	0.96	12.4
88.52	0	0.161	3.09E+02	150.12	75.06	0.97	12.48
89.39	0	0.159	3.12E+02	151.71	75.86	0.97	12.55
90.27	0	0.157	3.15E+02	153.31	76.65	0.98	12.63
91.15	0	0.156	3.19E+02	154.9	77.45	0.98	12.7
92.03	0	0.154	3.22E+02	156.5	78.25	0.99	12.77
92.9	0	0.153	3.26E+02	158.1	79.05	0.99	12.85
93.78	0	0.151	3.29E+02	159.7	79.85	0.99	12.92
94.66	0	0.15	3.32E+02	161.3	80.65	1	12.99
95.53	0	0.148	3.36E+02	162.9	81.45	1	13.07
96.41	0	0.147	3.39E+02	164.51	82.25	1.01	13.14
97.29	0	0.145	3.43E+02	166.11	83.06	1.01	13.21
98.16	0	0.144	3.46E+02	167.72	83.86	1.02	13.28
99.04	0	0.142	3.49E+02	169.33	84.67	1.02	13.35
99.92	0	0.141	3.53E+02	170.94	85.47	1.03	13.42
100.8	0	0.14	3.56E+02	172.55	86.28	1.03	13.49
101.67	0	0.138	3.59E+02	174.17	87.08	1.03	13.56
102.55	0	0.137	3.63E+02	175.78	87.89	1.04	13.64
103.43	0	0.136	3.66E+02	177.4	88.7	1.04	13.71
104.3	0	0.135	3.70E+02	179.01	89.51	1.05	13.78
105.18	0	0.133	3.73E+02	180.63	90.32	1.05	13.84
106.06	0	0.132	3.76E+02	182.25	91.13	1.06	13.91
106.94	0	0.131	3.80E+02	183.87	91.94	1.06	13.98
107.81	0	0.13	3.83E+02	185.49	92.75	1.06	14.05
108.69	0	0.129	3.87E+02	187.12	93.56	1.07	14.12
109.57	0	0.128	3.90E+02	188.74	94.37	1.07	14.19
110.44	0	0.127	3.93E+02	190.37	95.18	1.08	14.26
111.32	0	0.126	3.97E+02	192	96	1.08	14.33
112.2	0	0.124	4.00E+02	193.62	96.81	1.09	14.39

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113.08	0	0.123	4.04E+02	195.25	97.63	1.09	14.46
113.95	0	0.122	4.07E+02	196.88	98.44	1.09	14.53
114.83	0	0.121	4.11E+02	198.52	99.26	1.1	14.6
115.71	0	0.12	4.14E+02	200.15	100.08	1.1	14.66
116.58	0	0.119	4.17E+02	201.79	100.89	1.11	14.73
117.46	0	0.118	4.21E+02	203.42	101.71	1.11	14.8
118.34	0	0.118	4.24E+02	205.06	102.53	1.11	14.86
119.22	0	0.117	4.28E+02	206.7	103.35	1.12	14.93
120.09	0	0.116	4.31E+02	208.34	104.17	1.12	15
120.97	0	0.115	4.34E+02	209.98	104.99	1.13	15.06
121.85	0	0.114	4.38E+02	211.62	105.81	1.13	15.13
122.72	0	0.113	4.41E+02	213.26	106.63	1.13	15.19
123.6	0	0.112	4.45E+02	214.9	107.45	1.14	15.26
124.48	0	0.111	4.48E+02	216.55	108.27	1.14	15.32
125.35	0	0.11	4.51E+02	218.2	109.1	1.15	15.39
126.23	0	0.11	4.55E+02	219.84	109.92	1.15	15.45
127.11	0	0.109	4.58E+02	221.49	110.75	1.15	15.52
127.99	0	0.108	4.62E+02	223.14	111.57	1.16	15.58
128.86	0	0.107	4.65E+02	224.79	112.4	1.16	15.65
129.74	0	0.106	4.69E+02	226.44	113.22	1.17	15.71
130.62	0	0.106	4.72E+02	228.1	114.05	1.17	15.77
131.49	0	0.105	4.75E+02	229.75	114.88	1.17	15.84
132.37	0	0.104	4.79E+02	231.41	115.7	1.18	15.9
133.25	0	0.103	4.82E+02	233.06	116.53	1.18	15.96
134.13	0	0.103	4.86E+02	234.72	117.36	1.19	16.03
135	0	0.102	4.89E+02	236.38	118.19	1.19	16.09
135.88	0	0.101	4.93E+02	238.04	119.02	1.19	16.15
136.76	0	0.1	4.96E+02	239.7	119.85	1.2	16.22
137.63	0	0.1	4.99E+02	241.36	120.68	1.2	16.28
138.51	0	0.099	5.03E+02	243.02	121.51	1.2	16.34
139.39	0	0.098	5.06E+02	244.68	122.34	1.21	16.4
140.27	0	0.098	5.10E+02	246.35	123.17	1.21	16.46
141.14	0	0.097	5.13E+02	248.01	124.01	1.22	16.53
142.02	0	0.096	5.17E+02	249.68	124.84	1.22	16.59
142.9	0	0.096	5.20E+02	251.35	125.67	1.22	16.65
143.77	0	0.095	5.23E+02	253.01	126.51	1.23	16.71
144.65	0	0.095	5.27E+02	254.68	127.34	1.23	16.77
145.53	0	0.094	5.30E+02	256.35	128.18	1.23	16.83
146.41	0	0.093	5.34E+02	258.02	129.01	1.24	16.89
147.28	0	0.093	5.37E+02	259.7	129.85	1.24	16.96
148.16	0	0.092	5.41E+02	261.37	130.69	1.24	17.02
149.04	0	0.092	5.44E+02	263.04	131.52	1.25	17.08
149.91	0	0.091	5.47E+02	264.72	132.36	1.25	17.14

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150.79	0	0.09	5.51E+02	266.4	133.2	1.26	17.2
151.67	0	0.09	5.54E+02	268.07	134.04	1.26	17.26
152.54	0	0.089	5.58E+02	269.75	134.88	1.26	17.32
153.42	0	0.089	5.61E+02	271.43	135.71	1.27	17.38
154.3	0	0.088	5.65E+02	273.11	136.55	1.27	17.44
155.18	0	0.088	5.68E+02	274.79	137.39	1.27	17.5
156.05	0	0.087	5.71E+02	276.47	138.24	1.28	17.56
156.93	0	0.087	5.75E+02	278.15	139.08	1.28	17.61
157.81	0	0.086	5.78E+02	279.84	139.92	1.28	17.67
158.68	0	0.085	5.82E+02	281.52	140.76	1.29	17.73
159.56	0	0.085	5.85E+02	283.21	141.6	1.29	17.79
160.44	0	0.084	5.89E+02	284.89	142.45	1.29	17.85
161.32	0	0.084	5.92E+02	286.58	143.29	1.3	17.91
162.19	0	0.083	5.96E+02	288.27	144.13	1.3	17.97
163.07	0	0.083	5.99E+02	289.96	144.98	1.31	18.03
163.95	0	0.082	6.02E+02	291.65	145.82	1.31	18.08
164.82	0	0.082	6.06E+02	293.34	146.67	1.31	18.14
165.7	0	0.082	6.09E+02	295.03	147.51	1.32	18.2
166.58	0	0.081	6.13E+02	296.72	148.36	1.32	18.26
167.46	0	0.081	6.16E+02	298.41	149.21	1.32	18.32
168.33	0	0.08	6.20E+02	300.11	150.05	1.33	18.37
169.21	0	0.08	6.23E+02	301.8	150.9	1.33	18.43
170.09	0	0.079	6.27E+02	303.5	151.75	1.33	18.49
170.96	0	0.079	6.30E+02	305.19	152.6	1.34	18.55
171.84	0	0.078	6.33E+02	306.89	153.45	1.34	18.6
172.72	0	0.078	6.37E+02	308.59	154.29	1.34	18.66
173.6	0	0.078	6.40E+02	310.29	155.14	1.35	18.72
174.47	0	0.077	6.44E+02	311.99	155.99	1.35	18.77
175.35	0	0.077	6.47E+02	313.69	156.84	1.35	18.83
176.23	0	0.076	6.51E+02	315.39	157.69	1.36	18.89
177.1	0	0.076	6.54E+02	317.09	158.55	1.36	18.94
177.98	0	0.075	6.58E+02	318.79	159.4	1.36	19
178.86	0	0.075	6.61E+02	320.5	160.25	1.37	19.06
179.73	0	0.075	6.64E+02	322.2	161.1	1.37	19.11
180.61	0	0.074	6.68E+02	323.91	161.95	1.37	19.17
181.49	0	0.074	6.71E+02	325.62	162.81	1.38	19.22
182.37	0	0.073	6.75E+02	327.32	163.66	1.38	19.28
183.24	0	0.073	6.78E+02	329.03	164.52	1.38	19.34
184.12	0	0.073	6.82E+02	330.74	165.37	1.39	19.39
185	0	0.072	6.85E+02	332.45	166.22	1.39	19.45
185.87	0	0.072	6.89E+02	334.16	167.08	1.39	19.5
186.75	0	0.072	6.92E+02	335.87	167.93	1.4	19.56
187.63	0	0.071	6.96E+02	337.58	168.79	1.4	19.61

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188.51	0	0.071	6.99E+02	339.29	169.65	1.4	19.67
189.38	0	0.07	7.02E+02	341.01	170.5	1.41	19.72
190.26	0	0.07	7.06E+02	342.72	171.36	1.41	19.78
191.14	0	0.07	7.09E+02	344.44	172.22	1.41	19.83
192.01	0	0.069	7.13E+02	346.15	173.08	1.41	19.89
192.89	0	0.069	7.16E+02	347.87	173.93	1.42	19.94
193.77	0	0.069	7.20E+02	349.59	174.79	1.42	20
194.65	0	0.068	7.23E+02	351.3	175.65	1.42	20.05
195.52	0	0.068	7.27E+02	353.02	176.51	1.43	20.1
196.4	0	0.068	7.30E+02	354.74	177.37	1.43	20.16
197.28	0	0.067	7.33E+02	356.46	178.23	1.43	20.21
198.15	0	0.067	7.37E+02	358.18	179.09	1.44	20.27
199.03	0	0.067	7.40E+02	359.9	179.95	1.44	20.32
199.91	0	0.066	7.44E+02	361.63	180.81	1.44	20.37
200.78	0	0.066	7.47E+02	363.35	181.67	1.45	20.43
201.66	0	0.066	7.51E+02	365.07	182.54	1.45	20.48
202.54	0	0.065	7.54E+02	366.8	183.4	1.45	20.54
203.42	0	0.065	7.58E+02	368.52	184.26	1.46	20.59
204.29	0	0.065	7.61E+02	370.25	185.12	1.46	20.64
205.17	0	0.065	7.65E+02	371.97	185.99	1.46	20.7
206.05	0	0.064	7.68E+02	373.7	186.85	1.46	20.75
206.92	0	0.064	7.71E+02	375.43	187.71	1.47	20.8
207.8	0	0.064	7.75E+02	377.16	188.58	1.47	20.85
208.68	0	0.063	7.78E+02	378.89	189.44	1.47	20.91
209.56	0	0.063	7.82E+02	380.62	190.31	1.48	20.96
210.43	0	0.063	7.85E+02	382.35	191.17	1.48	21.01
211.31	0	0.063	7.89E+02	384.08	192.04	1.48	21.07
212.19	0	0.062	7.92E+02	385.81	192.91	1.49	21.12
213.06	0	0.062	7.96E+02	387.55	193.77	1.49	21.17
213.94	0	0.062	7.99E+02	389.28	194.64	1.49	21.22
214.82	0	0.061	8.03E+02	391.01	195.51	1.5	21.28
215.7	0	0.061	8.06E+02	392.75	196.37	1.5	21.33
216.57	0	0.061	8.10E+02	394.48	197.24	1.5	21.38
217.45	0	0.061	8.13E+02	396.22	198.11	1.5	21.43
218.33	0	0.06	8.16E+02	397.96	198.98	1.51	21.48

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A R E A S OF E X C E S S

1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.61	5.83E+01
1.21	1.64E+01
1.82	7.28E+00
2.42	3.85E+00
3.03	2.35E+00
3.63	1.54E+00
4.24	1.04E+00
4.85	7.31E-01
5.45	5.36E-01
6.06	3.88E-01
6.66	2.91E-01
7.27	2.28E-01
7.88	1.77E-01
8.48	1.39E-01
9.09	1.12E-01
9.69	9.09E-02
10.3	7.45E-02
10.9	6.18E-02
11.51	5.05E-02
12.12	3.38E-02

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Appendix E: Model Outputs for Diesel Generators II

Table E.1: Visual Plumes Model Output Data for Diesel Generators II at Mean Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,;
HEAT CONVECTION = 2 VEL. 0.07 M/S

DISCHARGE CONDITIONS : TEMP. = 16.1 C; DEPTH = 0.18 M.
; WIDTH = 0.17 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0.03 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 13.76

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.4	0	12.116	3.80E-01	2	1	0.21	0.35
0.41	0	11.894	3.93E-01	2.04	1.02	0.21	0.36
0.42	0	11.684	4.06E-01	2.07	1.04	0.21	0.38
0.44	0	11.486	4.20E-01	2.11	1.05	0.21	0.39
0.45	0	11.298	4.34E-01	2.14	1.07	0.21	0.4
0.46	0	11.119	4.48E-01	2.18	1.09	0.21	0.42
0.48	0	10.948	4.63E-01	2.21	1.11	0.21	0.43
0.51	0	10.628	4.92E-01	2.28	1.14	0.21	0.46
0.53	0	10.332	5.22E-01	2.35	1.17	0.21	0.48
0.56	0	10.058	5.53E-01	2.41	1.2	0.21	0.51
0.59	0	9.802	5.85E-01	2.47	1.24	0.21	0.53
0.64	0	9.337	6.50E-01	2.6	1.3	0.21	0.58
0.7	0	8.923	7.19E-01	2.72	1.36	0.21	0.62
0.75	0	8.55	7.90E-01	2.83	1.42	0.21	0.67
0.81	0	8.211	8.64E-01	2.95	1.48	0.21	0.71
0.92	0	7.618	1.02E+00	3.18	1.59	0.22	0.8
1.03	0	7.111	1.19E+00	3.41	1.7	0.22	0.88
1.14	0	6.672	1.36E+00	3.63	1.82	0.23	0.96
1.25	0	6.288	1.55E+00	3.85	1.93	0.24	1.04
1.36	0	5.948	1.75E+00	4.07	2.04	0.24	1.12
1.46	0	5.645	1.96E+00	4.29	2.15	0.25	1.19
1.57	0	5.373	2.17E+00	4.51	2.26	0.26	1.27
1.68	0	5.128	2.40E+00	4.73	2.36	0.26	1.35
1.9	0	4.703	2.87E+00	5.15	2.58	0.28	1.5
2.12	0	4.348	3.39E+00	5.57	2.79	0.29	1.64
2.34	0	4.046	3.94E+00	5.99	2.99	0.3	1.79
2.56	0	3.786	4.52E+00	6.4	3.2	0.31	1.93
3	0	3.364	5.77E+00	7.21	3.6	0.33	2.21
3.44	0	3.033	7.14E+00	7.99	4	0.35	2.48

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3.88	0	2.768	8.63E+00	8.76	4.38	0.37	2.75
4.32	0	2.549	1.02E+01	9.51	4.76	0.38	3.01
4.75	0	2.366	1.19E+01	10.25	5.12	0.4	3.27
5.19	0	2.211	1.37E+01	10.97	5.48	0.41	3.52
6.07	0	1.961	1.75E+01	12.38	6.19	0.44	4.01
6.95	0	1.767	2.17E+01	13.73	6.87	0.46	4.49
7.82	0	1.612	2.61E+01	15.06	7.53	0.48	4.95
8.7	0	1.484	3.08E+01	16.35	8.17	0.49	5.4
9.58	0	1.377	3.58E+01	17.62	8.81	0.51	5.83
10.46	0	1.286	4.10E+01	18.86	9.43	0.53	6.25
11.33	0	1.207	4.64E+01	20.1	10.05	0.54	6.67
12.21	0	1.137	5.20E+01	21.32	10.66	0.55	7.07
13.09	0	1.076	5.79E+01	22.53	11.27	0.57	7.47
13.96	0	1.021	6.38E+01	23.73	11.87	0.58	7.85
14.84	0	0.972	7.00E+01	24.93	12.47	0.59	8.23
15.72	0	0.928	7.63E+01	26.12	13.06	0.6	8.61
16.59	0	0.887	8.28E+01	27.31	13.66	0.61	8.97
17.47	0	0.85	8.95E+01	28.5	14.25	0.62	9.33
18.35	0	0.816	9.63E+01	29.69	14.84	0.63	9.68
19.23	0	0.784	1.03E+02	30.88	15.44	0.64	10.03
20.1	0	0.755	1.10E+02	32.06	16.03	0.65	10.37
20.98	0	0.728	1.17E+02	33.25	16.63	0.67	10.71
21.86	0	0.703	1.25E+02	34.45	17.22	0.68	11.05
22.73	0	0.679	1.32E+02	35.64	17.82	0.68	11.37
23.61	0	0.657	1.40E+02	36.84	18.42	0.69	11.7
24.49	0	0.636	1.47E+02	38.04	19.02	0.7	12.02
25.37	0	0.616	1.55E+02	39.24	19.62	0.71	12.34
26.24	0	0.598	1.63E+02	40.45	20.23	0.72	12.65
27.12	0	0.58	1.71E+02	41.66	20.83	0.73	12.96
28	0	0.564	1.79E+02	42.88	21.44	0.74	13.26
28.87	0	0.548	1.87E+02	44.1	22.05	0.75	13.57
29.75	0	0.533	1.95E+02	45.32	22.66	0.76	13.87
30.63	0	0.519	2.03E+02	46.55	23.27	0.77	14.16
31.51	0	0.506	2.12E+02	47.78	23.89	0.78	14.46
32.38	0	0.493	2.20E+02	49.01	24.51	0.79	14.75
33.26	0	0.481	2.29E+02	50.25	25.12	0.79	15.03
34.14	0	0.469	2.37E+02	51.49	25.75	0.8	15.32
35.01	0	0.458	2.46E+02	52.74	26.37	0.81	15.6
35.89	0	0.447	2.55E+02	53.99	26.99	0.82	15.88
36.77	0	0.437	2.64E+02	55.24	27.62	0.83	16.16
37.65	0	0.427	2.73E+02	56.5	28.25	0.84	16.44
38.52	0	0.418	2.82E+02	57.76	28.88	0.85	16.71
39.4	0	0.409	2.91E+02	59.03	29.51	0.85	16.98
40.28	0	0.4	3.00E+02	60.3	30.15	0.86	17.25
41.15	0	0.392	3.09E+02	61.57	30.79	0.87	17.52
42.03	0	0.384	3.18E+02	62.85	31.43	0.88	17.78
42.91	0	0.376	3.27E+02	64.13	32.07	0.89	18.05
43.78	0	0.369	3.37E+02	65.42	32.71	0.89	18.31
44.66	0	0.361	3.46E+02	66.71	33.36	0.9	18.57
45.54	0	0.354	3.55E+02	68.01	34.01	0.91	18.82

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46.42	0	0.348	3.65E+02	69.31	34.66	0.92	19.08
47.29	0	0.341	3.74E+02	70.62	35.31	0.92	19.33
48.17	0	0.335	3.84E+02	71.93	35.96	0.93	19.59
49.05	0	0.329	3.94E+02	73.24	36.62	0.94	19.84
49.92	0	0.323	4.03E+02	74.56	37.28	0.95	20.09
50.8	0	0.317	4.13E+02	75.88	37.94	0.95	20.33
51.68	0	0.312	4.23E+02	77.21	38.6	0.96	20.58
52.56	0	0.307	4.32E+02	78.54	39.27	0.97	20.82
53.43	0	0.301	4.42E+02	79.88	39.94	0.98	21.07
54.31	0	0.296	4.52E+02	81.22	40.61	0.98	21.31
55.19	0	0.292	4.62E+02	82.56	41.28	0.99	21.55
56.06	0	0.287	4.72E+02	83.91	41.96	1	21.79
56.94	0	0.282	4.82E+02	85.27	42.63	1.01	22.02
57.82	0	0.278	4.92E+02	86.63	43.31	1.01	22.26
58.7	0	0.273	5.02E+02	87.99	44	1.02	22.49
59.57	0	0.269	5.12E+02	89.36	44.68	1.03	22.73
60.45	0	0.265	5.22E+02	90.73	45.37	1.04	22.96
61.33	0	0.261	5.33E+02	92.11	46.05	1.04	23.19
62.2	0	0.257	5.43E+02	93.49	46.74	1.05	23.42
63.08	0	0.253	5.53E+02	94.88	47.44	1.06	23.65
63.96	0	0.25	5.63E+02	96.27	48.13	1.06	23.88
64.84	0	0.246	5.74E+02	97.66	48.83	1.07	24.1
65.71	0	0.243	5.84E+02	99.06	49.53	1.08	24.33
66.59	0	0.239	5.94E+02	100.46	50.23	1.09	24.55
67.47	0	0.236	6.05E+02	101.87	50.94	1.09	24.78
68.34	0	0.233	6.15E+02	103.28	51.64	1.1	25
69.22	0	0.229	6.26E+02	104.7	52.35	1.11	25.22
70.1	0	0.226	6.36E+02	106.12	53.06	1.11	25.44
70.97	0	0.223	6.47E+02	107.55	53.77	1.12	25.66
71.85	0	0.22	6.57E+02	108.98	54.49	1.13	25.87
72.73	0	0.217	6.68E+02	110.41	55.21	1.13	26.09
73.61	0	0.215	6.78E+02	111.85	55.93	1.14	26.31
74.48	0	0.212	6.89E+02	113.3	56.65	1.15	26.52
75.36	0	0.209	7.00E+02	114.74	57.37	1.15	26.74
76.24	0	0.207	7.10E+02	116.2	58.1	1.16	26.95
77.11	0	0.204	7.21E+02	117.65	58.83	1.17	27.16
77.99	0	0.201	7.32E+02	119.11	59.56	1.17	27.37
78.87	0	0.199	7.42E+02	120.58	60.29	1.18	27.58
79.75	0	0.197	7.53E+02	122.05	61.02	1.19	27.79
80.62	0	0.194	7.64E+02	123.52	61.76	1.19	28
81.5	0	0.192	7.75E+02	125	62.5	1.2	28.21
82.38	0	0.19	7.86E+02	126.48	63.24	1.21	28.42
83.25	0	0.187	7.96E+02	127.97	63.98	1.21	28.62
84.13	0	0.185	8.07E+02	129.46	64.73	1.22	28.83
85.01	0	0.183	8.18E+02	130.95	65.48	1.23	29.03
85.89	0	0.181	8.29E+02	132.45	66.22	1.23	29.24
86.76	0	0.179	8.40E+02	133.95	66.98	1.24	29.44
87.64	0	0.177	8.51E+02	135.46	67.73	1.25	29.64
88.52	0	0.175	8.62E+02	136.97	68.48	1.25	29.85
89.39	0	0.173	8.73E+02	138.48	69.24	1.26	30.05

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90.27	0	0.171	8.84E+02	140	70	1.27	30.25
91.15	0	0.169	8.95E+02	141.53	70.76	1.27	30.45
92.03	0	0.167	9.06E+02	143.06	71.53	1.28	30.65
92.9	0	0.166	9.17E+02	144.59	72.29	1.29	30.84
93.78	0	0.164	9.28E+02	146.12	73.06	1.29	31.04
94.66	0	0.162	9.39E+02	147.66	73.83	1.3	31.24
95.53	0	0.16	9.50E+02	149.21	74.6	1.31	31.43
96.41	0	0.159	9.62E+02	150.75	75.38	1.31	31.63
97.29	0	0.157	9.73E+02	152.3	76.15	1.32	31.82
98.16	0	0.156	9.84E+02	153.86	76.93	1.33	32.02
99.04	0	0.154	9.95E+02	155.42	77.71	1.33	32.21
99.92	0	0.152	1.01E+03	156.98	78.49	1.34	32.4
100.8	0	0.151	1.02E+03	158.55	79.27	1.34	32.6
101.67	0	0.149	1.03E+03	160.12	80.06	1.35	32.79
102.55	0	0.148	1.04E+03	161.69	80.85	1.36	32.98
103.43	0	0.146	1.05E+03	163.27	81.64	1.36	33.17
104.3	0	0.145	1.06E+03	164.86	82.43	1.37	33.36
105.18	0	0.144	1.07E+03	166.44	83.22	1.38	33.55
106.06	0	0.142	1.08E+03	168.03	84.02	1.38	33.74
106.94	0	0.141	1.10E+03	169.63	84.81	1.39	33.93
107.81	0	0.14	1.11E+03	171.22	85.61	1.39	34.11
108.69	0	0.138	1.12E+03	172.82	86.41	1.4	34.3
109.57	0	0.137	1.13E+03	174.43	87.21	1.41	34.49
110.44	0	0.136	1.14E+03	176.04	88.02	1.41	34.67
111.32	0	0.134	1.15E+03	177.65	88.83	1.42	34.86
112.2	0	0.133	1.16E+03	179.27	89.63	1.43	35.04
113.08	0	0.132	1.18E+03	180.89	90.44	1.43	35.23
113.95	0	0.131	1.19E+03	182.51	91.26	1.44	35.41
114.83	0	0.13	1.20E+03	184.14	92.07	1.44	35.59
115.71	0	0.129	1.21E+03	185.77	92.88	1.45	35.78
116.58	0	0.127	1.22E+03	187.4	93.7	1.46	35.96
117.46	0	0.126	1.23E+03	189.04	94.52	1.46	36.14
118.34	0	0.125	1.24E+03	190.68	95.34	1.47	36.32
119.22	0	0.124	1.26E+03	192.33	96.16	1.47	36.5
120.09	0	0.123	1.27E+03	193.97	96.99	1.48	36.68
120.97	0	0.122	1.28E+03	195.63	97.81	1.49	36.86
121.85	0	0.121	1.29E+03	197.28	98.64	1.49	37.04
122.72	0	0.12	1.30E+03	198.94	99.47	1.5	37.22
123.6	0	0.119	1.31E+03	200.6	100.3	1.5	37.4
124.48	0	0.118	1.32E+03	202.27	101.13	1.51	37.58
125.35	0	0.117	1.34E+03	203.94	101.97	1.52	37.76
126.23	0	0.116	1.35E+03	205.61	102.81	1.52	37.93
127.11	0	0.115	1.36E+03	207.29	103.64	1.53	38.11
127.99	0	0.114	1.37E+03	208.97	104.48	1.53	38.28
128.86	0	0.113	1.38E+03	210.65	105.32	1.54	38.46
129.74	0	0.112	1.39E+03	212.33	106.17	1.55	38.64
130.62	0	0.111	1.41E+03	214.02	107.01	1.55	38.81
131.49	0	0.111	1.42E+03	215.72	107.86	1.56	38.98
132.37	0	0.11	1.43E+03	217.41	108.71	1.56	39.16
133.25	0	0.109	1.44E+03	219.11	109.56	1.57	39.33

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134.13	0	0.108	1.45E+03	220.82	110.41	1.58	39.5
135	0	0.107	1.46E+03	222.52	111.26	1.58	39.68
135.88	0	0.106	1.48E+03	224.23	112.12	1.59	39.85
136.76	0	0.105	1.49E+03	225.94	112.97	1.59	40.02
137.63	0	0.105	1.50E+03	227.66	113.83	1.6	40.19
138.51	0	0.104	1.51E+03	229.38	114.69	1.6	40.36
139.39	0	0.103	1.52E+03	231.1	115.55	1.61	40.53
140.27	0	0.102	1.53E+03	232.82	116.41	1.62	40.7
141.14	0	0.102	1.55E+03	234.55	117.28	1.62	40.87
142.02	0	0.101	1.56E+03	236.28	118.14	1.63	41.04
142.9	0	0.1	1.57E+03	238.02	119.01	1.63	41.21
143.77	0	0.099	1.58E+03	239.76	119.88	1.64	41.38
144.65	0	0.099	1.59E+03	241.5	120.75	1.64	41.55
145.53	0	0.098	1.60E+03	243.24	121.62	1.65	41.72
146.41	0	0.097	1.62E+03	244.99	122.49	1.66	41.89
147.28	0	0.096	1.63E+03	246.74	123.37	1.66	42.05
148.16	0	0.096	1.64E+03	248.49	124.24	1.67	42.22
149.04	0	0.095	1.65E+03	250.25	125.12	1.67	42.39
149.91	0	0.094	1.66E+03	252	126	1.68	42.55
150.79	0	0.094	1.67E+03	253.77	126.88	1.68	42.72
151.67	0	0.093	1.69E+03	255.53	127.77	1.69	42.88
152.54	0	0.092	1.70E+03	257.3	128.65	1.7	43.05
153.42	0	0.092	1.71E+03	259.07	129.54	1.7	43.21
154.3	0	0.091	1.72E+03	260.84	130.42	1.71	43.38
155.18	0	0.091	1.73E+03	262.62	131.31	1.71	43.54
156.05	0	0.09	1.75E+03	264.4	132.2	1.72	43.7
156.93	0	0.089	1.76E+03	266.18	133.09	1.72	43.87
157.81	0	0.089	1.77E+03	267.97	133.98	1.73	44.03
158.68	0	0.088	1.78E+03	269.76	134.88	1.74	44.19
159.56	0	0.088	1.79E+03	271.55	135.77	1.74	44.36
160.44	0	0.087	1.80E+03	273.34	136.67	1.75	44.52
161.32	0	0.086	1.82E+03	275.14	137.57	1.75	44.68
162.19	0	0.086	1.83E+03	276.94	138.47	1.76	44.84
163.07	0	0.085	1.84E+03	278.74	139.37	1.76	45
163.95	0	0.085	1.85E+03	280.55	140.27	1.77	45.16
164.82	0	0.084	1.86E+03	282.36	141.18	1.77	45.32
165.7	0	0.084	1.88E+03	284.17	142.08	1.78	45.48
166.58	0	0.083	1.89E+03	285.98	142.99	1.79	45.64
167.46	0	0.083	1.90E+03	287.8	143.9	1.79	45.8
168.33	0	0.082	1.91E+03	289.62	144.81	1.8	45.96
169.21	0	0.082	1.92E+03	291.44	145.72	1.8	46.12
170.09	0	0.081	1.94E+03	293.26	146.63	1.81	46.28
170.96	0	0.08	1.95E+03	295.09	147.55	1.81	46.44
171.84	0	0.08	1.96E+03	296.92	148.46	1.82	46.6
172.72	0	0.079	1.97E+03	298.75	149.38	1.82	46.75
173.6	0	0.079	1.98E+03	300.59	150.29	1.83	46.91
174.47	0	0.079	2.00E+03	302.43	151.21	1.83	47.07
175.35	0	0.078	2.01E+03	304.27	152.13	1.84	47.22
176.23	0	0.078	2.02E+03	306.11	153.06	1.85	47.38
177.1	0	0.077	2.03E+03	307.96	153.98	1.85	47.54

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177.98	0	0.077	2.04E+03	309.81	154.9	1.86	47.69
178.86	0	0.076	2.05E+03	311.66	155.83	1.86	47.85
179.73	0	0.076	2.07E+03	313.51	156.76	1.87	48
180.61	0	0.075	2.08E+03	315.37	157.68	1.87	48.16
181.49	0	0.075	2.09E+03	317.23	158.61	1.88	48.31
182.37	0	0.074	2.10E+03	319.09	159.54	1.88	48.47
183.24	0	0.074	2.11E+03	320.95	160.48	1.89	48.62
184.12	0	0.073	2.13E+03	322.82	161.41	1.89	48.78
185	0	0.073	2.14E+03	324.69	162.34	1.9	48.93
185.87	0	0.073	2.15E+03	326.56	163.28	1.9	49.08
186.75	0	0.072	2.16E+03	328.43	164.22	1.91	49.24
187.63	0	0.072	2.17E+03	330.31	165.16	1.92	49.39
188.51	0	0.071	2.19E+03	332.19	166.1	1.92	49.54
189.38	0	0.071	2.20E+03	334.07	167.04	1.93	49.69
190.26	0	0.071	2.21E+03	335.96	167.98	1.93	49.85
191.14	0	0.07	2.22E+03	337.84	168.92	1.94	50
192.01	0	0.07	2.23E+03	339.73	169.87	1.94	50.15
192.89	0	0.069	2.25E+03	341.62	170.81	1.95	50.3
193.77	0	0.069	2.26E+03	343.52	171.76	1.95	50.45
194.65	0	0.069	2.27E+03	345.41	172.71	1.96	50.6
195.52	0	0.068	2.28E+03	347.31	173.66	1.96	50.75
196.4	0	0.068	2.30E+03	349.21	174.61	1.97	50.9
197.28	0	0.067	2.31E+03	351.12	175.56	1.97	51.05
198.15	0	0.067	2.32E+03	353.02	176.51	1.98	51.2
199.03	0	0.067	2.33E+03	354.93	177.47	1.98	51.35
199.91	0	0.066	2.34E+03	356.84	178.42	1.99	51.5
200.78	0	0.066	2.36E+03	358.75	179.38	1.99	51.65
201.66	0	0.066	2.37E+03	360.67	180.33	2	51.8
202.54	0	0.065	2.38E+03	362.59	181.29	2	51.95
203.42	0	0.065	2.39E+03	364.51	182.25	2.01	52.1
204.29	0	0.065	2.40E+03	366.43	183.21	2.01	52.25
205.17	0	0.064	2.42E+03	368.35	184.18	2.02	52.39
206.05	0	0.064	2.43E+03	370.28	185.14	2.03	52.54
206.92	0	0.064	2.44E+03	372.21	186.11	2.03	52.69
207.8	0	0.063	2.45E+03	374.14	187.07	2.04	52.84
208.68	0	0.063	2.46E+03	376.08	188.04	2.04	52.98
209.56	0	0.063	2.48E+03	378.01	189.01	2.05	53.13
210.43	0	0.062	2.49E+03	379.95	189.97	2.05	53.28
211.31	0	0.062	2.50E+03	381.89	190.94	2.06	53.42
212.19	0	0.062	2.51E+03	383.83	191.92	2.06	53.57
213.06	0	0.061	2.52E+03	385.78	192.89	2.07	53.72
213.94	0	0.061	2.54E+03	387.72	193.86	2.07	53.86
214.82	0	0.061	2.55E+03	389.67	194.84	2.08	54.01
215.7	0	0.06	2.56E+03	391.63	195.81	2.08	54.15

1 : case #

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EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.61	1.11E+02
1.21	2.34E+01
1.82	8.94E+00
2.42	4.44E+00
3.03	2.52E+00
3.63	1.65E+00
4.24	1.08E+00
4.85	7.50E-01
5.45	5.36E-01
6.06	3.96E-01
6.66	2.97E-01
7.27	2.29E-01
7.88	1.80E-01
8.48	1.42E-01
9.09	1.14E-01
9.69	9.37E-02
10.3	7.65E-02
10.9	6.34E-02
11.51	5.15E-02
12.12	3.38E-02

(DEG. C) AREA (SQ. M)

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Table E.2: Visual Plumes Model Output Data for Diesel Generators II at Maximum Currents

PDSWIN	FLOATING	WARM	WATER	JETS	--	June	1999PAGE	1
1	:	case	#					
AMBIENT	CONDITIONS	:	TEMP.	TA=	4	DEG.	C	
HEAT	CONVECTION	=	2		,;	VEL.	0.25	M/S
DISCHARGE	CONDITIONS	:	TEMP.	=	16.1	C;		
DEPTH	=	0.18	M.	;	WIDTH	=	0.17	M.
ANGLE	0	DEG	;	DISCHARGE	RATE	=	0.03	CU-M/S
DISCHARGE	DENSIMENTRIC	FROUDE	NO.	=	13.76			

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.4	0	12.116	3.79E-01	2	1	0.2	0.32
0.41	0	11.913	3.92E-01	2.03	1.02	0.19	0.33
0.42	0	11.722	4.05E-01	2.07	1.03	0.19	0.34
0.44	0	11.54	4.19E-01	2.1	1.05	0.19	0.35
0.45	0	11.368	4.33E-01	2.13	1.07	0.19	0.37
0.46	0	11.203	4.47E-01	2.16	1.08	0.19	0.38
0.48	0	11.045	4.61E-01	2.19	1.1	0.19	0.39
0.51	0	10.748	4.89E-01	2.25	1.13	0.19	0.4
0.53	0	10.474	5.18E-01	2.31	1.16	0.19	0.42
0.56	0	10.22	5.47E-01	2.37	1.19	0.19	0.44
0.59	0	9.981	5.78E-01	2.43	1.21	0.19	0.46
0.64	0	9.547	6.39E-01	2.54	1.27	0.19	0.49
0.7	0	9.159	7.03E-01	2.65	1.32	0.19	0.53
0.75	0	8.809	7.68E-01	2.75	1.38	0.19	0.56
0.81	0	8.49	8.35E-01	2.85	1.43	0.19	0.59
0.92	0	7.928	9.75E-01	3.06	1.53	0.19	0.65
1.03	0	7.445	1.12E+00	3.25	1.63	0.19	0.71
1.14	0	7.024	1.27E+00	3.45	1.73	0.19	0.76
1.25	0	6.652	1.43E+00	3.64	1.82	0.2	0.81
1.36	0	6.321	1.59E+00	3.83	1.92	0.2	0.86
1.46	0	6.024	1.76E+00	4.02	2.01	0.2	0.91
1.57	0	5.755	1.93E+00	4.21	2.11	0.21	0.96
1.68	0	5.511	2.11E+00	4.4	2.2	0.21	1
1.9	0	5.083	2.48E+00	4.77	2.38	0.21	1.09
2.12	0	4.721	2.86E+00	5.13	2.57	0.22	1.18
2.34	0	4.409	3.26E+00	5.5	2.75	0.23	1.26
2.56	0	4.138	3.68E+00	5.86	2.93	0.23	1.34
3	0	3.69	4.55E+00	6.57	3.28	0.24	1.49

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3.44	0	3.334	5.47E+00	7.27	3.64	0.25	1.63
3.88	0	3.043	6.43E+00	7.97	3.98	0.26	1.77
4.32	0	2.8	7.42E+00	8.66	4.33	0.27	1.9
4.75	0	2.595	8.46E+00	9.34	4.67	0.28	2.02
5.19	0	2.419	9.52E+00	10.02	5.01	0.29	2.14
6.07	0	2.134	1.17E+01	11.37	5.68	0.31	2.37
6.95	0	1.91	1.40E+01	12.7	6.35	0.32	2.59
7.82	0	1.729	1.64E+01	14.03	7.02	0.34	2.8
8.7	0	1.58	1.89E+01	15.35	7.68	0.35	2.99
9.58	0	1.455	2.14E+01	16.67	8.34	0.36	3.18
10.46	0	1.348	2.40E+01	17.99	8.99	0.37	3.37
11.33	0	1.256	2.66E+01	19.31	9.65	0.38	3.54
12.21	0	1.176	2.93E+01	20.63	10.32	0.4	3.71
13.09	0	1.105	3.20E+01	21.95	10.98	0.41	3.88
13.96	0	1.041	3.48E+01	23.28	11.64	0.42	4.04
14.84	0	0.985	3.76E+01	24.61	12.31	0.43	4.19
15.72	0	0.934	4.04E+01	25.95	12.98	0.44	4.35
16.59	0	0.888	4.32E+01	27.29	13.65	0.45	4.5
17.47	0	0.846	4.61E+01	28.64	14.32	0.46	4.64
18.35	0	0.808	4.90E+01	29.99	15	0.47	4.79
19.23	0	0.773	5.19E+01	31.35	15.68	0.47	4.93
20.1	0	0.741	5.49E+01	32.71	16.36	0.48	5.06
20.98	0	0.711	5.78E+01	34.08	17.04	0.49	5.2
21.86	0	0.683	6.08E+01	35.46	17.73	0.5	5.33
22.73	0	0.658	6.38E+01	36.84	18.42	0.51	5.46
23.61	0	0.634	6.68E+01	38.23	19.11	0.52	5.59
24.49	0	0.611	6.99E+01	39.62	19.81	0.53	5.72
25.37	0	0.591	7.29E+01	41.01	20.51	0.54	5.84
26.24	0	0.571	7.60E+01	42.42	21.21	0.54	5.97
27.12	0	0.553	7.90E+01	43.83	21.91	0.55	6.09
28	0	0.535	8.21E+01	45.24	22.62	0.56	6.21
28.87	0	0.519	8.52E+01	46.66	23.33	0.57	6.33
29.75	0	0.504	8.83E+01	48.08	24.04	0.58	6.44
30.63	0	0.489	9.15E+01	49.51	24.75	0.58	6.56
31.51	0	0.475	9.46E+01	50.94	25.47	0.59	6.67
32.38	0	0.462	9.77E+01	52.37	26.19	0.6	6.78
33.26	0	0.45	1.01E+02	53.81	26.91	0.61	6.9
34.14	0	0.438	1.04E+02	55.26	27.63	0.61	7.01
35.01	0	0.427	1.07E+02	56.7	28.35	0.62	7.12
35.89	0	0.416	1.10E+02	58.16	29.08	0.63	7.22
36.77	0	0.406	1.14E+02	59.61	29.81	0.63	7.33
37.65	0	0.396	1.17E+02	61.07	30.54	0.64	7.44
38.52	0	0.387	1.20E+02	62.53	31.27	0.65	7.54

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39.4	0	0.378	1.23E+02	64	32	0.66	7.65
40.28	0	0.37	1.26E+02	65.47	32.73	0.66	7.75
41.15	0	0.361	1.30E+02	66.94	33.47	0.67	7.85
42.03	0	0.354	1.33E+02	68.42	34.21	0.68	7.95
42.91	0	0.346	1.36E+02	69.9	34.95	0.68	8.05
43.78	0	0.339	1.39E+02	71.38	35.69	0.69	8.15
44.66	0	0.332	1.42E+02	72.86	36.43	0.69	8.25
45.54	0	0.325	1.46E+02	74.35	37.18	0.7	8.35
46.42	0	0.319	1.49E+02	75.84	37.92	0.71	8.45
47.29	0	0.313	1.52E+02	77.34	38.67	0.71	8.54
48.17	0	0.307	1.55E+02	78.84	39.42	0.72	8.64
49.05	0	0.301	1.59E+02	80.33	40.17	0.73	8.73
49.92	0	0.295	1.62E+02	81.84	40.92	0.73	8.83
50.8	0	0.29	1.65E+02	83.34	41.67	0.74	8.92
51.68	0	0.285	1.69E+02	84.85	42.43	0.75	9.01
52.56	0	0.28	1.72E+02	86.36	43.18	0.75	9.11
53.43	0	0.275	1.75E+02	87.87	43.94	0.76	9.2
54.31	0	0.27	1.78E+02	89.39	44.69	0.76	9.29
55.19	0	0.266	1.82E+02	90.91	45.45	0.77	9.38
56.06	0	0.262	1.85E+02	92.43	46.21	0.77	9.47
56.94	0	0.257	1.88E+02	93.95	46.97	0.78	9.56
57.82	0	0.253	1.92E+02	95.47	47.74	0.79	9.65
58.7	0	0.249	1.95E+02	97	48.5	0.79	9.74
59.57	0	0.245	1.98E+02	98.53	49.27	0.8	9.82
60.45	0	0.242	2.02E+02	100.06	50.03	0.8	9.91
61.33	0	0.238	2.05E+02	101.6	50.8	0.81	10
62.2	0	0.234	2.08E+02	103.13	51.57	0.81	10.08
63.08	0	0.231	2.11E+02	104.67	52.34	0.82	10.17
63.96	0	0.227	2.15E+02	106.21	53.11	0.83	10.26
64.84	0	0.224	2.18E+02	107.76	53.88	0.83	10.34
65.71	0	0.221	2.21E+02	109.3	54.65	0.84	10.42
66.59	0	0.218	2.25E+02	110.85	55.42	0.84	10.51
67.47	0	0.215	2.28E+02	112.4	56.2	0.85	10.59
68.34	0	0.212	2.31E+02	113.95	56.97	0.85	10.67
69.22	0	0.209	2.35E+02	115.5	57.75	0.86	10.76
70.1	0	0.206	2.38E+02	117.06	58.53	0.86	10.84
70.97	0	0.204	2.41E+02	118.61	59.31	0.87	10.92
71.85	0	0.201	2.45E+02	120.17	60.09	0.87	11
72.73	0	0.198	2.48E+02	121.73	60.87	0.88	11.08
73.61	0	0.196	2.51E+02	123.29	61.65	0.88	11.16
74.48	0	0.193	2.55E+02	124.86	62.43	0.89	11.24
75.36	0	0.191	2.58E+02	126.42	63.21	0.89	11.32
76.24	0	0.189	2.62E+02	127.99	64	0.9	11.4

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77.11	0	0.186	2.65E+02	129.56	64.78	0.9	11.48
77.99	0	0.184	2.68E+02	131.13	65.57	0.91	11.56
78.87	0	0.182	2.72E+02	132.71	66.35	0.91	11.64
79.75	0	0.18	2.75E+02	134.28	67.14	0.92	11.72
80.62	0	0.178	2.78E+02	135.86	67.93	0.92	11.79
81.5	0	0.176	2.82E+02	137.44	68.72	0.93	11.87
82.38	0	0.174	2.85E+02	139.02	69.51	0.93	11.95
83.25	0	0.172	2.88E+02	140.6	70.3	0.94	12.03
84.13	0	0.17	2.92E+02	142.18	71.09	0.94	12.1
85.01	0	0.168	2.95E+02	143.77	71.88	0.95	12.18
85.89	0	0.166	2.99E+02	145.35	72.68	0.95	12.25
86.76	0	0.164	3.02E+02	146.94	73.47	0.96	12.33
87.64	0	0.162	3.05E+02	148.53	74.26	0.96	12.4
88.52	0	0.161	3.09E+02	150.12	75.06	0.97	12.48
89.39	0	0.159	3.12E+02	151.71	75.86	0.97	12.55
90.27	0	0.157	3.15E+02	153.31	76.65	0.98	12.63
91.15	0	0.156	3.19E+02	154.9	77.45	0.98	12.7
92.03	0	0.154	3.22E+02	156.5	78.25	0.99	12.77
92.9	0	0.153	3.26E+02	158.1	79.05	0.99	12.85
93.78	0	0.151	3.29E+02	159.7	79.85	0.99	12.92
94.66	0	0.15	3.32E+02	161.3	80.65	1	12.99
95.53	0	0.148	3.36E+02	162.9	81.45	1	13.07
96.41	0	0.147	3.39E+02	164.51	82.25	1.01	13.14
97.29	0	0.145	3.43E+02	166.11	83.06	1.01	13.21
98.16	0	0.144	3.46E+02	167.72	83.86	1.02	13.28
99.04	0	0.142	3.49E+02	169.33	84.67	1.02	13.35
99.92	0	0.141	3.53E+02	170.94	85.47	1.03	13.42
100.8	0	0.14	3.56E+02	172.55	86.28	1.03	13.49
101.67	0	0.138	3.59E+02	174.17	87.08	1.03	13.56
102.55	0	0.137	3.63E+02	175.78	87.89	1.04	13.64
103.43	0	0.136	3.66E+02	177.4	88.7	1.04	13.71
104.3	0	0.135	3.70E+02	179.01	89.51	1.05	13.78
105.18	0	0.133	3.73E+02	180.63	90.32	1.05	13.84
106.06	0	0.132	3.76E+02	182.25	91.13	1.06	13.91
106.94	0	0.131	3.80E+02	183.87	91.94	1.06	13.98
107.81	0	0.13	3.83E+02	185.49	92.75	1.06	14.05
108.69	0	0.129	3.87E+02	187.12	93.56	1.07	14.12
109.57	0	0.128	3.90E+02	188.74	94.37	1.07	14.19
110.44	0	0.127	3.93E+02	190.37	95.18	1.08	14.26
111.32	0	0.126	3.97E+02	192	96	1.08	14.33
112.2	0	0.124	4.00E+02	193.62	96.81	1.09	14.39
113.08	0	0.123	4.04E+02	195.25	97.63	1.09	14.46
113.95	0	0.122	4.07E+02	196.88	98.44	1.09	14.53

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114.83	0	0.121	4.11E+02	198.52	99.26	1.1	14.6
115.71	0	0.12	4.14E+02	200.15	100.08	1.1	14.66
116.58	0	0.119	4.17E+02	201.79	100.89	1.11	14.73
117.46	0	0.118	4.21E+02	203.42	101.71	1.11	14.8
118.34	0	0.118	4.24E+02	205.06	102.53	1.11	14.86
119.22	0	0.117	4.28E+02	206.7	103.35	1.12	14.93
120.09	0	0.116	4.31E+02	208.34	104.17	1.12	15
120.97	0	0.115	4.34E+02	209.98	104.99	1.13	15.06
121.85	0	0.114	4.38E+02	211.62	105.81	1.13	15.13
122.72	0	0.113	4.41E+02	213.26	106.63	1.13	15.19
123.6	0	0.112	4.45E+02	214.9	107.45	1.14	15.26
124.48	0	0.111	4.48E+02	216.55	108.27	1.14	15.32
125.35	0	0.11	4.51E+02	218.2	109.1	1.15	15.39
126.23	0	0.11	4.55E+02	219.84	109.92	1.15	15.45
127.11	0	0.109	4.58E+02	221.49	110.75	1.15	15.52
127.99	0	0.108	4.62E+02	223.14	111.57	1.16	15.58
128.86	0	0.107	4.65E+02	224.79	112.4	1.16	15.65
129.74	0	0.106	4.69E+02	226.44	113.22	1.17	15.71
130.62	0	0.106	4.72E+02	228.1	114.05	1.17	15.77
131.49	0	0.105	4.75E+02	229.75	114.88	1.17	15.84
132.37	0	0.104	4.79E+02	231.41	115.7	1.18	15.9
133.25	0	0.103	4.82E+02	233.06	116.53	1.18	15.96
134.13	0	0.103	4.86E+02	234.72	117.36	1.19	16.03
135	0	0.102	4.89E+02	236.38	118.19	1.19	16.09
135.88	0	0.101	4.93E+02	238.04	119.02	1.19	16.15
136.76	0	0.1	4.96E+02	239.7	119.85	1.2	16.22
137.63	0	0.1	4.99E+02	241.36	120.68	1.2	16.28
138.51	0	0.099	5.03E+02	243.02	121.51	1.2	16.34
139.39	0	0.098	5.06E+02	244.68	122.34	1.21	16.4
140.27	0	0.098	5.10E+02	246.35	123.17	1.21	16.46
141.14	0	0.097	5.13E+02	248.01	124.01	1.22	16.53
142.02	0	0.096	5.17E+02	249.68	124.84	1.22	16.59
142.9	0	0.096	5.20E+02	251.35	125.67	1.22	16.65
143.77	0	0.095	5.23E+02	253.01	126.51	1.23	16.71
144.65	0	0.095	5.27E+02	254.68	127.34	1.23	16.77
145.53	0	0.094	5.30E+02	256.35	128.18	1.23	16.83
146.41	0	0.093	5.34E+02	258.02	129.01	1.24	16.89
147.28	0	0.093	5.37E+02	259.7	129.85	1.24	16.96
148.16	0	0.092	5.41E+02	261.37	130.69	1.24	17.02
149.04	0	0.092	5.44E+02	263.04	131.52	1.25	17.08
149.91	0	0.091	5.47E+02	264.72	132.36	1.25	17.14
150.79	0	0.09	5.51E+02	266.4	133.2	1.26	17.2
151.67	0	0.09	5.54E+02	268.07	134.04	1.26	17.26

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152.54	0	0.089	5.58E+02	269.75	134.88	1.26	17.32
153.42	0	0.089	5.61E+02	271.43	135.71	1.27	17.38
154.3	0	0.088	5.65E+02	273.11	136.55	1.27	17.44
155.18	0	0.088	5.68E+02	274.79	137.39	1.27	17.5
156.05	0	0.087	5.71E+02	276.47	138.24	1.28	17.56
156.93	0	0.087	5.75E+02	278.15	139.08	1.28	17.61
157.81	0	0.086	5.78E+02	279.84	139.92	1.28	17.67
158.68	0	0.085	5.82E+02	281.52	140.76	1.29	17.73
159.56	0	0.085	5.85E+02	283.21	141.6	1.29	17.79
160.44	0	0.084	5.89E+02	284.89	142.45	1.29	17.85
161.32	0	0.084	5.92E+02	286.58	143.29	1.3	17.91
162.19	0	0.083	5.96E+02	288.27	144.13	1.3	17.97
163.07	0	0.083	5.99E+02	289.96	144.98	1.31	18.03
163.95	0	0.082	6.02E+02	291.65	145.82	1.31	18.08
164.82	0	0.082	6.06E+02	293.34	146.67	1.31	18.14
165.7	0	0.082	6.09E+02	295.03	147.51	1.32	18.2
166.58	0	0.081	6.13E+02	296.72	148.36	1.32	18.26
167.46	0	0.081	6.16E+02	298.41	149.21	1.32	18.32
168.33	0	0.08	6.20E+02	300.11	150.05	1.33	18.37
169.21	0	0.08	6.23E+02	301.8	150.9	1.33	18.43
170.09	0	0.079	6.27E+02	303.5	151.75	1.33	18.49
170.96	0	0.079	6.30E+02	305.19	152.6	1.34	18.55
171.84	0	0.078	6.33E+02	306.89	153.45	1.34	18.6
172.72	0	0.078	6.37E+02	308.59	154.29	1.34	18.66
173.6	0	0.078	6.40E+02	310.29	155.14	1.35	18.72
174.47	0	0.077	6.44E+02	311.99	155.99	1.35	18.77
175.35	0	0.077	6.47E+02	313.69	156.84	1.35	18.83
176.23	0	0.076	6.51E+02	315.39	157.69	1.36	18.89
177.1	0	0.076	6.54E+02	317.09	158.55	1.36	18.94
177.98	0	0.075	6.58E+02	318.79	159.4	1.36	19
178.86	0	0.075	6.61E+02	320.5	160.25	1.37	19.06
179.73	0	0.075	6.64E+02	322.2	161.1	1.37	19.11
180.61	0	0.074	6.68E+02	323.91	161.95	1.37	19.17
181.49	0	0.074	6.71E+02	325.62	162.81	1.38	19.22
182.37	0	0.073	6.75E+02	327.32	163.66	1.38	19.28
183.24	0	0.073	6.78E+02	329.03	164.52	1.38	19.34
184.12	0	0.073	6.82E+02	330.74	165.37	1.39	19.39
185	0	0.072	6.85E+02	332.45	166.22	1.39	19.45
185.87	0	0.072	6.89E+02	334.16	167.08	1.39	19.5
186.75	0	0.072	6.92E+02	335.87	167.93	1.4	19.56
187.63	0	0.071	6.96E+02	337.58	168.79	1.4	19.61
188.51	0	0.071	6.99E+02	339.29	169.65	1.4	19.67
189.38	0	0.07	7.02E+02	341.01	170.5	1.41	19.72

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190.26	0	0.07	7.06E+02	342.72	171.36	1.41	19.78
191.14	0	0.07	7.09E+02	344.44	172.22	1.41	19.83
192.01	0	0.069	7.13E+02	346.15	173.08	1.41	19.89
192.89	0	0.069	7.16E+02	347.87	173.93	1.42	19.94
193.77	0	0.069	7.20E+02	349.59	174.79	1.42	20
194.65	0	0.068	7.23E+02	351.3	175.65	1.42	20.05
195.52	0	0.068	7.27E+02	353.02	176.51	1.43	20.1
196.4	0	0.068	7.30E+02	354.74	177.37	1.43	20.16
197.28	0	0.067	7.33E+02	356.46	178.23	1.43	20.21
198.15	0	0.067	7.37E+02	358.18	179.09	1.44	20.27
199.03	0	0.067	7.40E+02	359.9	179.95	1.44	20.32
199.91	0	0.066	7.44E+02	361.63	180.81	1.44	20.37
200.78	0	0.066	7.47E+02	363.35	181.67	1.45	20.43
201.66	0	0.066	7.51E+02	365.07	182.54	1.45	20.48
202.54	0	0.065	7.54E+02	366.8	183.4	1.45	20.54
203.42	0	0.065	7.58E+02	368.52	184.26	1.46	20.59
204.29	0	0.065	7.61E+02	370.25	185.12	1.46	20.64
205.17	0	0.065	7.65E+02	371.97	185.99	1.46	20.7
206.05	0	0.064	7.68E+02	373.7	186.85	1.46	20.75
206.92	0	0.064	7.71E+02	375.43	187.71	1.47	20.8
207.8	0	0.064	7.75E+02	377.16	188.58	1.47	20.85
208.68	0	0.063	7.78E+02	378.89	189.44	1.47	20.91
209.56	0	0.063	7.82E+02	380.62	190.31	1.48	20.96
210.43	0	0.063	7.85E+02	382.35	191.17	1.48	21.01
211.31	0	0.063	7.89E+02	384.08	192.04	1.48	21.07
212.19	0	0.062	7.92E+02	385.81	192.91	1.49	21.12
213.06	0	0.062	7.96E+02	387.55	193.77	1.49	21.17
213.94	0	0.062	7.99E+02	389.28	194.64	1.49	21.22
214.82	0	0.061	8.03E+02	391.01	195.51	1.5	21.28
215.7	0	0.061	8.06E+02	392.75	196.37	1.5	21.33
216.57	0	0.061	8.10E+02	394.48	197.24	1.5	21.38
217.45	0	0.061	8.13E+02	396.22	198.11	1.5	21.43
218.33	0	0.06	8.16E+02	397.96	198.98	1.51	21.48

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A R E A S OF E X C

1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.61	5.83E+01
1.21	1.64E+01
1.82	7.28E+00
2.42	3.85E+00
3.03	2.35E+00
3.63	1.54E+00
4.24	1.04E+00
4.85	7.31E-01
5.45	5.36E-01
6.06	3.88E-01
6.66	2.91E-01
7.27	2.28E-01
7.88	1.77E-01
8.48	1.39E-01
9.09	1.12E-01
9.69	9.09E-02
10.3	7.45E-02
10.9	6.18E-02
11.51	5.05E-02
12.12	3.38E-02

(DEG. C) AREA (SQ. M)

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Appendix F: Model Outputs for SCR Room

Table F.1: Visual Plumes Model Output Data for SCR Room at Mean Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,;
HEAT CONVECTION = 2 VEL. 0.07 M/S

DISCHARGE CONDITIONS : TEMP. = 4.2 C; DEPTH = 0.09 M.
; WIDTH = 0.09 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0.04 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 837.16

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.05	0	0.216	1.04E-02	2	1	0.14	0.14
0.05	0	0.213	1.11E-02	2.03	1.01	0.14	0.14
0.06	0	0.21	1.18E-02	2.05	1.03	0.14	0.14
0.06	0	0.207	1.25E-02	2.08	1.04	0.14	0.15
0.06	0	0.205	1.32E-02	2.11	1.05	0.14	0.15
0.07	0	0.202	1.40E-02	2.13	1.07	0.14	0.15
0.07	0	0.2	1.47E-02	2.16	1.08	0.14	0.16
0.08	0	0.195	1.62E-02	2.21	1.1	0.15	0.16
0.09	0	0.191	1.78E-02	2.26	1.13	0.15	0.17
0.09	0	0.187	1.94E-02	2.31	1.15	0.15	0.17
0.1	0	0.183	2.10E-02	2.35	1.18	0.15	0.18
0.11	0	0.176	2.43E-02	2.44	1.22	0.15	0.19
0.13	0	0.17	2.78E-02	2.53	1.27	0.15	0.2
0.14	0	0.164	3.13E-02	2.62	1.31	0.15	0.21
0.15	0	0.159	3.50E-02	2.71	1.35	0.16	0.23
0.18	0	0.15	4.28E-02	2.87	1.44	0.16	0.25
0.21	0	0.142	5.09E-02	3.04	1.52	0.16	0.27
0.24	0	0.135	5.95E-02	3.19	1.6	0.17	0.29
0.26	0	0.129	6.86E-02	3.35	1.67	0.17	0.31
0.32	0	0.118	8.78E-02	3.64	1.82	0.18	0.35
0.37	0	0.11	1.09E-01	3.93	1.97	0.19	0.39
0.43	0	0.102	1.31E-01	4.22	2.11	0.2	0.43
0.48	0	0.096	1.55E-01	4.5	2.25	0.2	0.46
0.59	0	0.086	2.07E-01	5.05	2.52	0.22	0.53
0.7	0	0.077	2.64E-01	5.58	2.79	0.24	0.6
0.81	0	0.071	3.28E-01	6.11	3.06	0.25	0.67
0.92	0	0.065	3.97E-01	6.64	3.32	0.27	0.74

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1.14	0	0.057	5.50E-01	7.68	3.84	0.3	0.87
1.36	0	0.05	7.24E-01	8.71	4.35	0.33	1
1.58	0	0.045	9.19E-01	9.73	4.86	0.37	1.13
1.8	0	0.041	1.13E+00	10.74	5.37	0.4	1.25
2.02	0	0.037	1.37E+00	11.75	5.87	0.43	1.37
2.24	0	0.034	1.62E+00	12.75	6.38	0.46	1.49
2.68	0	0.03	2.19E+00	14.75	7.37	0.52	1.72
3.11	0	0.026	2.82E+00	16.73	8.36	0.58	1.94
3.55	0	0.024	3.53E+00	18.69	9.35	0.63	2.16
3.99	0	0.021	4.31E+00	20.64	10.32	0.69	2.38
4.43	0	0.019	5.15E+00	22.58	11.29	0.74	2.59
4.87	0	0.018	6.06E+00	24.51	12.26	0.79	2.79
5.31	0	0.017	7.03E+00	26.43	13.22	0.84	2.99
5.75	0	0.015	8.06E+00	28.34	14.17	0.89	3.19
6.18	0	0.014	9.16E+00	30.25	15.12	0.93	3.38
6.62	0	0.014	1.03E+01	32.14	16.07	0.98	3.57
7.06	0	0.013	1.15E+01	34.02	17.01	1.03	3.76
7.5	0	0.012	1.28E+01	35.89	17.95	1.07	3.94
7.94	0	0.012	1.41E+01	37.76	18.88	1.11	4.12
8.38	0	0.011	1.55E+01	39.62	19.81	1.15	4.3
8.82	0	0.011	1.69E+01	41.47	20.73	1.19	4.48
9.25	0	0.01	1.83E+01	43.31	21.66	1.23	4.65
9.69	0	0.01	1.99E+01	45.15	22.57	1.27	4.82
10.13	0	0.009	2.14E+01	46.98	23.49	1.31	4.98
10.57	0	0.009	2.30E+01	48.8	24.4	1.35	5.15
11.01	0	0.009	2.47E+01	50.61	25.31	1.39	5.31
11.45	0	0.008	2.64E+01	52.42	26.21	1.42	5.47
11.89	0	0.008	2.81E+01	54.23	27.11	1.46	5.63
12.32	0	0.008	2.99E+01	56.02	28.01	1.49	5.78
12.76	0	0.008	3.17E+01	57.81	28.91	1.52	5.94
13.2	0	0.007	3.36E+01	59.6	29.8	1.56	6.09
13.64	0	0.007	3.55E+01	61.38	30.69	1.59	6.24
14.08	0	0.007	3.74E+01	63.15	31.58	1.62	6.39
14.52	0	0.007	3.94E+01	64.92	32.46	1.65	6.54
14.96	0	0.007	4.14E+01	66.68	33.34	1.69	6.68
15.39	0	0.006	4.35E+01	68.44	34.22	1.72	6.83
15.83	0	0.006	4.56E+01	70.19	35.1	1.75	6.97
16.27	0	0.006	4.77E+01	71.94	35.97	1.78	7.11
16.71	0	0.006	4.99E+01	73.69	36.84	1.8	7.25
17.15	0	0.006	5.21E+01	75.42	37.71	1.83	7.39
17.59	0	0.006	5.43E+01	77.16	38.58	1.86	7.52
18.03	0	0.006	5.65E+01	78.89	39.44	1.89	7.66
18.46	0	0.005	5.88E+01	80.61	40.31	1.92	7.79
18.9	0	0.005	6.12E+01	82.33	41.17	1.94	7.92
19.34	0	0.005	6.35E+01	84.05	42.02	1.97	8.06
19.78	0	0.005	6.59E+01	85.76	42.88	2	8.19
20.22	0	0.005	6.83E+01	87.47	43.73	2.02	8.32
20.66	0	0.005	7.07E+01	89.17	44.59	2.05	8.44

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21.1	0	0.005	7.32E+01	90.87	45.44	2.07	8.57
21.53	0	0.005	7.57E+01	92.57	46.29	2.1	8.7
21.97	0	0.005	7.82E+01	94.26	47.13	2.12	8.82
22.41	0	0.005	8.08E+01	95.95	47.98	2.15	8.94
22.85	0	0.004	8.33E+01	97.64	48.82	2.17	9.07
23.29	0	0.004	8.60E+01	99.32	49.66	2.19	9.19
23.73	0	0.004	8.86E+01	101	50.5	2.22	9.31
24.17	0	0.004	9.12E+01	102.67	51.33	2.24	9.43
24.61	0	0.004	9.39E+01	104.34	52.17	2.26	9.55
25.04	0	0.004	9.66E+01	106.01	53	2.28	9.67
25.48	0	0.004	9.94E+01	107.67	53.84	2.31	9.78
25.92	0	0.004	1.02E+02	109.33	54.67	2.33	9.9
26.36	0	0.004	1.05E+02	110.99	55.5	2.35	10.01
26.8	0	0.004	1.08E+02	112.65	56.32	2.37	10.13
27.24	0	0.004	1.11E+02	114.3	57.15	2.39	10.24
27.68	0	0.004	1.13E+02	115.94	57.97	2.41	10.36
28.11	0	0.004	1.16E+02	117.59	58.8	2.43	10.47
28.55	0	0.004	1.19E+02	119.23	59.62	2.45	10.58
28.99	0	0.004	1.22E+02	120.87	60.44	2.47	10.69
29.43	0	0.004	1.25E+02	122.51	61.25	2.5	10.8
29.87	0	0.004	1.28E+02	124.14	62.07	2.51	10.91
30.31	0	0.003	1.31E+02	125.77	62.89	2.53	11.02
30.75	0	0.003	1.34E+02	127.4	63.7	2.55	11.13
31.18	0	0.003	1.37E+02	129.03	64.51	2.57	11.23
31.62	0	0.003	1.40E+02	130.65	65.32	2.59	11.34
32.06	0	0.003	1.43E+02	132.27	66.13	2.61	11.45
32.5	0	0.003	1.46E+02	133.89	66.94	2.63	11.55
32.94	0	0.003	1.49E+02	135.5	67.75	2.65	11.66
33.38	0	0.003	1.52E+02	137.11	68.56	2.67	11.76
33.82	0	0.003	1.55E+02	138.72	69.36	2.69	11.86
34.25	0	0.003	1.58E+02	140.33	70.17	2.7	11.97
34.69	0	0.003	1.62E+02	141.94	70.97	2.72	12.07
35.13	0	0.003	1.65E+02	143.54	71.77	2.74	12.17
35.57	0	0.003	1.68E+02	145.14	72.57	2.76	12.27
36.01	0	0.003	1.71E+02	146.74	73.37	2.77	12.37
36.45	0	0.003	1.74E+02	148.33	74.17	2.79	12.47
36.89	0	0.003	1.78E+02	149.92	74.96	2.81	12.57
37.32	0	0.003	1.81E+02	151.52	75.76	2.83	12.67
37.76	0	0.003	1.84E+02	153.1	76.55	2.84	12.77
38.2	0	0.003	1.88E+02	154.69	77.35	2.86	12.87
38.64	0	0.003	1.91E+02	156.27	78.14	2.88	12.96
39.08	0	0.003	1.94E+02	157.86	78.93	2.89	13.06
39.52	0	0.003	1.98E+02	159.44	79.72	2.91	13.16
39.96	0	0.003	2.01E+02	161.01	80.51	2.93	13.25
40.39	0	0.003	2.04E+02	162.59	81.3	2.94	13.35
40.83	0	0.003	2.08E+02	164.16	82.08	2.96	13.44
41.27	0	0.003	2.11E+02	165.74	82.87	2.97	13.54
41.71	0	0.003	2.15E+02	167.31	83.65	2.99	13.63

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42.15	0	0.003	2.18E+02	168.87	84.44	3	13.73
42.59	0	0.003	2.21E+02	170.44	85.22	3.02	13.82
43.03	0	0.003	2.25E+02	172	86	3.04	13.91
43.46	0	0.003	2.28E+02	173.56	86.78	3.05	14
43.9	0	0.002	2.32E+02	175.12	87.56	3.07	14.1
44.34	0	0.002	2.35E+02	176.68	88.34	3.08	14.19
44.78	0	0.002	2.39E+02	178.24	89.12	3.1	14.28
45.22	0	0.002	2.42E+02	179.79	89.9	3.11	14.37
45.66	0	0.002	2.46E+02	181.35	90.67	3.13	14.46
46.1	0	0.002	2.50E+02	182.9	91.45	3.14	14.55
46.53	0	0.002	2.53E+02	184.45	92.22	3.15	14.64
46.97	0	0.002	2.57E+02	185.99	93	3.17	14.73
47.41	0	0.002	2.60E+02	187.54	93.77	3.18	14.82
47.85	0	0.002	2.64E+02	189.08	94.54	3.2	14.9
48.29	0	0.002	2.68E+02	190.62	95.31	3.21	14.99
48.73	0	0.002	2.71E+02	192.16	96.08	3.23	15.08
49.17	0	0.002	2.75E+02	193.7	96.85	3.24	15.17
49.6	0	0.002	2.78E+02	195.24	97.62	3.25	15.25
50.04	0	0.002	2.82E+02	196.77	98.39	3.27	15.34
50.48	0	0.002	2.86E+02	198.31	99.15	3.28	15.43
50.92	0	0.002	2.90E+02	199.84	99.92	3.29	15.51
51.36	0	0.002	2.93E+02	201.37	100.69	3.31	15.6
51.8	0	0.002	2.97E+02	202.9	101.45	3.32	15.68
52.24	0	0.002	3.01E+02	204.43	102.21	3.33	15.77
52.67	0	0.002	3.04E+02	205.95	102.98	3.35	15.85
53.11	0	0.002	3.08E+02	207.48	103.74	3.36	15.94
53.55	0	0.002	3.12E+02	209	104.5	3.37	16.02
53.99	0	0.002	3.16E+02	210.52	105.26	3.39	16.1
54.43	0	0.002	3.19E+02	212.04	106.02	3.4	16.19
54.87	0	0.002	3.23E+02	213.56	106.78	3.41	16.27
55.31	0	0.002	3.27E+02	215.08	107.54	3.43	16.35
55.74	0	0.002	3.31E+02	216.59	108.3	3.44	16.43
56.18	0	0.002	3.35E+02	218.11	109.05	3.45	16.51
56.62	0	0.002	3.39E+02	219.62	109.81	3.46	16.6
57.06	0	0.002	3.42E+02	221.13	110.56	3.48	16.68
57.5	0	0.002	3.46E+02	222.64	111.32	3.49	16.76
57.94	0	0.002	3.50E+02	224.15	112.07	3.5	16.84
58.38	0	0.002	3.54E+02	225.65	112.83	3.51	16.92
58.81	0	0.002	3.58E+02	227.16	113.58	3.53	17
59.25	0	0.002	3.62E+02	228.66	114.33	3.54	17.08
59.69	0	0.002	3.66E+02	230.17	115.08	3.55	17.16
60.13	0	0.002	3.70E+02	231.67	115.83	3.56	17.24
60.57	0	0.002	3.74E+02	233.17	116.58	3.57	17.32
61.01	0	0.002	3.78E+02	234.67	117.33	3.59	17.4
61.45	0	0.002	3.81E+02	236.16	118.08	3.6	17.47
61.88	0	0.002	3.85E+02	237.66	118.83	3.61	17.55
62.32	0	0.002	3.89E+02	239.15	119.58	3.62	17.63
62.76	0	0.002	3.93E+02	240.65	120.32	3.63	17.71

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63.2	0	0.002	3.97E+02	242.14	121.07	3.65	17.79
63.64	0	0.002	4.01E+02	243.63	121.82	3.66	17.86
64.08	0	0.002	4.05E+02	245.12	122.56	3.67	17.94
64.52	0	0.002	4.09E+02	246.61	123.31	3.68	18.02
64.96	0	0.002	4.13E+02	248.1	124.05	3.69	18.09
65.39	0	0.002	4.17E+02	249.58	124.79	3.7	18.17
65.83	0	0.002	4.21E+02	251.07	125.53	3.71	18.25
66.27	0	0.002	4.25E+02	252.55	126.28	3.73	18.32
66.71	0	0.002	4.30E+02	254.04	127.02	3.74	18.4
67.15	0	0.002	4.34E+02	255.52	127.76	3.75	18.47
67.59	0	0.002	4.38E+02	257	128.5	3.76	18.55
68.03	0	0.002	4.42E+02	258.48	129.24	3.77	18.62
68.46	0	0.002	4.46E+02	259.96	129.98	3.78	18.7
68.9	0	0.002	4.50E+02	261.43	130.72	3.79	18.77
69.34	0	0.002	4.54E+02	262.91	131.45	3.8	18.85
69.78	0	0.002	4.58E+02	264.38	132.19	3.81	18.92
70.22	0	0.002	4.62E+02	265.86	132.93	3.82	18.99
70.66	0	0.002	4.66E+02	267.33	133.66	3.83	19.07
71.1	0	0.002	4.70E+02	268.8	134.4	3.85	19.14
71.53	0	0.002	4.75E+02	270.27	135.14	3.86	19.21
71.97	0	0.002	4.79E+02	271.74	135.87	3.87	19.29
72.41	0	0.002	4.83E+02	273.21	136.6	3.88	19.36
72.85	0	0.002	4.87E+02	274.68	137.34	3.89	19.43
73.29	0	0.002	4.91E+02	276.14	138.07	3.9	19.5
73.73	0	0.002	4.95E+02	277.61	138.8	3.91	19.58
74.17	0	0.002	5.00E+02	279.07	139.54	3.92	19.65
74.6	0	0.002	5.04E+02	280.53	140.27	3.93	19.72
75.04	0	0.002	5.08E+02	282	141	3.94	19.79
75.48	0	0.002	5.12E+02	283.46	141.73	3.95	19.86
75.92	0	0.002	5.16E+02	284.92	142.46	3.96	19.93
76.36	0	0.002	5.21E+02	286.38	143.19	3.97	20
76.8	0	0.002	5.25E+02	287.83	143.92	3.98	20.07
77.24	0	0.001	5.29E+02	289.29	144.64	3.99	20.14
77.67	0	0.001	5.33E+02	290.75	145.37	4	20.21
78.11	0	0.001	5.38E+02	292.2	146.1	4.01	20.28
78.55	0	0.001	5.42E+02	293.65	146.83	4.02	20.35
78.99	0	0.001	5.46E+02	295.11	147.55	4.03	20.42
79.43	0	0.001	5.50E+02	296.56	148.28	4.04	20.49
79.87	0	0.001	5.55E+02	298.01	149.01	4.05	20.56
80.31	0	0.001	5.59E+02	299.46	149.73	4.06	20.63
80.74	0	0.001	5.63E+02	300.91	150.46	4.07	20.7
81.18	0	0.001	5.68E+02	302.36	151.18	4.08	20.77
81.62	0	0.001	5.72E+02	303.81	151.9	4.09	20.84
82.06	0	0.001	5.76E+02	305.25	152.63	4.1	20.91
82.5	0	0.001	5.80E+02	306.7	153.35	4.11	20.97
82.94	0	0.001	5.85E+02	308.14	154.07	4.12	21.04
83.38	0	0.001	5.89E+02	309.59	154.79	4.13	21.11
83.81	0	0.001	5.93E+02	311.03	155.51	4.14	21.18

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84.25	0	0.001	5.98E+02	312.47	156.24	4.15	21.25
84.69	0	0.001	6.02E+02	313.91	156.96	4.16	21.31
85.13	0	0.001	6.07E+02	315.35	157.68	4.16	21.38
85.57	0	0.001	6.11E+02	316.79	158.4	4.17	21.45
86.01	0	0.001	6.15E+02	318.23	159.11	4.18	21.51
86.45	0	0.001	6.20E+02	319.67	159.83	4.19	21.58
86.88	0	0.001	6.24E+02	321.1	160.55	4.2	21.65
87.32	0	0.001	6.28E+02	322.54	161.27	4.21	21.71
87.76	0	0.001	6.33E+02	323.97	161.99	4.22	21.78
88.2	0	0.001	6.37E+02	325.41	162.7	4.23	21.85
88.64	0	0.001	6.42E+02	326.84	163.42	4.24	21.91
89.08	0	0.001	6.46E+02	328.27	164.14	4.25	21.98
89.52	0	0.001	6.50E+02	329.71	164.85	4.26	22.04
89.95	0	0.001	6.55E+02	331.14	165.57	4.27	22.11
90.39	0	0.001	6.59E+02	332.57	166.28	4.27	22.18
90.83	0	0.001	6.64E+02	334	167	4.28	22.24
91.27	0	0.001	6.68E+02	335.42	167.71	4.29	22.31
91.71	0	0.001	6.72E+02	336.85	168.43	4.3	22.37
92.15	0	0.001	6.77E+02	338.28	169.14	4.31	22.44
92.59	0	0.001	6.81E+02	339.71	169.85	4.32	22.5
93.02	0	0.001	6.86E+02	341.13	170.57	4.33	22.56
93.46	0	0.001	6.90E+02	342.55	171.28	4.34	22.63
93.9	0	0.001	6.95E+02	343.98	171.99	4.34	22.69
94.34	0	0.001	6.99E+02	345.4	172.7	4.35	22.76
94.78	0	0.001	7.04E+02	346.82	173.41	4.36	22.82
95.22	0	0.001	7.08E+02	348.24	174.12	4.37	22.88
95.66	0	0.001	7.13E+02	349.67	174.83	4.38	22.95
96.09	0	0.001	7.17E+02	351.09	175.54	4.39	23.01
96.53	0	0.001	7.22E+02	352.5	176.25	4.4	23.07
96.97	0	0.001	7.26E+02	353.92	176.96	4.41	23.14
97.41	0	0.001	7.31E+02	355.34	177.67	4.41	23.2
97.85	0	0.001	7.35E+02	356.76	178.38	4.42	23.26
98.29	0	0.001	7.40E+02	358.17	179.09	4.43	23.33
98.73	0	0.001	7.44E+02	359.59	179.79	4.44	23.39
99.16	0	0.001	7.49E+02	361	180.5	4.45	23.45
99.6	0	0.001	7.53E+02	362.42	181.21	4.46	23.51
100.04	0	0.001	7.58E+02	363.83	181.92	4.46	23.58
100.48	0	0.001	7.62E+02	365.24	182.62	4.47	23.64
100.92	0	0.001	7.67E+02	366.65	183.33	4.48	23.7
101.36	0	0.001	7.71E+02	368.07	184.03	4.49	23.76
101.8	0	0.001	7.76E+02	369.48	184.74	4.5	23.82
102.23	0	0.001	7.81E+02	370.89	185.44	4.51	23.89
102.67	0	0.001	7.85E+02	372.29	186.15	4.51	23.95
103.11	0	0.001	7.90E+02	373.7	186.85	4.52	24.01
103.55	0	0.001	7.94E+02	375.11	187.56	4.53	24.07
103.99	0	0.001	7.99E+02	376.52	188.26	4.54	24.13
104.43	0	0.001	8.03E+02	377.92	188.96	4.55	24.19
104.87	0	0.001	8.08E+02	379.33	189.66	4.55	24.25

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105.31	0	0.001	8.13E+02	380.73	190.37	4.56	24.31
105.74	0	0.001	8.17E+02	382.14	191.07	4.57	24.37
106.18	0	0.001	8.22E+02	383.54	191.77	4.58	24.43
106.62	0	0.001	8.26E+02	384.95	192.47	4.59	24.5
107.06	0	0.001	8.31E+02	386.35	193.17	4.59	24.56
107.5	0	0.001	8.36E+02	387.75	193.87	4.6	24.62
107.94	0	0.001	8.40E+02	389.15	194.57	4.61	24.68
108.38	0	0.001	8.45E+02	390.55	195.28	4.62	24.74
108.81	0	0.001	8.50E+02	391.95	195.97	4.63	24.8
109.25	0	0.001	8.54E+02	393.35	196.67	4.63	24.86
109.69	0	0.001	8.59E+02	394.75	197.37	4.64	24.91
110.13	0	0.001	8.64E+02	396.14	198.07	4.65	24.97
110.57	0	0.001	8.68E+02	397.54	198.77	4.66	25.03
111.01	0	0.001	8.73E+02	398.94	199.47	4.66	25.09
111.45	0	0.001	8.77E+02	400.33	200.17	4.67	25.15

A R E A S OF E X C E S
T E M P E R A T U R E
1 : case #

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.01	1.31E+01
0.02	3.02E+00
0.03	1.26E+00
0.04	6.28E-01
0.05	3.60E-01
0.06	2.19E-01
0.08	1.41E-01
0.09	9.07E-02
0.1	6.38E-02
0.11	4.59E-02
0.12	3.15E-02
0.13	2.33E-02
0.14	1.75E-02
0.15	1.26E-02
0.16	9.62E-03
0.17	7.26E-03
0.18	5.50E-03
0.19	4.25E-03
0.2	3.25E-03
0.22	2.18E-03

(DEG. C) AREA (SQ. M)

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Table F.2: Visual Plumes Model Output Data for SCR Room at Maximum Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,; VEL. 0.25 M/S
HEAT CONVECTION = 2

DISCHARGE CONDITIONS : TEMP. = 4.2 C; DEPTH = 0.09 M.
; WIDTH = 0.09 M.
DEPTH = 0.09 M. ; WIDTH = 0.09 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0.04 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 837.16

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.05	0	0.216	1.04E-02	2	1	0.14	0.13
0.06	0	0.21	1.18E-02	2.05	1.03	0.14	0.14
0.06	0	0.205	1.32E-02	2.1	1.05	0.14	0.15
0.07	0	0.2	1.47E-02	2.16	1.08	0.14	0.15
0.08	0	0.196	1.62E-02	2.2	1.1	0.14	0.16
0.09	0	0.191	1.78E-02	2.25	1.13	0.14	0.16
0.09	0	0.187	1.93E-02	2.3	1.15	0.14	0.17
0.11	0	0.18	2.26E-02	2.39	1.2	0.15	0.18
0.12	0	0.174	2.59E-02	2.48	1.24	0.15	0.19
0.13	0	0.168	2.94E-02	2.57	1.29	0.15	0.2
0.15	0	0.162	3.30E-02	2.66	1.33	0.15	0.21
0.17	0	0.153	4.04E-02	2.82	1.41	0.15	0.23
0.2	0	0.145	4.83E-02	2.98	1.49	0.16	0.25
0.23	0	0.138	5.66E-02	3.14	1.57	0.16	0.27
0.26	0	0.131	6.53E-02	3.29	1.64	0.16	0.29
0.31	0	0.121	8.37E-02	3.58	1.79	0.17	0.32
0.37	0	0.112	1.04E-01	3.86	1.93	0.18	0.36
0.42	0	0.104	1.25E-01	4.14	2.07	0.19	0.39
0.48	0	0.098	1.47E-01	4.41	2.21	0.19	0.42
0.59	0	0.087	1.96E-01	4.94	2.47	0.21	0.48
0.7	0	0.079	2.49E-01	5.46	2.73	0.22	0.54
0.8	0	0.072	3.07E-01	5.97	2.98	0.23	0.6
0.91	0	0.067	3.70E-01	6.47	3.23	0.24	0.66
1.13	0	0.058	5.07E-01	7.46	3.73	0.27	0.76

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1.35	0	0.052	6.60E-01	8.42	4.21	0.29	0.86
1.57	0	0.047	8.28E-01	9.38	4.69	0.32	0.96
1.79	0	0.042	1.01E+00	10.33	5.16	0.34	1.05
2.01	0	0.039	1.21E+00	11.26	5.63	0.36	1.14
2.23	0	0.036	1.42E+00	12.19	6.09	0.38	1.22
2.67	0	0.031	1.87E+00	14.02	7.01	0.42	1.38
3.11	0	0.028	2.37E+00	15.82	7.91	0.46	1.53
3.55	0	0.025	2.91E+00	17.6	8.8	0.49	1.68
3.98	0	0.023	3.49E+00	19.36	9.68	0.52	1.82
4.42	0	0.021	4.11E+00	21.11	10.55	0.55	1.95
4.86	0	0.019	4.75E+00	22.83	11.42	0.58	2.07
5.3	0	0.018	5.43E+00	24.54	12.27	0.61	2.19
5.74	0	0.017	6.14E+00	26.24	13.12	0.64	2.31
6.18	0	0.016	6.88E+00	27.92	13.96	0.67	2.42
6.62	0	0.015	7.64E+00	29.59	14.8	0.69	2.53
7.05	0	0.014	8.43E+00	31.25	15.62	0.72	2.63
7.49	0	0.013	9.24E+00	32.89	16.45	0.74	2.74
7.93	0	0.013	1.01E+01	34.53	17.27	0.76	2.84
8.37	0	0.012	1.09E+01	36.16	18.08	0.78	2.93
8.81	0	0.012	1.18E+01	37.78	18.89	0.8	3.03
9.25	0	0.011	1.27E+01	39.38	19.69	0.83	3.12
9.69	0	0.011	1.36E+01	40.98	20.49	0.85	3.21
10.12	0	0.01	1.45E+01	42.57	21.29	0.87	3.3
10.56	0	0.01	1.55E+01	44.16	22.08	0.88	3.38
11	0	0.01	1.64E+01	45.74	22.87	0.9	3.47
11.44	0	0.009	1.74E+01	47.3	23.65	0.92	3.55
11.88	0	0.009	1.84E+01	48.87	24.43	0.94	3.63
12.32	0	0.009	1.94E+01	50.42	25.21	0.96	3.71
12.76	0	0.008	2.04E+01	51.97	25.99	0.97	3.79
13.19	0	0.008	2.14E+01	53.52	26.76	0.99	3.86
13.63	0	0.008	2.25E+01	55.06	27.53	1.01	3.94
14.07	0	0.008	2.35E+01	56.59	28.29	1.02	4.01
14.51	0	0.008	2.46E+01	58.11	29.06	1.04	4.09
14.95	0	0.007	2.56E+01	59.64	29.82	1.05	4.16
15.39	0	0.007	2.67E+01	61.15	30.58	1.07	4.23
15.83	0	0.007	2.78E+01	62.66	31.33	1.08	4.3
16.27	0	0.007	2.89E+01	64.17	32.09	1.1	4.37
16.7	0	0.007	3.00E+01	65.67	32.84	1.11	4.44
17.14	0	0.007	3.12E+01	67.17	33.59	1.12	4.5
17.58	0	0.006	3.23E+01	68.66	34.33	1.14	4.57
18.02	0	0.006	3.34E+01	70.15	35.08	1.15	4.64
18.46	0	0.006	3.46E+01	71.64	35.82	1.17	4.7
18.9	0	0.006	3.57E+01	73.12	36.56	1.18	4.76

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19.34	0	0.006	3.69E+01	74.6	37.3	1.19	4.83
19.77	0	0.006	3.81E+01	76.07	38.03	1.2	4.89
20.21	0	0.006	3.93E+01	77.54	38.77	1.22	4.95
20.65	0	0.006	4.04E+01	79	39.5	1.23	5.01
21.09	0	0.005	4.16E+01	80.47	40.23	1.24	5.07
21.53	0	0.005	4.28E+01	81.93	40.96	1.25	5.13
21.97	0	0.005	4.40E+01	83.38	41.69	1.27	5.19
22.41	0	0.005	4.53E+01	84.83	42.42	1.28	5.25
22.84	0	0.005	4.65E+01	86.28	43.14	1.29	5.3
23.28	0	0.005	4.77E+01	87.73	43.86	1.3	5.36
23.72	0	0.005	4.89E+01	89.17	44.59	1.31	5.42
24.16	0	0.005	5.02E+01	90.61	45.31	1.32	5.47
24.6	0	0.005	5.14E+01	92.05	46.02	1.33	5.53
25.04	0	0.005	5.27E+01	93.48	46.74	1.34	5.58
25.48	0	0.005	5.39E+01	94.91	47.46	1.36	5.64
25.91	0	0.005	5.52E+01	96.34	48.17	1.37	5.69
26.35	0	0.004	5.65E+01	97.77	48.88	1.38	5.75
26.79	0	0.004	5.77E+01	99.19	49.6	1.39	5.8
27.23	0	0.004	5.90E+01	100.61	50.31	1.4	5.85
27.67	0	0.004	6.03E+01	102.03	51.02	1.41	5.9
28.11	0	0.004	6.16E+01	103.45	51.72	1.42	5.96
28.55	0	0.004	6.29E+01	104.86	52.43	1.43	6.01
28.98	0	0.004	6.42E+01	106.27	53.14	1.44	6.06
29.42	0	0.004	6.55E+01	107.68	53.84	1.45	6.11
29.86	0	0.004	6.68E+01	109.09	54.54	1.46	6.16
30.3	0	0.004	6.81E+01	110.49	55.25	1.47	6.21
30.74	0	0.004	6.94E+01	111.89	55.95	1.48	6.26
31.18	0	0.004	7.07E+01	113.29	56.65	1.49	6.31
31.62	0	0.004	7.20E+01	114.69	57.35	1.5	6.35
32.05	0	0.004	7.34E+01	116.09	58.04	1.51	6.4
32.49	0	0.004	7.47E+01	117.48	58.74	1.51	6.45
32.93	0	0.004	7.60E+01	118.87	59.44	1.52	6.5
33.37	0	0.004	7.74E+01	120.26	60.13	1.53	6.55
33.81	0	0.004	7.87E+01	121.65	60.82	1.54	6.59
34.25	0	0.004	8.00E+01	123.03	61.52	1.55	6.64
34.69	0	0.004	8.14E+01	124.42	62.21	1.56	6.69
35.12	0	0.003	8.27E+01	125.8	62.9	1.57	6.73
35.56	0	0.003	8.41E+01	127.18	63.59	1.58	6.78
36	0	0.003	8.54E+01	128.56	64.28	1.59	6.82
36.44	0	0.003	8.68E+01	129.93	64.97	1.59	6.87
36.88	0	0.003	8.82E+01	131.31	65.65	1.6	6.91
37.32	0	0.003	8.95E+01	132.68	66.34	1.61	6.96
37.76	0	0.003	9.09E+01	134.05	67.03	1.62	7

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38.19	0	0.003	9.23E+01	135.42	67.71	1.63	7.05
38.63	0	0.003	9.37E+01	136.79	68.4	1.64	7.09
39.07	0	0.003	9.50E+01	138.16	69.08	1.64	7.13
39.51	0	0.003	9.64E+01	139.52	69.76	1.65	7.18
39.95	0	0.003	9.78E+01	140.88	70.44	1.66	7.22
40.39	0	0.003	9.92E+01	142.25	71.12	1.67	7.26
40.83	0	0.003	1.01E+02	143.61	71.8	1.68	7.3
41.26	0	0.003	1.02E+02	144.96	72.48	1.68	7.35
41.7	0	0.003	1.03E+02	146.32	73.16	1.69	7.39
42.14	0	0.003	1.05E+02	147.68	73.84	1.7	7.43
42.58	0	0.003	1.06E+02	149.03	74.52	1.71	7.47
43.02	0	0.003	1.08E+02	150.38	75.19	1.72	7.51
43.46	0	0.003	1.09E+02	151.73	75.87	1.72	7.55
43.9	0	0.003	1.10E+02	153.08	76.54	1.73	7.6
44.33	0	0.003	1.12E+02	154.43	77.22	1.74	7.64
44.77	0	0.003	1.13E+02	155.78	77.89	1.75	7.68
45.21	0	0.003	1.15E+02	157.13	78.56	1.75	7.72
45.65	0	0.003	1.16E+02	158.47	79.23	1.76	7.76
46.09	0	0.003	1.17E+02	159.81	79.91	1.77	7.8
46.53	0	0.003	1.19E+02	161.15	80.58	1.78	7.84
46.97	0	0.003	1.20E+02	162.49	81.25	1.78	7.88
47.4	0	0.003	1.22E+02	163.83	81.92	1.79	7.92
47.84	0	0.003	1.23E+02	165.17	82.59	1.8	7.96
48.28	0	0.003	1.25E+02	166.51	83.25	1.81	7.99
48.72	0	0.003	1.26E+02	167.84	83.92	1.81	8.03
49.16	0	0.003	1.27E+02	169.18	84.59	1.82	8.07
49.6	0	0.003	1.29E+02	170.51	85.26	1.83	8.11
50.04	0	0.003	1.30E+02	171.84	85.92	1.83	8.15
50.47	0	0.003	1.32E+02	173.17	86.59	1.84	8.19
50.91	0	0.002	1.33E+02	174.5	87.25	1.85	8.22
51.35	0	0.002	1.35E+02	175.83	87.92	1.85	8.26
51.79	0	0.002	1.36E+02	177.16	88.58	1.86	8.3
52.23	0	0.002	1.38E+02	178.48	89.24	1.87	8.34
52.67	0	0.002	1.39E+02	179.81	89.9	1.87	8.37
53.11	0	0.002	1.40E+02	181.13	90.57	1.88	8.41
53.54	0	0.002	1.42E+02	182.45	91.23	1.89	8.45
53.98	0	0.002	1.43E+02	183.78	91.89	1.89	8.49
54.42	0	0.002	1.45E+02	185.1	92.55	1.9	8.52
54.86	0	0.002	1.46E+02	186.42	93.21	1.91	8.56
55.3	0	0.002	1.48E+02	187.73	93.87	1.91	8.59
55.74	0	0.002	1.49E+02	189.05	94.53	1.92	8.63
56.18	0	0.002	1.51E+02	190.37	95.18	1.93	8.67
56.62	0	0.002	1.52E+02	191.68	95.84	1.93	8.7

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57.05	0	0.002	1.54E+02	193	96.5	1.94	8.74
57.49	0	0.002	1.55E+02	194.31	97.16	1.95	8.77
57.93	0	0.002	1.57E+02	195.62	97.81	1.95	8.81
58.37	0	0.002	1.58E+02	196.94	98.47	1.96	8.85
58.81	0	0.002	1.60E+02	198.25	99.12	1.97	8.88
59.25	0	0.002	1.61E+02	199.56	99.78	1.97	8.92
59.69	0	0.002	1.63E+02	200.86	100.43	1.98	8.95
60.12	0	0.002	1.64E+02	202.17	101.09	1.99	8.99
60.56	0	0.002	1.65E+02	203.48	101.74	1.99	9.02
61	0	0.002	1.67E+02	204.79	102.39	2	9.05
61.44	0	0.002	1.68E+02	206.09	103.04	2	9.09
61.88	0	0.002	1.70E+02	207.39	103.7	2.01	9.12
62.32	0	0.002	1.71E+02	208.7	104.35	2.02	9.16
62.76	0	0.002	1.73E+02	210	105	2.02	9.19
63.19	0	0.002	1.74E+02	211.3	105.65	2.03	9.23
63.63	0	0.002	1.76E+02	212.6	106.3	2.03	9.26
64.07	0	0.002	1.77E+02	213.9	106.95	2.04	9.29
64.51	0	0.002	1.79E+02	215.2	107.6	2.05	9.33
64.95	0	0.002	1.80E+02	216.5	108.25	2.05	9.36
65.39	0	0.002	1.82E+02	217.8	108.9	2.06	9.39
65.83	0	0.002	1.83E+02	219.09	109.55	2.06	9.43
66.26	0	0.002	1.85E+02	220.39	110.19	2.07	9.46
66.7	0	0.002	1.86E+02	221.68	110.84	2.08	9.49
67.14	0	0.002	1.88E+02	222.98	111.49	2.08	9.53
67.58	0	0.002	1.89E+02	224.27	112.13	2.09	9.56
68.02	0	0.002	1.91E+02	225.56	112.78	2.09	9.59
68.46	0	0.002	1.92E+02	226.85	113.43	2.1	9.62
68.9	0	0.002	1.94E+02	228.14	114.07	2.1	9.66
69.33	0	0.002	1.95E+02	229.43	114.72	2.11	9.69
69.77	0	0.002	1.97E+02	230.72	115.36	2.12	9.72
70.21	0	0.002	1.98E+02	232.01	116.01	2.12	9.75
70.65	0	0.002	2.00E+02	233.3	116.65	2.13	9.79
71.09	0	0.002	2.01E+02	234.59	117.29	2.13	9.82
71.53	0	0.002	2.03E+02	235.87	117.94	2.14	9.85
71.97	0	0.002	2.04E+02	237.16	118.58	2.14	9.88
72.4	0	0.002	2.06E+02	238.44	119.22	2.15	9.91
72.84	0	0.002	2.07E+02	239.73	119.86	2.16	9.95
73.28	0	0.002	2.09E+02	241.01	120.5	2.16	9.98
73.72	0	0.002	2.11E+02	242.29	121.15	2.17	10.01
74.16	0	0.002	2.12E+02	243.57	121.79	2.17	10.04
74.6	0	0.002	2.14E+02	244.85	122.43	2.18	10.07
75.04	0	0.002	2.15E+02	246.13	123.07	2.18	10.1
75.47	0	0.002	2.17E+02	247.41	123.71	2.19	10.13

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75.91	0	0.002	2.18E+02	248.69	124.35	2.19	10.16
76.35	0	0.002	2.20E+02	249.97	124.99	2.2	10.19
76.79	0	0.002	2.21E+02	251.25	125.62	2.2	10.23
77.23	0	0.002	2.23E+02	252.53	126.26	2.21	10.26
77.67	0	0.002	2.24E+02	253.8	126.9	2.22	10.29
78.11	0	0.002	2.26E+02	255.08	127.54	2.22	10.32
78.54	0	0.002	2.27E+02	256.35	128.18	2.23	10.35
78.98	0	0.002	2.29E+02	257.63	128.81	2.23	10.38
79.42	0	0.002	2.30E+02	258.9	129.45	2.24	10.41
79.86	0	0.002	2.32E+02	260.18	130.09	2.24	10.44
80.3	0	0.002	2.33E+02	261.45	130.72	2.25	10.47
80.74	0	0.002	2.35E+02	262.72	131.36	2.25	10.5
81.18	0	0.002	2.37E+02	263.99	132	2.26	10.53
81.61	0	0.002	2.38E+02	265.26	132.63	2.26	10.56
82.05	0	0.002	2.40E+02	266.53	133.27	2.27	10.59
82.49	0	0.002	2.41E+02	267.8	133.9	2.27	10.62
82.93	0	0.002	2.43E+02	269.07	134.53	2.28	10.65
83.37	0	0.002	2.44E+02	270.34	135.17	2.28	10.68
83.81	0	0.002	2.46E+02	271.61	135.8	2.29	10.71
84.25	0	0.002	2.47E+02	272.87	136.44	2.29	10.74
84.68	0	0.002	2.49E+02	274.14	137.07	2.3	10.76
85.12	0	0.002	2.50E+02	275.4	137.7	2.3	10.79
85.56	0	0.002	2.52E+02	276.67	138.33	2.31	10.82
86	0	0.002	2.53E+02	277.93	138.97	2.31	10.85
86.44	0	0.002	2.55E+02	279.2	139.6	2.32	10.88
86.88	0	0.002	2.57E+02	280.46	140.23	2.32	10.91
87.32	0	0.002	2.58E+02	281.72	140.86	2.33	10.94
87.75	0	0.002	2.60E+02	282.99	141.49	2.33	10.97
88.19	0	0.002	2.61E+02	284.25	142.12	2.34	11
88.63	0	0.002	2.63E+02	285.51	142.75	2.34	11.02
89.07	0	0.002	2.64E+02	286.77	143.39	2.35	11.05
89.51	0	0.002	2.66E+02	288.03	144.02	2.35	11.08
89.95	0	0.002	2.67E+02	289.29	144.65	2.36	11.11
90.39	0	0.001	2.69E+02	290.55	145.27	2.36	11.14
90.82	0	0.001	2.71E+02	291.81	145.9	2.37	11.17
91.26	0	0.001	2.72E+02	293.07	146.53	2.37	11.19
91.7	0	0.001	2.74E+02	294.32	147.16	2.38	11.22
92.14	0	0.001	2.75E+02	295.58	147.79	2.38	11.25
92.58	0	0.001	2.77E+02	296.84	148.42	2.39	11.28
93.02	0	0.001	2.78E+02	298.09	149.05	2.39	11.31
93.46	0	0.001	2.80E+02	299.35	149.67	2.4	11.33
93.89	0	0.001	2.81E+02	300.6	150.3	2.4	11.36
94.33	0	0.001	2.83E+02	301.86	150.93	2.41	11.39

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94.77	0	0.001	2.85E+02	303.11	151.55	2.41	11.42
95.21	0	0.001	2.86E+02	304.36	152.18	2.42	11.45
95.65	0	0.001	2.88E+02	305.62	152.81	2.42	11.47
96.09	0	0.001	2.89E+02	306.87	153.43	2.42	11.5
96.53	0	0.001	2.91E+02	308.12	154.06	2.43	11.53
96.97	0	0.001	2.92E+02	309.37	154.69	2.43	11.56
97.4	0	0.001	2.94E+02	310.62	155.31	2.44	11.58
97.84	0	0.001	2.96E+02	311.87	155.94	2.44	11.61
98.28	0	0.001	2.97E+02	313.12	156.56	2.45	11.64
98.72	0	0.001	2.99E+02	314.37	157.19	2.45	11.66
99.16	0	0.001	3.00E+02	315.62	157.81	2.46	11.69
99.6	0	0.001	3.02E+02	316.87	158.43	2.46	11.72
100.04	0	0.001	3.03E+02	318.12	159.06	2.47	11.75
100.47	0	0.001	3.05E+02	319.36	159.68	2.47	11.77
100.91	0	0.001	3.06E+02	320.61	160.3	2.48	11.8
101.35	0	0.001	3.08E+02	321.86	160.93	2.48	11.83
101.79	0	0.001	3.10E+02	323.1	161.55	2.48	11.85
102.23	0	0.001	3.11E+02	324.35	162.17	2.49	11.88
102.67	0	0.001	3.13E+02	325.59	162.8	2.49	11.91
103.11	0	0.001	3.14E+02	326.84	163.42	2.5	11.93
103.54	0	0.001	3.16E+02	328.08	164.04	2.5	11.96
103.98	0	0.001	3.18E+02	329.33	164.66	2.51	11.98
104.42	0	0.001	3.19E+02	330.57	165.28	2.51	12.01
104.86	0	0.001	3.21E+02	331.81	165.91	2.52	12.04
105.3	0	0.001	3.22E+02	333.05	166.53	2.52	12.06
105.74	0	0.001	3.24E+02	334.3	167.15	2.52	12.09
106.18	0	0.001	3.25E+02	335.54	167.77	2.53	12.12
106.61	0	0.001	3.27E+02	336.78	168.39	2.53	12.14
107.05	0	0.001	3.29E+02	338.02	169.01	2.54	12.17
107.49	0	0.001	3.30E+02	339.26	169.63	2.54	12.19
107.93	0	0.001	3.32E+02	340.5	170.25	2.55	12.22
108.37	0	0.001	3.33E+02	341.74	170.87	2.55	12.25
108.81	0	0.001	3.35E+02	342.98	171.49	2.55	12.27
109.25	0	0.001	3.36E+02	344.21	172.11	2.56	12.3
109.68	0	0.001	3.38E+02	345.45	172.73	2.56	12.32
110.12	0	0.001	3.40E+02	346.69	173.35	2.57	12.35
110.56	0	0.001	3.41E+02	347.93	173.96	2.57	12.37
111	0	0.001	3.43E+02	349.16	174.58	2.58	12.4
111.44	0	0.001	3.44E+02	350.4	175.2	2.58	12.43
111.88	0	0.001	3.46E+02	351.64	175.82	2.58	12.45
112.32	0	0.001	3.48E+02	352.87	176.44	2.59	12.48
112.75	0	0.001	3.49E+02	354.11	177.05	2.59	12.5
113.19	0	0.001	3.51E+02	355.34	177.67	2.6	12.53

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113.63	0	0.001	3.52E+02	356.58	178.29	2.6	12.55
114.07	0	0.001	3.54E+02	357.81	178.91	2.61	12.58
114.51	0	0.001	3.55E+02	359.04	179.52	2.61	12.6
114.95	0	0.001	3.57E+02	360.28	180.14	2.61	12.63
115.39	0	0.001	3.59E+02	361.51	180.75	2.62	12.65
115.82	0	0.001	3.60E+02	362.74	181.37	2.62	12.68
116.26	0	0.001	3.62E+02	363.97	181.99	2.63	12.7
116.7	0	0.001	3.63E+02	365.21	182.6	2.63	12.73
117.14	0	0.001	3.65E+02	366.44	183.22	2.64	12.75
117.58	0	0.001	3.67E+02	367.67	183.83	2.64	12.78
118.02	0	0.001	3.68E+02	368.9	184.45	2.64	12.8
118.46	0	0.001	3.70E+02	370.13	185.06	2.65	12.83
118.89	0	0.001	3.71E+02	371.36	185.68	2.65	12.85
119.33	0	0.001	3.73E+02	372.59	186.29	2.66	12.88
119.77	0	0.001	3.75E+02	373.82	186.91	2.66	12.9
120.21	0	0.001	3.76E+02	375.04	187.52	2.66	12.93
120.65	0	0.001	3.78E+02	376.27	188.14	2.67	12.95
121.09	0	0.001	3.79E+02	377.5	188.75	2.67	12.97
121.53	0	0.001	3.81E+02	378.73	189.36	2.68	13
121.96	0	0.001	3.83E+02	379.95	189.98	2.68	13.02
122.4	0	0.001	3.84E+02	381.18	190.59	2.68	13.05
122.84	0	0.001	3.86E+02	382.41	191.2	2.69	13.07
123.28	0	0.001	3.87E+02	383.63	191.82	2.69	13.1
123.72	0	0.001	3.89E+02	384.86	192.43	2.7	13.12
124.16	0	0.001	3.91E+02	386.08	193.04	2.7	13.14
124.6	0	0.001	3.92E+02	387.31	193.65	2.7	13.17
125.03	0	0.001	3.94E+02	388.53	194.27	2.71	13.19
125.47	0	0.001	3.95E+02	389.76	194.88	2.71	13.22
125.91	0	0.001	3.97E+02	390.98	195.49	2.72	13.24
126.35	0	0.001	3.99E+02	392.21	196.1	2.72	13.26
126.79	0	0.001	4.00E+02	393.43	196.71	2.72	13.29
127.23	0	0.001	4.02E+02	394.65	197.33	2.73	13.31
127.67	0	0.001	4.03E+02	395.87	197.94	2.73	13.34
128.1	0	0.001	4.05E+02	397.1	198.55	2.74	13.36
128.54	0	0.001	4.07E+02	398.32	199.16	2.74	13.38
128.98	0	0.001	4.08E+02	399.54	199.77	2.74	13.41
129.42	0	0.001	4.10E+02	400.76	200.38	2.75	13.43
129.86	0	0.001	4.11E+02	401.98	200.99	2.75	13.45

A R E A S OF
E X C E S S

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EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.01	1.17E+01
0.02	2.88E+00
0.03	1.17E+00
0.04	5.94E-01
0.05	3.43E-01
0.06	2.18E-01
0.08	1.37E-01
0.09	9.27E-02
0.1	6.44E-02
0.11	4.49E-02
0.12	3.25E-02
0.13	2.39E-02
0.14	1.71E-02
0.15	1.29E-02
0.16	9.63E-03
0.17	7.23E-03
0.18	5.51E-03
0.19	4.22E-03
0.2	3.23E-03
0.22	2.18E-03

(DEG. C) AREA (SQ. M)

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Appendix G: Model Outputs for Main Deck

Table G.1: Visual Plumes Model Output Data for Main Deck at Mean Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C ,;
HEAT CONVECTION = 2 VEL. 0.07 M/S

DISCHARGE CONDITIONS : TEMP. = 12 C; DEPTH = 0.09 M
; WIDTH = 0.09 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 2

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.37	0	8.016	4.38E+00	2	1	0.03	0.39
0.39	0	7.859	4.54E+00	2.04	1.02	0.03	0.4
0.4	0	7.709	4.69E+00	2.08	1.04	0.03	0.4
0.42	0	7.565	4.85E+00	2.12	1.06	0.03	0.4
0.43	0	7.426	5.01E+00	2.16	1.08	0.03	0.41
0.44	0	7.292	5.16E+00	2.2	1.1	0.03	0.41
0.46	0	7.163	5.32E+00	2.24	1.12	0.03	0.42
0.48	0	6.919	5.64E+00	2.32	1.16	0.03	0.42
0.51	0	6.691	5.96E+00	2.4	1.2	0.03	0.43
0.54	0	6.477	6.28E+00	2.47	1.24	0.03	0.44
0.57	0	6.276	6.61E+00	2.55	1.28	0.03	0.45
0.62	0	5.91	7.26E+00	2.71	1.36	0.03	0.46
0.68	0	5.583	7.93E+00	2.87	1.44	0.03	0.48
0.73	0	5.289	8.59E+00	3.03	1.52	0.03	0.49
0.79	0	5.023	9.27E+00	3.19	1.6	0.03	0.51
0.84	0	4.782	9.95E+00	3.35	1.68	0.03	0.52
0.9	0	4.561	1.06E+01	3.51	1.76	0.04	0.54
0.95	0	4.359	1.13E+01	3.68	1.84	0.04	0.55
1	0	4.173	1.20E+01	3.84	1.92	0.04	0.56
1.11	0	3.843	1.34E+01	4.17	2.09	0.04	0.59
1.22	0	3.558	1.48E+01	4.5	2.25	0.04	0.62
1.33	0	3.309	1.62E+01	4.84	2.42	0.04	0.64
1.44	0	3.091	1.77E+01	5.18	2.59	0.04	0.67
1.66	0	2.726	2.06E+01	5.88	2.94	0.05	0.72
1.88	0	2.433	2.35E+01	6.59	3.29	0.05	0.77
2.1	0	2.193	2.65E+01	7.31	3.65	0.05	0.81
2.32	0	1.993	2.94E+01	8.04	4.02	0.05	0.86
2.76	0	1.683	3.54E+01	9.54	4.77	0.06	0.94
3.2	0	1.451	4.14E+01	11.09	5.54	0.06	1.02
3.64	0	1.271	4.75E+01	12.66	6.33	0.07	1.1

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4.07	0	1.128	5.36E+01	14.27	7.13	0.07	1.17
4.51	0	1.012	5.98E+01	15.9	7.95	0.07	1.24
4.95	0	0.916	6.59E+01	17.56	8.78	0.08	1.31
5.39	0	0.835	7.21E+01	19.25	9.62	0.08	1.38
5.83	0	0.767	7.82E+01	20.96	10.48	0.08	1.44
6.27	0	0.709	8.44E+01	22.69	11.34	0.09	1.5
6.71	0	0.658	9.06E+01	24.43	12.22	0.09	1.56
7.14	0	0.614	9.68E+01	26.2	13.1	0.09	1.62
7.58	0	0.574	1.03E+02	27.98	13.99	0.1	1.68
8.02	0	0.54	1.09E+02	29.78	14.89	0.1	1.74
8.46	0	0.509	1.15E+02	31.6	15.8	0.1	1.8
8.9	0	0.481	1.22E+02	33.43	16.71	0.1	1.85
9.34	0	0.456	1.28E+02	35.27	17.64	0.11	1.9
9.78	0	0.433	1.34E+02	37.13	18.56	0.11	1.96
10.22	0	0.412	1.40E+02	38.99	19.5	0.11	2.01
10.65	0	0.393	1.47E+02	40.87	20.44	0.11	2.06
11.09	0	0.376	1.53E+02	42.76	21.38	0.12	2.11
11.53	0	0.36	1.59E+02	44.67	22.33	0.12	2.16
11.97	0	0.345	1.65E+02	46.58	23.29	0.12	2.21
12.41	0	0.331	1.72E+02	48.5	24.25	0.12	2.26
12.85	0	0.319	1.78E+02	50.43	25.22	0.13	2.31
13.29	0	0.307	1.84E+02	52.37	26.19	0.13	2.35
13.72	0	0.296	1.90E+02	54.32	27.16	0.13	2.4
14.16	0	0.285	1.97E+02	56.28	28.14	0.13	2.45
14.6	0	0.276	2.03E+02	58.25	29.13	0.13	2.49
15.04	0	0.267	2.09E+02	60.23	30.11	0.14	2.54
15.48	0	0.258	2.15E+02	62.21	31.11	0.14	2.58
15.92	0	0.25	2.22E+02	64.2	32.1	0.14	2.63
16.36	0	0.243	2.28E+02	66.2	33.1	0.14	2.67
16.79	0	0.235	2.34E+02	68.21	34.11	0.14	2.71
17.23	0	0.229	2.41E+02	70.22	35.11	0.15	2.76
17.67	0	0.222	2.47E+02	72.25	36.12	0.15	2.8
18.11	0	0.216	2.53E+02	74.27	37.14	0.15	2.84
18.55	0	0.21	2.59E+02	76.31	38.15	0.15	2.88
18.99	0	0.205	2.66E+02	78.35	39.18	0.15	2.92
19.43	0	0.2	2.72E+02	80.4	40.2	0.16	2.96
19.86	0	0.195	2.78E+02	82.45	41.23	0.16	3.01
20.3	0	0.19	2.84E+02	84.51	42.26	0.16	3.05
20.74	0	0.185	2.91E+02	86.58	43.29	0.16	3.09
21.18	0	0.181	2.97E+02	88.65	44.33	0.16	3.13
21.62	0	0.177	3.03E+02	90.73	45.37	0.16	3.16
22.06	0	0.173	3.09E+02	92.82	46.41	0.17	3.2
22.5	0	0.169	3.16E+02	94.91	47.45	0.17	3.24
22.93	0	0.165	3.22E+02	97	48.5	0.17	3.28
23.37	0	0.162	3.28E+02	99.11	49.55	0.17	3.32
23.81	0	0.159	3.35E+02	101.21	50.61	0.17	3.36
24.25	0	0.155	3.41E+02	103.32	51.66	0.17	3.39
24.69	0	0.152	3.47E+02	105.44	52.72	0.18	3.43
25.13	0	0.149	3.53E+02	107.56	53.78	0.18	3.47
25.57	0	0.146	3.60E+02	109.69	54.85	0.18	3.51

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26	0	0.144	3.66E+02	111.82	55.91	0.18	3.54
26.44	0	0.141	3.72E+02	113.96	56.98	0.18	3.58
26.88	0	0.138	3.78E+02	116.1	58.05	0.18	3.62
27.32	0	0.136	3.85E+02	118.25	59.12	0.19	3.65
27.76	0	0.133	3.91E+02	120.4	60.2	0.19	3.69
28.2	0	0.131	3.97E+02	122.55	61.28	0.19	3.72
28.64	0	0.129	4.04E+02	124.71	62.36	0.19	3.76
29.07	0	0.126	4.10E+02	126.88	63.44	0.19	3.79
29.51	0	0.124	4.16E+02	129.05	64.52	0.19	3.83
29.95	0	0.122	4.22E+02	131.22	65.61	0.2	3.86
30.39	0	0.12	4.29E+02	133.4	66.7	0.2	3.9
30.83	0	0.118	4.35E+02	135.58	67.79	0.2	3.93
31.27	0	0.116	4.41E+02	137.76	68.88	0.2	3.97
31.71	0	0.115	4.47E+02	139.95	69.98	0.2	4
32.14	0	0.113	4.54E+02	142.14	71.07	0.2	4.03
32.58	0	0.111	4.60E+02	144.34	72.17	0.2	4.07
33.02	0	0.109	4.66E+02	146.54	73.27	0.21	4.1
33.46	0	0.108	4.73E+02	148.75	74.37	0.21	4.13
33.9	0	0.106	4.79E+02	150.96	75.48	0.21	4.17
34.34	0	0.105	4.85E+02	153.17	76.58	0.21	4.2
34.78	0	0.103	4.91E+02	155.38	77.69	0.21	4.23
35.21	0	0.102	4.98E+02	157.6	78.8	0.21	4.27
35.65	0	0.1	5.04E+02	159.83	79.91	0.21	4.3
36.09	0	0.099	5.10E+02	162.05	81.03	0.21	4.33
36.53	0	0.098	5.17E+02	164.28	82.14	0.22	4.36
36.97	0	0.096	5.23E+02	166.52	83.26	0.22	4.4
37.41	0	0.095	5.29E+02	168.75	84.38	0.22	4.43
37.85	0	0.094	5.35E+02	170.99	85.5	0.22	4.46
38.28	0	0.093	5.42E+02	173.24	86.62	0.22	4.49
38.72	0	0.091	5.48E+02	175.49	87.74	0.22	4.52
39.16	0	0.09	5.54E+02	177.74	88.87	0.22	4.55
39.6	0	0.089	5.60E+02	179.99	89.99	0.23	4.59
40.04	0	0.088	5.67E+02	182.25	91.12	0.23	4.62
40.48	0	0.087	5.73E+02	184.51	92.25	0.23	4.65
40.92	0	0.086	5.79E+02	186.77	93.38	0.23	4.68
41.35	0	0.085	5.86E+02	189.04	94.52	0.23	4.71
41.79	0	0.084	5.92E+02	191.31	95.65	0.23	4.74
42.23	0	0.083	5.98E+02	193.58	96.79	0.23	4.77
42.67	0	0.082	6.04E+02	195.85	97.93	0.23	4.8
43.11	0	0.081	6.11E+02	198.13	99.07	0.24	4.83
43.55	0	0.08	6.17E+02	200.41	100.21	0.24	4.86
43.99	0	0.079	6.23E+02	202.7	101.35	0.24	4.89
44.42	0	0.078	6.30E+02	204.98	102.49	0.24	4.92
44.86	0	0.077	6.36E+02	207.28	103.64	0.24	4.95
45.3	0	0.076	6.42E+02	209.57	104.78	0.24	4.98
45.74	0	0.076	6.48E+02	211.86	105.93	0.24	5.01
46.18	0	0.075	6.55E+02	214.16	107.08	0.24	5.04
46.62	0	0.074	6.61E+02	216.46	108.23	0.25	5.07
47.06	0	0.073	6.67E+02	218.77	109.38	0.25	5.1
47.49	0	0.072	6.73E+02	221.08	110.54	0.25	5.13

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47.93	0	0.072	6.80E+02	223.38	111.69	0.25	5.16
48.37	0	0.071	6.86E+02	225.7	112.85	0.25	5.19
48.81	0	0.07	6.92E+02	228.01	114.01	0.25	5.21
49.25	0	0.07	6.99E+02	230.33	115.16	0.25	5.24
49.69	0	0.069	7.05E+02	232.65	116.32	0.25	5.27
50.13	0	0.068	7.11E+02	234.97	117.49	0.25	5.3
50.57	0	0.068	7.17E+02	237.3	118.65	0.26	5.33
51	0	0.067	7.24E+02	239.63	119.81	0.26	5.36
51.44	0	0.066	7.30E+02	241.96	120.98	0.26	5.39
51.88	0	0.066	7.36E+02	244.29	122.14	0.26	5.41
52.32	0	0.065	7.43E+02	246.62	123.31	0.26	5.44
52.76	0	0.064	7.49E+02	248.96	124.48	0.26	5.47
53.2	0	0.064	7.55E+02	251.3	125.65	0.26	5.5
53.64	0	0.063	7.61E+02	253.64	126.82	0.26	5.53
54.07	0	0.063	7.68E+02	255.99	127.99	0.26	5.55
54.51	0	0.062	7.74E+02	258.34	129.17	0.27	5.58
54.95	0	0.061	7.80E+02	260.69	130.34	0.27	5.61
55.39	0	0.061	7.86E+02	263.04	131.52	0.27	5.64
55.83	0	0.06	7.93E+02	265.39	132.7	0.27	5.66
56.27	0	0.06	7.99E+02	267.75	133.88	0.27	5.69
56.71	0	0.059	8.05E+02	270.11	135.06	0.27	5.72
57.14	0	0.059	8.12E+02	272.47	136.24	0.27	5.75
57.58	0	0.058	8.18E+02	274.84	137.42	0.27	5.77
58.02	0	0.058	8.24E+02	277.2	138.6	0.27	5.8
58.46	0	0.057	8.30E+02	279.57	139.78	0.28	5.83
58.9	0	0.057	8.37E+02	281.94	140.97	0.28	5.85
59.34	0	0.056	8.43E+02	284.31	142.16	0.28	5.88
59.78	0	0.056	8.49E+02	286.69	143.34	0.28	5.91
60.21	0	0.055	8.56E+02	289.06	144.53	0.28	5.93
60.65	0	0.055	8.62E+02	291.44	145.72	0.28	5.96
61.09	0	0.055	8.68E+02	293.83	146.91	0.28	5.99
61.53	0	0.054	8.74E+02	296.21	148.1	0.28	6.01
61.97	0	0.054	8.81E+02	298.59	149.3	0.28	6.04
62.41	0	0.053	8.87E+02	300.98	150.49	0.28	6.07
62.85	0	0.053	8.93E+02	303.37	151.69	0.29	6.09
63.28	0	0.052	8.99E+02	305.76	152.88	0.29	6.12
63.72	0	0.052	9.06E+02	308.16	154.08	0.29	6.14
64.16	0	0.052	9.12E+02	310.55	155.28	0.29	6.17
64.6	0	0.051	9.18E+02	312.95	156.48	0.29	6.2
65.04	0	0.051	9.25E+02	315.35	157.68	0.29	6.22
65.48	0	0.05	9.31E+02	317.75	158.88	0.29	6.25
65.92	0	0.05	9.37E+02	320.16	160.08	0.29	6.27
66.35	0	0.05	9.43E+02	322.56	161.28	0.29	6.3
66.79	0	0.049	9.50E+02	324.97	162.49	0.3	6.32
67.23	0	0.049	9.56E+02	327.38	163.69	0.3	6.35
67.67	0	0.049	9.62E+02	329.79	164.9	0.3	6.38
68.11	0	0.048	9.69E+02	332.21	166.1	0.3	6.4
68.55	0	0.048	9.75E+02	334.62	167.31	0.3	6.43
68.99	0	0.047	9.81E+02	337.04	168.52	0.3	6.45
69.42	0	0.047	9.87E+02	339.46	169.73	0.3	6.48

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69.86	0	0.047	9.94E+02	341.88	170.94	0.3	6.5
70.3	0	0.046	1.00E+03	344.3	172.15	0.3	6.53
70.74	0	0.046	1.01E+03	346.73	173.36	0.3	6.55
71.18	0	0.046	1.01E+03	349.16	174.58	0.3	6.58
71.62	0	0.046	1.02E+03	351.59	175.79	0.31	6.6
72.06	0	0.045	1.03E+03	354.02	177.01	0.31	6.63
72.49	0	0.045	1.03E+03	356.45	178.22	0.31	6.65
72.93	0	0.045	1.04E+03	358.88	179.44	0.31	6.68
73.37	0	0.044	1.04E+03	361.32	180.66	0.31	6.7
73.81	0	0.044	1.05E+03	363.76	181.88	0.31	6.73
74.25	0	0.044	1.06E+03	366.2	183.1	0.31	6.75
74.69	0	0.043	1.06E+03	368.64	184.32	0.31	6.77
75.13	0	0.043	1.07E+03	371.08	185.54	0.31	6.8
75.56	0	0.043	1.08E+03	373.53	186.76	0.31	6.82
76	0	0.043	1.08E+03	375.97	187.99	0.32	6.85
76.44	0	0.042	1.09E+03	378.42	189.21	0.32	6.87
76.88	0	0.042	1.09E+03	380.87	190.44	0.32	6.9
77.32	0	0.042	1.10E+03	383.32	191.66	0.32	6.92
77.76	0	0.041	1.11E+03	385.78	192.89	0.32	6.95
78.2	0	0.041	1.11E+03	388.23	194.12	0.32	6.97
78.63	0	0.041	1.12E+03	390.69	195.35	0.32	6.99
79.07	0	0.041	1.13E+03	393.15	196.57	0.32	7.02
79.51	0	0.04	1.13E+03	395.61	197.8	0.32	7.04
79.95	0	0.04	1.14E+03	398.07	199.04	0.32	7.07
80.39	0	0.04	1.14E+03	400.54	200.27	0.32	7.09

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A T R E 1 : E M case A P # S E OF R E A X T C U E R

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.4	1.00E+01
0.8	3.68E+00
1.2	2.01E+00
1.6	1.29E+00
2	8.73E-01
2.4	6.49E-01
2.81	4.89E-01
3.21	3.83E-01
3.61	3.01E-01
4.01	2.45E-01
4.41	1.97E-01
4.81	1.60E-01
5.21	1.32E-01
5.61	1.07E-01
6.01	8.89E-02
6.41	7.27E-02
6.81	5.88E-02
7.21	4.64E-02
7.61	3.47E-02
8.02	1.60E-02

(DEG. C) AREA (SQ. M)

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Table G.2: Visual Plumes Model Output Data for Main Deck at Maximum Currents

PDSWIN FLOATING WARM WATER JETS -- June 1999PAGE 1
1 : case #

AMBIENT CONDITIONS : TEMP. TA= 4 DEG. C
HEAT CONVECTION = 2 ,; VEL. 0.25 M/S

DISCHARGE CONDITIONS : TEMP. = 12 C;
DEPTH = 0.09 M. ; WIDTH = 0.09 M.
ANGLE 0 DEG ; DISCHARGE RATE = 0 CU-M/S
DISCHARGE DENSIMENTRIC FROUDE NO. = 2

X(M.)	Y(M.)	EX.TEMP (DEG. C)	TIME (SEC.)	Q/Q0 (DILU.)	QM/Q0	DEPTH (M.)	WIDTH (M.)
0.37	0	8.016	4.32E+00	2	1	0.02	0.27
0.38	0	7.85	4.39E+00	2.04	1.02	0.02	0.27
0.39	0	7.691	4.46E+00	2.08	1.04	0.02	0.27
0.39	0	7.538	4.53E+00	2.13	1.06	0.02	0.27
0.4	0	7.392	4.60E+00	2.17	1.08	0.02	0.27
0.41	0	7.252	4.66E+00	2.21	1.11	0.02	0.27
0.42	0	7.118	4.73E+00	2.25	1.13	0.02	0.27
0.43	0	6.865	4.85E+00	2.34	1.17	0.02	0.27
0.44	0	6.633	4.97E+00	2.42	1.21	0.02	0.28
0.46	0	6.417	5.08E+00	2.5	1.25	0.02	0.28
0.47	0	6.218	5.19E+00	2.58	1.29	0.02	0.28
0.5	0	5.86	5.40E+00	2.74	1.37	0.02	0.28
0.52	0	5.547	5.60E+00	2.89	1.44	0.02	0.29
0.55	0	5.272	5.79E+00	3.04	1.52	0.02	0.29
0.58	0	5.028	5.98E+00	3.19	1.59	0.02	0.29
0.61	0	4.81	6.16E+00	3.33	1.67	0.02	0.3
0.63	0	4.613	6.33E+00	3.48	1.74	0.02	0.3
0.66	0	4.435	6.50E+00	3.61	1.81	0.02	0.3
0.69	0	4.272	6.67E+00	3.75	1.88	0.02	0.3
0.74	0	3.987	6.99E+00	4.02	2.01	0.02	0.31
0.8	0	3.744	7.31E+00	4.28	2.14	0.03	0.32
0.85	0	3.534	7.62E+00	4.54	2.27	0.03	0.32
0.91	0	3.35	7.92E+00	4.79	2.39	0.03	0.33
1.02	0	3.043	8.51E+00	5.27	2.63	0.03	0.34
1.13	0	2.795	9.08E+00	5.74	2.87	0.03	0.35

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1.24	0	2.59	9.64E+00	6.19	3.1	0.03	0.36
1.35	0	2.417	1.02E+01	6.64	3.32	0.03	0.37
1.57	0	2.142	1.13E+01	7.5	3.75	0.03	0.38
1.79	0	1.928	1.23E+01	8.34	4.17	0.04	0.4
2.01	0	1.757	1.33E+01	9.16	4.58	0.04	0.42
2.22	0	1.615	1.43E+01	9.96	4.98	0.04	0.43
2.44	0	1.495	1.53E+01	10.75	5.38	0.04	0.45
2.66	0	1.394	1.63E+01	11.54	5.77	0.04	0.47
3.1	0	1.231	1.83E+01	13.09	6.55	0.04	0.49
3.54	0	1.103	2.02E+01	14.63	7.31	0.05	0.52
3.98	0	0.999	2.21E+01	16.15	8.07	0.05	0.55
4.42	0	0.913	2.40E+01	17.67	8.83	0.05	0.57
4.86	0	0.841	2.59E+01	19.18	9.59	0.05	0.6
5.29	0	0.779	2.78E+01	20.7	10.35	0.06	0.62
5.73	0	0.726	2.97E+01	22.21	11.11	0.06	0.65
6.17	0	0.68	3.15E+01	23.73	11.86	0.06	0.67
6.61	0	0.639	3.34E+01	25.25	12.62	0.06	0.69
7.05	0	0.602	3.52E+01	26.77	13.38	0.06	0.71
7.49	0	0.57	3.71E+01	28.3	14.15	0.06	0.73
7.93	0	0.541	3.89E+01	29.82	14.91	0.07	0.75
8.36	0	0.514	4.07E+01	31.35	15.68	0.07	0.77
8.8	0	0.49	4.25E+01	32.89	16.44	0.07	0.79
9.24	0	0.468	4.44E+01	34.42	17.21	0.07	0.81
9.68	0	0.448	4.62E+01	35.96	17.98	0.07	0.83
10.12	0	0.43	4.80E+01	37.51	18.75	0.07	0.85
10.56	0	0.413	4.98E+01	39.05	19.53	0.07	0.87
11	0	0.397	5.16E+01	40.6	20.3	0.07	0.88
11.43	0	0.382	5.34E+01	42.15	21.07	0.08	0.9
11.87	0	0.369	5.53E+01	43.7	21.85	0.08	0.92
12.31	0	0.356	5.71E+01	45.25	22.63	0.08	0.94
12.75	0	0.344	5.89E+01	46.81	23.4	0.08	0.95
13.19	0	0.333	6.07E+01	48.37	24.18	0.08	0.97
13.63	0	0.323	6.25E+01	49.93	24.96	0.08	0.99
14.07	0	0.313	6.43E+01	51.49	25.75	0.08	1
14.5	0	0.304	6.61E+01	53.06	26.53	0.08	1.02
14.94	0	0.295	6.79E+01	54.63	27.31	0.09	1.03
15.38	0	0.287	6.97E+01	56.2	28.1	0.09	1.05
15.82	0	0.279	7.15E+01	57.77	28.88	0.09	1.07
16.26	0	0.272	7.33E+01	59.34	29.67	0.09	1.08
16.7	0	0.265	7.50E+01	60.92	30.46	0.09	1.1
17.14	0	0.258	7.68E+01	62.5	31.25	0.09	1.11
17.58	0	0.251	7.86E+01	64.08	32.04	0.09	1.13
18.01	0	0.245	8.04E+01	65.66	32.83	0.09	1.14

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18.45	0	0.24	8.22E+01	67.25	33.62	0.09	1.16
18.89	0	0.234	8.40E+01	68.83	34.42	0.1	1.17
19.33	0	0.229	8.58E+01	70.42	35.21	0.1	1.18
19.77	0	0.224	8.76E+01	72.01	36.01	0.1	1.2
20.21	0	0.219	8.94E+01	73.6	36.8	0.1	1.21
20.65	0	0.214	9.11E+01	75.2	37.6	0.1	1.23
21.08	0	0.21	9.29E+01	76.79	38.4	0.1	1.24
21.52	0	0.206	9.47E+01	78.39	39.2	0.1	1.25
21.96	0	0.201	9.65E+01	79.99	40	0.1	1.27
22.4	0	0.197	9.83E+01	81.59	40.8	0.1	1.28
22.84	0	0.194	1.00E+02	83.2	41.6	0.1	1.3
23.28	0	0.19	1.02E+02	84.8	42.4	0.1	1.31
23.72	0	0.186	1.04E+02	86.41	43.2	0.11	1.32
24.15	0	0.183	1.05E+02	88.02	44.01	0.11	1.33
24.59	0	0.18	1.07E+02	89.63	44.81	0.11	1.35
25.03	0	0.177	1.09E+02	91.24	45.62	0.11	1.36
25.47	0	0.174	1.11E+02	92.85	46.43	0.11	1.37
25.91	0	0.171	1.13E+02	94.47	47.23	0.11	1.39
26.35	0	0.168	1.14E+02	96.08	48.04	0.11	1.4
26.79	0	0.165	1.16E+02	97.7	48.85	0.11	1.41
27.22	0	0.162	1.18E+02	99.32	49.66	0.11	1.42
27.66	0	0.16	1.20E+02	100.94	50.47	0.11	1.44
28.1	0	0.157	1.21E+02	102.57	51.28	0.11	1.45
28.54	0	0.155	1.23E+02	104.19	52.09	0.12	1.46
28.98	0	0.152	1.25E+02	105.82	52.91	0.12	1.47
29.42	0	0.15	1.27E+02	107.44	53.72	0.12	1.49
29.86	0	0.148	1.29E+02	109.07	54.54	0.12	1.5
30.29	0	0.146	1.30E+02	110.7	55.35	0.12	1.51
30.73	0	0.143	1.32E+02	112.33	56.17	0.12	1.52
31.17	0	0.141	1.34E+02	113.97	56.98	0.12	1.53
31.61	0	0.139	1.36E+02	115.6	57.8	0.12	1.55
32.05	0	0.137	1.37E+02	117.24	58.62	0.12	1.56
32.49	0	0.135	1.39E+02	118.88	59.44	0.12	1.57
32.93	0	0.134	1.41E+02	120.52	60.26	0.12	1.58
33.36	0	0.132	1.43E+02	122.16	61.08	0.12	1.59
33.8	0	0.13	1.44E+02	123.8	61.9	0.12	1.6
34.24	0	0.128	1.46E+02	125.44	62.72	0.13	1.62
34.68	0	0.127	1.48E+02	127.09	63.54	0.13	1.63
35.12	0	0.125	1.50E+02	128.73	64.37	0.13	1.64
35.56	0	0.124	1.52E+02	130.38	65.19	0.13	1.65
36	0	0.122	1.53E+02	132.03	66.01	0.13	1.66
36.43	0	0.12	1.55E+02	133.68	66.84	0.13	1.67
36.87	0	0.119	1.57E+02	135.33	67.66	0.13	1.68

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37.31	0	0.118	1.59E+02	136.98	68.49	0.13	1.69
37.75	0	0.116	1.60E+02	138.64	69.32	0.13	1.71
38.19	0	0.115	1.62E+02	140.29	70.15	0.13	1.72
38.63	0	0.113	1.64E+02	141.95	70.97	0.13	1.73
39.07	0	0.112	1.66E+02	143.61	71.8	0.13	1.74
39.5	0	0.111	1.68E+02	145.26	72.63	0.13	1.75
39.94	0	0.11	1.69E+02	146.92	73.46	0.13	1.76
40.38	0	0.108	1.71E+02	148.59	74.29	0.14	1.77
40.82	0	0.107	1.73E+02	150.25	75.12	0.14	1.78
41.26	0	0.106	1.75E+02	151.91	75.96	0.14	1.79
41.7	0	0.105	1.76E+02	153.58	76.79	0.14	1.8
42.14	0	0.104	1.78E+02	155.24	77.62	0.14	1.81
42.57	0	0.103	1.80E+02	156.91	78.46	0.14	1.82
43.01	0	0.102	1.82E+02	158.58	79.29	0.14	1.83
43.45	0	0.1	1.83E+02	160.25	80.12	0.14	1.85
43.89	0	0.099	1.85E+02	161.92	80.96	0.14	1.86
44.33	0	0.098	1.87E+02	163.59	81.8	0.14	1.87
44.77	0	0.097	1.89E+02	165.27	82.63	0.14	1.88
45.21	0	0.096	1.91E+02	166.94	83.47	0.14	1.89
45.64	0	0.095	1.92E+02	168.62	84.31	0.14	1.9
46.08	0	0.095	1.94E+02	170.29	85.15	0.14	1.91
46.52	0	0.094	1.96E+02	171.97	85.98	0.14	1.92
46.96	0	0.093	1.98E+02	173.65	86.82	0.15	1.93
47.4	0	0.092	1.99E+02	175.33	87.66	0.15	1.94
47.84	0	0.091	2.01E+02	177.01	88.5	0.15	1.95
48.28	0	0.09	2.03E+02	178.69	89.35	0.15	1.96
48.71	0	0.089	2.05E+02	180.38	90.19	0.15	1.97
49.15	0	0.088	2.06E+02	182.06	91.03	0.15	1.98
49.59	0	0.088	2.08E+02	183.74	91.87	0.15	1.99
50.03	0	0.087	2.10E+02	185.43	92.72	0.15	2
50.47	0	0.086	2.12E+02	187.12	93.56	0.15	2.01
50.91	0	0.085	2.13E+02	188.81	94.4	0.15	2.02
51.35	0	0.085	2.15E+02	190.5	95.25	0.15	2.03
51.78	0	0.084	2.17E+02	192.19	96.09	0.15	2.04
52.22	0	0.083	2.19E+02	193.88	96.94	0.15	2.05
52.66	0	0.082	2.21E+02	195.57	97.79	0.15	2.06
53.1	0	0.082	2.22E+02	197.27	98.63	0.15	2.07
53.54	0	0.081	2.24E+02	198.96	99.48	0.15	2.08
53.98	0	0.08	2.26E+02	200.66	100.33	0.16	2.09
54.42	0	0.08	2.28E+02	202.35	101.18	0.16	2.09
54.85	0	0.079	2.29E+02	204.05	102.03	0.16	2.1
55.29	0	0.078	2.31E+02	205.75	102.87	0.16	2.11
55.73	0	0.078	2.33E+02	207.45	103.72	0.16	2.12

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56.17	0	0.077	2.35E+02	209.15	104.57	0.16	2.13
56.61	0	0.076	2.36E+02	210.85	105.43	0.16	2.14
57.05	0	0.076	2.38E+02	212.55	106.28	0.16	2.15
57.49	0	0.075	2.40E+02	214.26	107.13	0.16	2.16
57.93	0	0.075	2.42E+02	215.96	107.98	0.16	2.17
58.36	0	0.074	2.44E+02	217.67	108.83	0.16	2.18
58.8	0	0.073	2.45E+02	219.37	109.69	0.16	2.19
59.24	0	0.073	2.47E+02	221.08	110.54	0.16	2.2
59.68	0	0.072	2.49E+02	222.79	111.39	0.16	2.21
60.12	0	0.072	2.51E+02	224.5	112.25	0.16	2.22
60.56	0	0.071	2.52E+02	226.21	113.1	0.16	2.23
61	0	0.071	2.54E+02	227.92	113.96	0.16	2.24
61.43	0	0.07	2.56E+02	229.63	114.82	0.16	2.24
61.87	0	0.07	2.58E+02	231.34	115.67	0.17	2.25
62.31	0	0.069	2.59E+02	233.06	116.53	0.17	2.26
62.75	0	0.069	2.61E+02	234.77	117.39	0.17	2.27
63.19	0	0.068	2.63E+02	236.49	118.24	0.17	2.28
63.63	0	0.068	2.65E+02	238.2	119.1	0.17	2.29
64.07	0	0.067	2.66E+02	239.92	119.96	0.17	2.3
64.5	0	0.067	2.68E+02	241.64	120.82	0.17	2.31
64.94	0	0.066	2.70E+02	243.36	121.68	0.17	2.32
65.38	0	0.066	2.72E+02	245.08	122.54	0.17	2.33
65.82	0	0.065	2.73E+02	246.8	123.4	0.17	2.33
66.26	0	0.065	2.75E+02	248.52	124.26	0.17	2.34
66.7	0	0.064	2.77E+02	250.24	125.12	0.17	2.35
67.14	0	0.064	2.79E+02	251.97	125.98	0.17	2.36
67.57	0	0.063	2.81E+02	253.69	126.85	0.17	2.37
68.01	0	0.063	2.82E+02	255.42	127.71	0.17	2.38
68.45	0	0.063	2.84E+02	257.14	128.57	0.17	2.39
68.89	0	0.062	2.86E+02	258.87	129.44	0.17	2.4
69.33	0	0.062	2.88E+02	260.6	130.3	0.17	2.4
69.77	0	0.061	2.89E+02	262.33	131.16	0.18	2.41
70.21	0	0.061	2.91E+02	264.06	132.03	0.18	2.42
70.64	0	0.061	2.93E+02	265.79	132.89	0.18	2.43
71.08	0	0.06	2.95E+02	267.52	133.76	0.18	2.44
71.52	0	0.06	2.96E+02	269.25	134.62	0.18	2.45
71.96	0	0.059	2.98E+02	270.98	135.49	0.18	2.46
72.4	0	0.059	3.00E+02	272.71	136.36	0.18	2.47
72.84	0	0.059	3.02E+02	274.45	137.22	0.18	2.47
73.28	0	0.058	3.03E+02	276.18	138.09	0.18	2.48
73.71	0	0.058	3.05E+02	277.92	138.96	0.18	2.49
74.15	0	0.058	3.07E+02	279.66	139.83	0.18	2.5
74.59	0	0.057	3.09E+02	281.39	140.7	0.18	2.51

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75.03	0	0.057	3.11E+02	283.13	141.57	0.18	2.52
75.47	0	0.056	3.12E+02	284.87	142.44	0.18	2.52
75.91	0	0.056	3.14E+02	286.61	143.31	0.18	2.53
76.35	0	0.056	3.16E+02	288.35	144.18	0.18	2.54
76.78	0	0.055	3.18E+02	290.09	145.05	0.18	2.55
77.22	0	0.055	3.19E+02	291.84	145.92	0.18	2.56
77.66	0	0.055	3.21E+02	293.58	146.79	0.18	2.57
78.1	0	0.054	3.23E+02	295.32	147.66	0.18	2.57
78.54	0	0.054	3.25E+02	297.07	148.53	0.19	2.58
78.98	0	0.054	3.26E+02	298.81	149.41	0.19	2.59
79.42	0	0.054	3.28E+02	300.56	150.28	0.19	2.6
79.85	0	0.053	3.30E+02	302.3	151.15	0.19	2.61
80.29	0	0.053	3.32E+02	304.05	152.03	0.19	2.62
80.73	0	0.053	3.33E+02	305.8	152.9	0.19	2.62
81.17	0	0.052	3.35E+02	307.55	153.77	0.19	2.63
81.61	0	0.052	3.37E+02	309.3	154.65	0.19	2.64
82.05	0	0.052	3.39E+02	311.05	155.52	0.19	2.65
82.49	0	0.051	3.40E+02	312.8	156.4	0.19	2.66
82.92	0	0.051	3.42E+02	314.55	157.28	0.19	2.66
83.36	0	0.051	3.44E+02	316.31	158.15	0.19	2.67
83.8	0	0.051	3.46E+02	318.06	159.03	0.19	2.68
84.24	0	0.05	3.48E+02	319.81	159.91	0.19	2.69
84.68	0	0.05	3.49E+02	321.57	160.78	0.19	2.7
85.12	0	0.05	3.51E+02	323.32	161.66	0.19	2.71
85.56	0	0.049	3.53E+02	325.08	162.54	0.19	2.71
85.99	0	0.049	3.55E+02	326.84	163.42	0.19	2.72
86.43	0	0.049	3.56E+02	328.59	164.3	0.19	2.73
86.87	0	0.049	3.58E+02	330.35	165.18	0.19	2.74
87.31	0	0.048	3.60E+02	332.11	166.06	0.19	2.75
87.75	0	0.048	3.62E+02	333.87	166.94	0.2	2.75
88.19	0	0.048	3.63E+02	335.63	167.82	0.2	2.76
88.63	0	0.048	3.65E+02	337.39	168.7	0.2	2.77
89.06	0	0.047	3.67E+02	339.16	169.58	0.2	2.78
89.5	0	0.047	3.69E+02	340.92	170.46	0.2	2.78
89.94	0	0.047	3.70E+02	342.68	171.34	0.2	2.79
90.38	0	0.047	3.72E+02	344.44	172.22	0.2	2.8
90.82	0	0.046	3.74E+02	346.21	173.1	0.2	2.81
91.26	0	0.046	3.76E+02	347.97	173.99	0.2	2.82
91.7	0	0.046	3.77E+02	349.74	174.87	0.2	2.82
92.13	0	0.046	3.79E+02	351.51	175.75	0.2	2.83
92.57	0	0.046	3.81E+02	353.28	176.64	0.2	2.84
93.01	0	0.045	3.83E+02	355.04	177.52	0.2	2.85
93.45	0	0.045	3.85E+02	356.81	178.41	0.2	2.86

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93.89	0	0.045	3.86E+02	358.58	179.29	0.2	2.86
94.33	0	0.045	3.88E+02	360.35	180.18	0.2	2.87
94.77	0	0.044	3.90E+02	362.12	181.06	0.2	2.88
95.2	0	0.044	3.92E+02	363.89	181.95	0.2	2.89
95.64	0	0.044	3.93E+02	365.67	182.83	0.2	2.89
96.08	0	0.044	3.95E+02	367.44	183.72	0.2	2.9
96.52	0	0.044	3.97E+02	369.21	184.61	0.2	2.91
96.96	0	0.043	3.99E+02	370.99	185.49	0.2	2.92
97.4	0	0.043	4.00E+02	372.76	186.38	0.21	2.92
97.84	0	0.043	4.02E+02	374.54	187.27	0.21	2.93
98.28	0	0.043	4.04E+02	376.31	188.16	0.21	2.94
98.71	0	0.043	4.06E+02	378.09	189.04	0.21	2.95
99.15	0	0.042	4.07E+02	379.87	189.93	0.21	2.95
99.59	0	0.042	4.09E+02	381.64	190.82	0.21	2.96
100.03	0	0.042	4.11E+02	383.42	191.71	0.21	2.97
100.47	0	0.042	4.13E+02	385.2	192.6	0.21	2.98
100.91	0	0.042	4.14E+02	386.98	193.49	0.21	2.98
101.35	0	0.041	4.16E+02	388.76	194.38	0.21	2.99
101.78	0	0.041	4.18E+02	390.54	195.27	0.21	3
102.22	0	0.041	4.20E+02	392.32	196.16	0.21	3.01
102.66	0	0.041	4.21E+02	394.11	197.05	0.21	3.01
103.1	0	0.041	4.23E+02	395.89	197.94	0.21	3.02
103.54	0	0.04	4.25E+02	397.67	198.84	0.21	3.03
103.98	0	0.04	4.27E+02	399.46	199.73	0.21	3.04
104.42	0	0.04	4.29E+02	401.24	200.62	0.21	3.04
104.85	0	0.04	4.30E+02	403.03	201.51	0.21	3.05

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A R E A S OF
E X C E S S
TEMPERATURE

EXC. TEMP. (DEG. C)	AREA (SQ. M)
0.4	4.67E+00
0.8	1.57E+00
1.2	8.14E-01
1.6	5.01E-01
2	3.46E-01
2.4	2.57E-01
2.81	1.96E-01
3.21	1.60E-01
3.61	1.31E-01
4.01	1.09E-01
4.41	9.35E-02
4.81	8.02E-02
5.21	7.00E-02
5.61	6.08E-02
6.01	5.34E-02
6.41	4.64E-02
6.81	4.03E-02
7.21	3.43E-02
7.61	2.80E-02
8.02	1.60E-02

(DEG. C) AREA (SQ. M)

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