

**BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

)	
In the Matter of:)	
)	
Tennessee Valley Authority)	
Paradise Fossil Plant)	
Title V Operating Permit)	Petition No. V-09_____
V-07-018)	
)	
Issued by the Kentucky Environmental)	
and Public Protection Cabinet)	
)	

**SIERRA CLUB’S PETITION TO HAVE THE ADMINISTRATOR OBJECT TO
THE TENNESSEE VALLEY AUTHORITY’S PARADISE FOSSIL PLANT’S
TITLE V PERMIT AND/OR TO REOPEN FOR CAUSE**

I. INTRODUCTION

Pursuant to Section 505(b)(2) of the Clean Air Act, 42 U.S.C. § 7661d(b)(2), Sierra Club petitions the Administrator of the U.S. Environmental Protection Agency (“the Administrator” or “EPA”) to object to the Title V operating permit issued by the Kentucky Environmental and Public Protection Cabinet, Department for Environmental Protection, Division for Air Quality (Kentucky DAQ), for the Tennessee Valley Authority Paradise Fossil Plant (“TVA Paradise” or “Paradise”).

The Administrator is required to object to the TVA Paradise permit because, as demonstrated below, the content of the permit does not meet (1) requirements found in the Clean Air Act, (2) requirements found in the federal operating permit regulations, and (3) requirements found in the Commonwealth of Kentucky’s State Implementation Plan (“SIP”).

In the alternative, Sierra Club petitions the Administrator to find that cause exists to terminate, modify, or revoke and reissue the Paradise Plant permit pursuant to 42 U.S.C. § 7661d(e) and 40 C.F.R. §§ 70.7(f), (g) and 70.8(g). Termination, modification or revocation is required because the revised Statement of Basis by Kentucky DAQ does not satisfy the Administrator’s July 13, 2009, as required by 40 C.F.R. §§ 70.7(g)(5) and 70.8(g), because KDAQ improperly applied the law as set forth herein. Furthermore, reopening for cause is required pursuant to 40 C.F.R. § 70.7(f)(iii) because “the permit contains a material mistake [and] inaccurate statements were made in establishing the

emissions standards or other terms or conditions of the permit,” and pursuant to 40 C.F.R. § 70.7(f)(iv) “to assure compliance with the applicable requirements,” as set forth herein.

Sierra Club is a non-stock, non-profit environmental organization, formed in 1892 to enhance and improve the environment of the United States, including Kentucky. Sierra Club members live, work, and recreate in the air shed that is impacted by air pollution emissions from the TVA-Paradise power plant, and use surface waters that are impacted by mercury and other pollutants emitted from the plant.

PREVIOUS PROCEEDINGS

This is at least the third time the permit for the TVA Paradise plant has been before the EPA in recent years. Kentucky DAQ¹ published notice for public comment on a draft Title V operating permit for TVA Paradise on August 18, 2004. Kentucky then issued the final Title V permit on December 29, 2004. *See* <http://www.air.ky.gov/permitting/Tennessee+Valley+Authority.htm>. A little over a week after issuing the final permit, on January 7, 2005, Kentucky DAQ issued the proposed permit to EPA; the opposite of the appropriate order of proceeding under 40 CFR § 70.7(a)(v). EPA objected to the TVA Paradise Title V permit on February 18, 2005, during its 45 day review period, to the based on two grounds:

1. The permit was deficient because it failed to include operations limitations (heat input limits) from State Operating Permits 0-87-012 and 0-86-75, in violation of 40 C.F.R. § 70.6(a)(1).
2. Failure to include periodic monitoring for lime storage silos and handling systems to ensure compliance with the maximum hourly throughput limits in violation of 40 C.F.R. § 70.6(a)(3)(B).

See Letter from Beverly H. Banister, Director, Air, Pesticides and Toxics Management Division, USEPA Region 4, to John S. Lyons, Director, Department of Environmental Protection (February 18, 2005); attached as Exhibit 1.

On April 9, 2007, TVA submitted an updated application purportedly addressing EPA’s February, 2005, objection. TVA requested on June 23, 2006, that the original permit for Paradise, which had been issued despite EPA’s objection, be withdrawn. DAQ subsequently issued a new draft permit. On July 31, 2007, members of the public again submitted comments. Various members of the public, the Center for Biological Diversity and the Sierra Club petitioned EPA for an objection to the August, 2007 permit. *See* http://www.epa.gov/region07/programs/artd/air/title5/petitiondb/petitions/tva_paradise_petition2007.pdf.

¹ The EPA granted final approval of the Kentucky Title V operating permit program on October 31, 2001. *See* 66 Fed. Reg. 54,953 (Oct. 31, 2001). The Division of Air Quality of the Kentucky Environmental and Public Protection Cabinet (“Kentucky DAQ”) is the agency responsible for issuing Title V operating permits in Kentucky. 401 KAR 52:020.

EPA responded and granted the petition, in part, and denied the petition in part on July 13, 2009. *See*

http://www.epa.gov/region07/programs/artd/air/title5/petitiondb/petitions/tva_paradise_petition2007.pdf.

Among the reasons for the EPA Administrator's objection was as follow:

On July 31, 2007, Petitioners provided KDAQ with detailed comments on the TVA Paradise permit revision alleging that PSD was an applicable requirement for Units 1-3 due to major modifications performed at those units that resulted in significant net emissions increases for NO_x. Petitioners' Exhibit 6 at 1-3. Petitioners provide supporting information regarding the specific modifications, citing primarily to *In Re Tennessee Valley Authority*, 9 E.A.D. 357, EAB 2000, "Final Order on Reconsideration" and the substantial record developed as part of that matter. In the July 31, 2007, public comment, Petitioners state that a full PSD review should apply for Units 1-3 for NO_x, and Petitioners recommend temporary BACT emission limits for NO_x. In response to these comments, KDAQ stated, "The Division is aware of the current enforcement action against TVA ... To date, there is no judicial determination of the merits of TVA's alleged NSR violations." KDAQ Response to Comments (RTC) at 3-4. KDAQ concludes by stating that, "The U.S. EPA considers this an active enforcement case and is proceeding. Upon settlement or judicial ruling the Division will incorporate those terms and conditions into this permit." *Id* at 4. Petitioners allege not only the substantive concerns raised during the public comment period, but also raise KDAQ's failure to respond to the substance of the public comments.

... KDAQ's response is not adequate because it does not address the substance of the comment. EPA concludes that KDAQ's failure to respond to this significant comment may have resulted in one or more deficiencies in the TVA Paradise renewal permit (where emission limitations were revised for Units 1-3). *See In the Matter of Louisiana Pacific Corporation, Tomahawk, Wisconsin*, Petition No. V-200-6-3 (Order on Petition) (November 5, 2007) at 5-6; *see also In the Matter of CEMEX Inc., Lyons Cement Plant*, Petition No. VIII-2008-01 (Order on Petition) (April 29, 2009) at 9-10; *In the Matter of Midwest Generation, LLC Fisk Generating Station*, Petition No. V -2004-1 (Order on Petition) (March 25, 2005) at 4-5. Further, EPA notes that at the time the permit was issued, EPA had no active enforcement lawsuit pending against TVA for modifications at Plant Paradise.

Therefore, I grant the petition on this issue and order KDAQ to adequately address Petitioners' comment that PSD is an applicable requirement for Units 1-3 as a result of major modifications previously performed that Petitioners allege resulted in significant net increases in NOx. In evaluating Petitioners' comment that PSD is an applicable requirement for Units 1-3, KDAQ is directed to consider the information referenced in Petitioners' comments, including the factual record developed as part of the EPA proceeding against TVA in *In re Tennessee Valley Authority*, 9 E.A.D. 357 (EAB 2000) as it pertains to Plant Paradise, and other appropriate information. Should KDAQ determine that PSD is an applicable requirement for Units 1-3, KDAQ should take action to revise the permit to include a compliance schedule for addressing those requirements.

Id. at 5-6.

On October 26, 2009, KDAQ issued a revised statement of basis (“SOB”) and response to comments which purports to address the public comments regarding application of Prevention of Significant Deterioration and best available control technology to the Paradise Plant. The KDAQ response, which is wrong for a number of reasons as set forth below, provides the following statement:

As indicated in the Administrator’s Order and in the August 15, 2007, Response to Comments, U.S. EPA alleged NSR violations through an Administrative Compliance Order (“ACO”). The Division’s original response to the Petitioners’ comment also refers to the Eleventh Circuit Court of Appeals ruling that EPA must “prove the existence of a CAA violation in district court, including the alleged violation that spurred EPA to issue the ACO in this case.” *Tennessee Valley Authority v. Whitman*, 336 F.3d 1236, 1260 (11th Cir. 2003)...

In the [objection], EPA directed the Division to consider the information referenced in the factual record developed as part of the EPA proceeding against TVA in *In re Tennessee Valley Authority*, 9 E.A.D. 357 (EAB 2000) (herein after “factual record”). The Order did not address whether PSD was an applicable requirement for Paradise Units 1-3, leaving the determination to the Division.

...[T]he Division did review all records received from EPA [from the TVA case before the EAB].

Petitioners' comment above relies solely on the factual record developed in a proceeding that was found to be unconstitutional. Specifically, the Eleventh Circuit found the following procedural defects in the proceedings relied upon in the comment: (1) the ALJ was instructed by the EAB not to make any findings of fact and conclusions of law; (2) discovery was effectively unavailable; (3) testimony was limited at the hearing at the direction of the Administrator; (4) TVA was given little time to prepare a defense; and (5) the EAB and ALJ manufactured the procedures used, ignoring the concept of the rule of law. *Tennessee Valley Authority v. Whitman*, 336 F.3d 1236, 1246 (11th Cir. 2003). Furthermore, through reviewing the factual record, the Division is aware that several issues of law and fact were disputed by TVA. The Division cannot ignore these potential defenses and valid legal questions. Therefore, the Division disagrees with Petitioners' assertion that the Eleventh Circuit decision is not relevant.

After reviewing the factual record, the Division recognizes that there exists a question as to whether the alleged major modifications performed by TVA fell within the definition of "routine maintenance, repair or replacement". The comment above does not acknowledge or address all of the defenses raised by TVA. In reviewing the factual record, the Division determines that the type of modifications made at TVA Units 1-3 were routine maintenance, repair or replacement when industry-wide replacements are considered. Recently, a Kentucky District Court found that whether a repair is routine must be determined on an industry-wide, rather than a facility-wide basis. *U.S. v. East Kentucky Power Co-op.*, 498 F.Supp.2d 976 (E.D. Ky., 2007). According to testimony in the factual record, cyclone replacement had clearly become routine within the industry. For example, pre-filed testimony indicated that data from the Cyclone Users Association "revealed that more than 300 cyclones on more than half of the 26,152 MW of electric capacity powered by cyclone-fired boilers had been replaced...A survey of maintenance practice of other coal-burning electric utility units, representing more than 20% of the total electricity generation capability in the United States, revealed that of a population sample of 219 utility boilers, 174 waterwall replacement projects had been performed." TVA Ex. 4, at 24 (Golden's pre-filed testimony). The Division has no reason to dispute the validity of this testimony; therefore, agrees that the changes

made to TVA Paradise Unit 1-3 were routine maintenance, repair or replacement.

Even if the Division did not agree that the changes to Unit 1-3 were routine, the complexity surrounding the “routine maintenance, repair or replacement” exclusion and other defenses raised by TVA supports the position that deciding whether PSD is an applicable requirement should be determined within the context of an enforcement action. Such an enforcement action would give TVA the opportunity to raise any and all possible defenses. As mentioned previously, the comment above solely relies on the factual record developed in EPA’s enforcement case.

Given the Eleventh Circuit decision, the Division cannot determine that there is a PSD modification solely based on the factual record. It is important to note that the Division has never issued a Notice of Violation (“NOV”) regarding the changes referenced in the comment.

Furthermore, the Division believes that the timing of the replacements is important. The replacements began in 1984 and concluded in 1986. *Wisconsin Elec. Power Co. v. Reilly*, 893 F.2d 901 (7th Cir. 1990) was the first case to address the scope of the exclusion in depth.

Therefore, TVA was without the benefit of clear judicial interpretation. If the Division considered the changes at issue as major modifications and not routine maintenance, repair or replacement, the only appropriate course of action would be to pursue an enforcement proceeding. Given the amount of time that has passed and the fact that U.S. EPA unsuccessfully pursued an enforcement case on these exact alleged violations, the Division has not identified further PSD violations on which to base an enforcement action against TVA.

Based on the Division’s independent review, the changes made to Paradise Units 1-3 were routine maintenance, repair or replacement and did not constitute a major modification.

See http://www.air.ky.gov/NR/rdonlyres/F9879917-03C8-42E6-A6B3-4705963E4F98/0/V07018R1Basis_102609.pdf at pp. 4-5.

DAQ’s Discussion of the Eleventh Circuit Decision Is Irrelevant.

Kentucky DAQ makes gratuitous reference to the Eleventh Circuit case reviewing (or more accurately, refusing to review) the EAB proceeding in *In re Tennessee Valley Authority*, 9 E.A.D. 357 (EAB 2000). It is clear that Kentucky DAQ misses the point of

the Eleventh Circuit's decision in *Tennessee Valley Authority v. Whitman*, 336 F.3d 1236, 1246 (11th Cir. 2003). The Eleventh Circuit's decision did not find that the EAB's findings were wrong, nor that the findings are unconstitutional, as Kentucky DAQ seems to imply.² To the contrary, the Eleventh Circuit refused to address the merits because the court found the EAB proceeding to be non-final and, therefore, not reviewable. The Title V process is, of course, a different proceeding. The EAB proceeding is relevant here in that it collected and analyzed uncontested facts regarding modifications made to the Paradise plant that are relevant in the current Title V process.³ Any discussion by the Eleventh Circuit about the effect of the EAB process on civil and criminal enforcement actions—which is, of course, also not binding as to the Paradise plant located outside of the Eleventh circuit—is simply irrelevant.

The Cyclone Replacement Physical Changes

Paradise's first two coal-fired boilers began operating in 1963, and its third unit came online in 1970. In 1984, as part of an extensive effort to extend the useful lives of its coal-fired power plants, TVA embarked on a series of improvements to its Paradise plant. The work was essentially the same at all three units and included the replacement of all cyclone burners in each boiler and the replacement of the lower furnace walls, floor and headers. *In re TVA*, 9 E.A.D. at 404, 484-86; *see also* EPA Enforcement Ex. 273,

² As the EPA has subsequently pointed out:

All of the court of appeals' questions and criticisms regarding the procedures leading to the EAB decision in *TVA* concerned . . . whether the EAB decision could constitutionally be considered a reviewable order, not to whether the EAB decision in fact reflected EPA's interpretation of the regulations at issue, or whether that interpretation was reasonable or correct. Thus, nothing in the Eleventh Circuit's decision changes the fact that the EAB decision was and remains a statement of agency position, is an indication of EPA's continued interpretation of its regulations consistently with its historic interpretation, and, as such, is deserving of normal deference.

United States v. Alabama Power Co., 01-HS-0152-S (N.D. Ala.) Docket No. 101, United States Memorandum of Law Regarding the Correct Legal Test For Determining Whether There Has Been a "Modification" for the Purposes of the Clean Air Act's Prevention of Significant Deterioration Provisions, at 45-46 n.27.

³ Putting aside the fact that the Eleventh Circuit's decision is based on a questionable interpretation of law, the Court recognized that where a party has access to an administrative review process—such as the APA, 5 U.S.C. §§ 554-555—there are not constitutional issues. *TVA*, at 1241 and n.7. In other words, it was the "injunction like legal status," of ACOs, "coupled with the fact that they are issued without an adjudication or meaningful judicial review," that was the basis of the court's decision—not the interpretation of law or findings of fact by the EAB. *Id.* The ability to adjudicate issues of fact before an administrative adjudicatory body is available here. *See e.g.*, 5 U.S.C. §§ 554-555; 40 C.F.R. § 70.4(b)(3)(x). Moreover, permitting proceedings, such as this one, are not the same as enforcement proceedings merely because the permitting proceeding involves issues that are, or could, also be raised through an enforcement action. *See e.g., Marine Shale Processors, Inc. v. U.S. EPA*, 81 F.3d 1371, 1377 (5th Cir. 1996).

attached as Exhibit 2⁴; EPA Enforcement Ex. 279, at 40-42 (Hekking's pre-filed testimony), attached as Exhibit 3; TVA Ex. 4, at 23-26 (Golden's pre-filed testimony), attached as Exhibit 4. The projects consisted of, at least, the following:

- Replacement of all 14 cyclones and lower furnace walls, floor and header on Paradise Unit 1 in or about 1985. This project cost \$16,300,000.00 and involved an outage of 6.5 months. *Id.*; *see also* Unit 1 Work Order, attached as Exhibit 5.
- Replacement of all 14 cyclones, lower furnace walls, floor and headers on Paradise Unit 2 in or about 1985-86. This project cost \$15,790,000.00 and involved an outage of 4.5 months. *Id.*; *see also* Unit 2 Work Order, attached as Exhibit 6.
- Replacement of all 23 cyclones and lower furnace walls, floor and headers on Paradise Unit 3 in 1985. This project cost \$29,440,000.00 and involved an outage of 6 months. *Id.*; *see also* Unit 3 Work Orders, attached as Exhibit 7.

In addition, TVA cut out and replaced the waterwall below 465 feet, including the lower headers and floor at Unit 1. *Id.* TVA performed the same work at Unit 2. *Id.* At Unit 3, in addition to the twenty-three cyclones, TVA replaced the waterwalls between 418 feet to 501 feet. *Id.*

1. The Cyclone Replacements⁵ Were Not Routine Maintenance.

First, it should be noted that Kentucky DAQ has not disagreed that the nature, extent, cost and purpose of the cyclone replacements all weigh against a finding that the projects were routine maintenance. Because these factors are undisputed by Kentucky DAQ, only a brief summary is necessary. The only factor addressed by Kentucky DAQ was frequency. Kentucky DAQ's erroneous interpretation and application of the frequency factor is addressed in more detail below. However, even if the frequency factor did weigh in favor of a routine maintenance finding, the fact that the routine maintenance exemption is based on all factors, that it must be narrowly construed against a finding of routine, that TVA has the burden to demonstrate routine maintenance, and that the three other factors indisputably weigh against routine maintenance means that the projects would still not be routine maintenance. *See e.g., United States v. Cinergy Corp.*, 495 F. Supp. 2d 909, 936 n.14 (S.D.Ind. 2007) (holding that even if the defendant had shown that a project was frequently done, the court would still find the project non-routine

⁴ Sierra Club attaches some relevant exhibits from the Environmental Appeals Board case as separate exhibits. Additionally, Sierra Club obtained all EAB documents that Kentucky DAQ had when it issued the revised SOB and is attaching and incorporating that entire record herein.

⁵ This petition addresses the cyclone replacements. The waterwall tube replacements were done at similar times and therefore were part of the cyclone replacement projects. Moreover, because the cyclone replacements triggered PSD requirements, it would not be necessary to address the waterwall replacements even if they were separate projects.

because “consideration of all of the other factors together would still clearly demonstrate that none of the projects were routine.”).

a) Background on the PSD Program and Routine Maintenance Exemption.

The Clean Air Act defines “modifications” subject to the PSD program as including any physical or operational change without limitation. 42 U.S.C. §§ 7411(a)(4), 7475(2)(C). Because this definition, read literally, applies the PSD program to even the replacement of a single screw during day-to-day maintenance, EPA adopted regulations based on the *de minimus* legal doctrine that provide that “routine maintenance, repair, and replacement” (“RMRR”) activities are exempt from the definition of modification. 40 C.F.R. §§ 51.165(a)(1)(v)(C), 51.166(b)(2)(iii), 52.21(b)(2)(iii)(a); *see also* 67 Fed. Reg. 80,290, 80,292 (Dec. 31, 2002); 57 Fed. Reg. 32313, 32316-19 (July 21, 1992) (explaining the need for the routine maintenance exemption to avoid PSD “encompass[ing] the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or a change in the way the pipe is utilized.”); *Wis. Elec. Power Co. v. Reilly*, 893 F.2d 901, 905 (7th Cir. 1990) (noting that “the potential reach of these modification provisions is apparent: the most trivial activities-- the replacement of leaky pipes, for example-- may trigger the modification provisions...” (hereinafter “*WEPCO*”). As the D.C. Circuit has held, the RMRR exemption is only lawful (if at all⁶), based on a *de minimis* theory of administrative necessity. *Alabama Power Co. v. Costle*, 636 F.2d 323, 360-61, 400 (D.C.Cir. 1979); *see also* 57 Fed. Reg. 32313, 32316-19 (July 21, 1992) (explaining the need for the routine maintenance exemption to avoid PSD “encompass[ing] the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or a change in the way the pipe is utilized.”); *New York v. EPA*, 443 F.3d 880, 883-84, 888 (D.C.Cir. 2006) (holding that the only possible basis for a RMRR is a *de minimis* theory); *In re Tennessee Valley Authority*, 9 E.A.D. at 392-93 (citing *O’Neil v. Barrow County Bd. of Comm’rs*, 980 F.2d 674 (11th Cir. 1993); *North Haven Bd. of Educ. v. Bell*, 456 U.S. 512 (1982)). In fact, because the routine maintenance exemption conflicts with the literal, plain language used by Congress that applies the PSD program to *any* physical change, the routine maintenance exemption must be limited to the very mundane daily activities that would overwhelm permitting agencies if subjected to permitting. *Cf. WEPCO*, 893 F.2d at 909 (warning that RMRR cannot be interpreted to “open vistas of indefinite immunity from the provisions of ... PSD”); *Ohio Edison*, 276 F. Supp. 2d at 855; *In re TVA*, 9 E.A.D. at 410-11 (rejecting an interpretation of RMRR

⁶ The D.C. Circuit has implied in *dicta* that the RMRR exclusion may be an unlawful “application of the *de minimis* exception, given the limits on the scope of the *de minimis* doctrine.” *New York*, 443 F.3d at 888, *citing Shays v. FEC*, 414 F.3d 76, 113-14. In *Shays*, the D.C. Circuit held that “there are limits” to agencies’ ability to create *de minimis* exceptions to statutory schemes, including: (1) that the “*de minimis* exemption power does not extend to ‘extraordinarily rigid’ statutes”; and (2) that it “does not extend to a situation where the regulatory function does provide benefits, in the sense of furthering regulatory objectives, but the agency concludes that the acknowledged benefits are exceeded by the costs’.” 414 F.3d at 114. While this issue was not before the D.C. Circuit in the *New York* case, the court’s holding implies that the Clean Air Act is “rigid” and that including all changes and emission increases furthers the CAA’s regulatory objectives. 443 F.3d at 885-89 (holding that the PSD program applies to “any” physical changes, with no limitation except those changes that do not increase emissions, due to “Congress’s basic goals... to intensify the war against air pollution”).

that would “constitute ‘perpetual immunity’ for existing plants, a result flatly rejected by Congress and the circuit courts in *Alabama Power* and *WEPCO*”).

EPA’s long-standing interpretation of the definition of PSD-triggering “physical changes,” and the routine maintenance exemption, “is to construe “physical change” very broadly, to cover virtually any significant alteration to an existing plant and to interpret the exclusion related to routine maintenance, repair and replacement narrowly.” *See* Letter from Doug Cole, EPA, to Alan Newman, Washington Dept. of Ecology (November 5, 2001), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20011105.pdf>.

b) The *WEPCO* Test for the RMRR

The Seventh Circuit has summarized and approved EPA’s four-part test to assess whether a project falls within the narrow routine maintenance exemption: (1) the nature and extent of a change; (2) the purpose for the change; (3) the frequency of the change; and (4) the cost of the change. *WEPCO*, 893 F.2d at 909-11; *see also* 67 Fed. Reg. 80,290, 80,292-93 (Dec. 31, 2002) (describing the routine maintenance exemption as “a case-by-case determination by weighing the nature, extent, purpose, frequency, and cost of the work as well as other factors to arrive at a common sense finding.”). District Courts have generally applied this four-factor *WEPCO* test. *United States v. Cinergy Corp.*, 495 F. Supp. 2d 909, 933-948 (S.D.Ind. 2007); *United States v. Southern Indiana Gas & Electric Co.*, 245 F. Supp. 2d 994, 1008 (S.D.Ind. 2003); *United States v. Southern Indiana Gas & Electric Co.*, 2003 WL 446280, *2 (S.D.Ind. Feb. 18, 2003); *United States v. Southern Indiana Gas & Electric Co.*, 258 F. Supp. 2d 884, 886 (S.D.Ind. 2003); *see also Ohio Edison*, 276 F. Supp. 2d at 834. In doing so, courts have recognized that routine maintenance is an extremely narrow exemption that is only legally justifiable when applied extremely narrowly. *SIEGCO*, 245 F. Supp. 2d at 1019 (quoting a USEPA determination for Wisconsin Electric’s Port Washington plant that the exemptions from the definition of “modification”—including routine maintenance—are “very narrow.”). Courts have thus identified three hallmarks of the RMRR exemption:

First, the exemption applies to a *narrow range of activities*, in keeping with the EPA’s limited authority to exempt activities from the [CAA]. Second, the exemption applies only to activities that are *routine for a generating unit*. The exemption does not turn on whether the activity is prevalent within the industry as a whole. Third, *no activity is categorically exempt*. EPA examines each activity on a case-by-case basis, looking at the nature and extent, purpose, frequency, and cost of the activity.

United States v. S. Indiana Gas and Elec. Co., 245 F.Supp. 2d 994, 1008 (S.D. Ind. 2003) (emphasis added, original emphasis omitted) (hereinafter “*SIGECO*”).

Certain types of projects categorically cannot be considered routine maintenance. These categorically non-routine project include:

- Projects approved by management, planned by a central office, using outside contractors, and involving replacements of entire components. *Ohio Edison*, 276 F. Supp. 2d at 834, 859; *In re TVA*, 9 E.A.D. at 481, 484-85, 490-91, 493-94.
- Projects which include modifying or replacing numerous parts and redesigned, custom, or “upgraded” parts. *See Cinergy*, 495 F. Supp. 2d at 934.
- Projects that have a purpose of improving operations, by extending the operational life of the unit or resulting in fewer needed shutdowns to perform repairs is not routine maintenance. *WEPCO*, 893 F.2d at 911-12 (holding that a project that rehabilitates aging units as an alternative to retiring them is not routine); *Cinergy*, 495 F. Supp. 2d at 935 (finding a project non-routine based, in part, on the fact that the purpose was to “‘improve[] operating efficiency’ with less [sic] potential outages.”); *Ohio Edison*, 276 F. Supp. 2d at 858, 860 (finding a project non-routine that “reduc[ed] forced outages and improv[ed] availability and reliability of the unit(s)”).
- Projects paid for with funds other than a plant’s operating and maintenance budget, or which are treated as capital expenses on balance sheets are not routine. *Cinergy*, 495 F. Supp. 2d at 933; *Ohio Edison*, 276 F. Supp. 2d at 834, 859, 862.

In short, routine maintenance “occurs regularly, involves no permanent improvements, is typically limited in expense, is usually performed in large plants by in-house employees, and is treated for accounting purposes as an expense.” *Ohio Edison*, 276 F. Supp. 2d at 834 (citing *WEPCO*, 893 F.2d 901). Non-routine and, therefore non-exempt, projects include “capital improvements which generally involve more expense, are large in scope, often involve outside contractors, involve an increase of value to the unit, are usually not undertaken with regular frequency, and are treated for accounting purposes as capital expenditures on the balance sheet.” *Id.*

c) Applying the Four Factors To the Paradise Plant Cyclone Replacements Clearly Demonstrates that the Projects Were Not Routine.

i) Nature and Extent

The cyclone replacements at the Paradise Plant were conducted only after the TVA Board of Directors approved the project and after years of planning. TVA implemented the work at Unit 3 first, beginning in the Fall of 1984, requiring the unit to be shut down for six months. *TVA*, 9 E.A.D. at 485. It then worked on Unit 1, shutting it down for approximately 6.5 months beginning in March of 1985. *Id.* Finally, TVA performed the work on Unit 2 beginning in November of 1985 and lasting 4.5 months. *Id.* In each case, the units were shut down for periods *well beyond* the four weeks typical of scheduled maintenance outages. *Id.* It is obvious that the nature and extent of this

project to replace numerous tubes is different than truly routine repairs—which replace a single or a few worn or damaged tubes on an as-needed basis. See Letter from Robert B. Miller, EPA, to Steven Dunn, Wisconsin DNR (Jan. 29, 2003), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20030129.pdf>; Letter from Doug Cole, EPA, to Alan Newman, Washington Dept. of Ecology at 3 (Nov. 5, 2001) (finding that replacement of a component, rather than a few tubes, does not support a Routine Maintenance determination), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20011105.pdf>; Letter from Gregg M. Worley, EPA, to Barry R. Stephens, Tenn. Dept. of Env't. and Conservation at 4 (September 14, 2001) (same), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/pca2001.pdf>.

The magnitude of the work at each of the Paradise units was also significant. For example, TVA had to construct monorails at the front and rear walls for lifting and positioning the cyclones at each unit. *TVA*, 9 E.A.D. at 484; EPA Enforcement Ex. 279, at 43 (Hekking's pre-filed testimony), attached as Exhibit 3. TVA installed a trolley system to transport the cyclones in and out of the building, and TVA constructed rigging inside the furnace to assist in attaching the wall panels and floor panels. *Id.* The approximate cost of these renovations exceeded \$60 million. *Id.* The projects affected significant components, were massive, developed and carried out by central office rather than plant staff, took years to plan, were approved by the Board of Directors, required a shutdown of many months. *TVA*, 9 E.A.D. at 405-06.

Moreover, the sheer extent of the work on the Paradise units was substantial. The work at Unit 1 and 2 required the replacement of approximately 18.5% of the total tubing in the boiler. *Id.*; TVA Ex. 4, at 23, 25 (Golden's pre-filed testimony), attached as Exhibit 4. TVA replaced approximately 19.4% of the total tubing in Unit 3's boiler. *TVA*, 9 E.A.D. at 485; TVA Ex. 4 (Golden testimony), at 26, attached as Exhibit 4.

Therefore, the nature and extent of the project clearly weighs against Routine Maintenance. Courts have found projects not to be routine based on nature and extent when the “purchase was so large that it required [the source] to make a special purchase from a vendor because it did not keep sufficient material on site to do the job,” hired outside engineers and contractors for the job, made changes to tubes, and rejected alternatives in favor of “complete tube replacement.” *Cinergy*, 495 F. Supp. 2d at 937-38. Projects can also be non-routine due to “the sheer size” of the parts that are replaced. *Id.* at 939 (finding that retubing a large component is not routine). Here, the sheer size and the fact that the annual Operations and Maintenance (“O&M”) budgets for Paradise could not have handled the large expenditures for the projects above, while still meeting other maintenance needs, demonstrate that the projects were not routine. *TVA*, 9 E.A.D. at 486.

ii) The Cost of the Projects

The sheer cost of the cyclone replacements precludes a finding of Routine Maintenance. As noted above, the cost was approximately \$60 million, and over \$15

million for each boiler. This far exceeds other costs that courts and EPA have found not to be Routine Maintenance. *See e.g., Sierra Club v. Morgan*, 2007 U.S. Dist. LEXIS 82760, *39 (W.D. Wis. 2007) (finding that a \$ 77,000 cost was not Routine Maintenance because “it was paid from a spending authorization and not from the [plant]’s annual maintenance and operating budget” and “was treated as a capital expenditure under GAAP”), *id.* at *42 (finding another project not Routine Maintenance because its cost exceeded the annual maintenance budget for the plant and was capitalized), *id.* at *44 (same for a \$90,700 project); Letter from Robert B. Miller, EPA, to Steven Dunn, Wisconsin DNR (Jan. 29, 2003), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20030129.pdf> (finding a project costing \$50,000 not to be routine); Letter from Gregg M. Worley, EPA, to Barry R. Stephens, Tenn. Dept. of Env’t. and Conservation at 4 (September 14, 2001) (same), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/pca2001.pdf> (finding a project costing \$924,500 to be expensive compared to annual maintenance budgets and non-routine); *see also Cinergy*, 495 F.Supp.2d at 938, 942-43, 947 (finding a \$1,490,800 project, a \$856,000 project, and a \$665,000 project not to be routine).

Moreover the history of capital projects as the Paradise units shows that the cyclone replacements were a significant cost. *See* EPA Exhibits 224-226, attached hereto as Exhibit 8. Each unit’s cyclone replacement was almost as expensive as the original cost to build the unit. *Id.* Moreover, each unit’s cost to replace the cyclones cost more than all other capital projects on the unit, combined, since the unit’s original construction. *Id.* Further still, the cyclone project(s) would have consumed most if not all of TVA’s annual maintenance budget for the plant. *TVA*, 9 E.A.D. at 407.

The cyclone replacement projects were all capitalized, rather than expensed as maintenance. *Id.* Capitalizing a project is almost always—if not absolutely always—indicative that the project was more than mere routine maintenance, repair or replacement. *Cinergy Corp.*, 495 F. Supp. 2d at, 933-35 (holding that paying for a project with capital funds, modifying or replacing numerous parts and redesigned, custom, or “upgraded” parts, or decreasing outages for repairs is not routine maintenance); *Ohio Edison Co.*, 276 F. Supp. 2d at 834. As the District Court noted in the *Ohio Edison* case:

Despite Ohio Edison's argument to the contrary, this Court finds that the accounting and budgeting treatment of the activities at issue as capital expenditures to be highly probative of whether the activities can be considered routine maintenance, repair or replacement for purposes of the CAA... A straightforward and logical construction of the term “maintenance,” let alone “routine maintenance,” would exclude from its scope any amounts defined as capital expenditures.

276 F. Supp. 2d at 859-60 (emphasis added). This is consistent with TVA’s policy, which distinguished between annual operating and maintenance budgets for restoring assets to serviceable condition, and capital budgeting that was utilized for replacement of

major components and equipment to “add new tangible assets or leave existing tangible assets in better condition for profitable service than when new... (e.g., increase capacity, efficiency, or useful life).” *TVA*, 9 E.A.D. at 401-02 (quoting EPA Enforcement Ex. 152); TVA Capitalization Policy, attached as Exhibit 9; TVA Capital Budget and Planning Guidelines, attached as Exhibit 10.

iii) The Purpose of the Projects

The purpose of the cyclone replacement projects was to increase each unit’s availability and reliability by decreasing the number of forced outages, as well as to extend the life of the units by twenty years. *TVA*, 9 E.A.D. at 406, 485; Work Orders for Cyclone Replacements, attached as Exhibits 5, 6, 7; EPA Enforcement Exs. 3, 4, 6, 9. Unlike projects in the past, that replaced individual tubes in the waterwalls, floors, and the cyclones—which did not prevent increasing forced outages—these projects were intended to improve the units and not to merely maintain their present condition. *Id.*; EPA Enforcement Ex. 279 at 40 (Hekking pre-filed testimony), attached as Exhibit 3.

Due to decreased demand for electricity and an abandonment of new nuclear plants to replace coal plants, TVA focused on refurbishing and extending the life of existing coal plants. *TVA*, 9 E.A.D. at 398-99 (citing EPA Enforcement Docs. 201, 279; Tr. at 129); EPA Exhibit 279 (Hekking testimony), attached as Exhibit 3. The explicit goal of the Fossil and Hydro Unit Evaluation and Modernization Program (FHUEM Program)—which was incorporated into the Capital Additions and Improvements Program, of which the cyclone replacements were part-- was (1) to extend the life of the plant by 20 or more years to 35 to 40 years; (2) maintain unit reliability and efficiency; and (3) to modernize by utilizing advanced boiler (but not pollution control) technology. *Id.* at 399 (citing EPA Enforcement Ex. 201 at 854); *see* TVA Life Extension and Assessment of Fossil Power Plants, attached as Exhibit 11.

The purpose of the cyclone replacements demonstrates that the projects were not routine.

iv) The Frequency Factor.

As noted above, the only factor addressed by Kentucky DAQ was the frequency factor. This one factor, alone, cannot justify RMRR in light of the fact that all three of the other factors weigh heavily against RMRR. But here, even the frequency factor weighs against RMRR.

The projects at TVA Paradise were the first and only of its magnitude at these units. *TVA*, 9 E.A.D. at 407; EPA Enforcement Ex. 279 at 43 (Hekking pre-filed testimony), attached as Exhibit 3. While somewhat similar projects may have been done at a few other plants around the United States, these types of projects are infrequent within the life of any individual unit of the type of Paradise units 1, 2 and 3. *Id.*

TVA has identified examples of cyclone replacements at TVA plants and at other power plants in the United States. *See e.g.*, Attachment C to TVA's Response to EPA's Compliance Order, attached as Exhibit 12. What is clear in this list is that the list does not represent a majority of coal fired steam electric generating units (in fact it includes some industrial boilers at paper mills) and that none of the units identified replaced a cyclone more than once. *Id.*

In this case, Kentucky DAQ's interpretation of the meaning of the frequency factor was tragically backwards. DAQ looked at how many times a cyclone replacement has occurred in the United States, detached from any comparison to the number of times a cyclone replacement is expected to occur at a particular unit. PSD applies to an emission unit and EPA has always interpreted the RMRR exemption to pertain to what is routine at an emission unit. Moreover, even if frequency of a project at units other than the unit at issue is relevant, it is only relevant in assessing how often project is expected to occur during the life of a typical or average unit. The prevalence of a particular project—no matter how infrequent during the life of any individual unit's life—is irrelevant to a RMRR determination.

a) EPA's established policy is to apply the "frequency" factor by assessing how many times the project has occurred during the life of the unit at issue.

It is clear from EPA's application of the "frequency" factor that EPA looks to the frequency at which a project occurs at the individual unit at issue. *See* Letter from Robert B. Miller, EPA, to Steven Dunn, Wisconsin DNR at 2 (Jan. 29, 2003) (finding that a tube replacement project is not Routine Maintenance because, inter alia, "this would be the first time in the 35 year life of *the boiler* where all the tubes would be replaced. Moreover, the infrequency of such replacement *at this boiler* supports our understanding that complete boiler tube replacements are not performed on a frequent basis.") (emphasis added), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20030129.pdf>; Letter from Winston A. Smith, EPA, to James P. Johnson, Georgia Env'tl. Protection Dept. (January 28, 2002) (finding that frequency did not support a finding of Routine "[b]ased on the information presented to us, the previous owner of the mill never performed the same changes *at the No. 3 Recovery Boiler* during its entire 17-year operating history..") (emphasis added), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20020128.pdf>; Letter from Doug Cole, EPA, to Alan Newman, Washington Dept. of Ecology at 4 (Nov. 5, 2001) ("EPA is not aware of [Recovery Furnace Number] 2 undergoing such an extensive boiler tube replacement project since it started up as a recovery furnace in 1980, more than twenty years ago"), available at <http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/20011105.pdf>; Letter from Gregg M. Worley, EPA, to Barry R. Stephens, Tenn. Dept. of Env't. and Conservation at 4 (September 14, 2001) ("Therefore, during the entire 40-year operating history of R-1, a generating bank tube replacement project of the magnitude now proposed has occurred only once."), available at

<http://www.epa.gov/region7/programs/artd/air/nsr/nsrmemos/pca2001.pdf>. In each of these determinations, EPA looked at how frequently a project has occurred during the life of the source at issue.

b) Application of the Frequency Factor By Courts Generally Follows EPA's Interpretation And Looks To Frequency At the Unit.

Discussions of the frequency factor by courts largely parallel's EPA's interpretation. The Seventh Circuit described the factor as: "normally occur once or twice during *a unit's expected life cycle*" are not routine. *WEPCO*, 893 F.2d at 912. Similarly, in *U.S. v. Southern Indiana Gas and Electric Company*, the District Court agreed with EPA's interpretation—which it found was reasonable, persuasive, and owed deference—that the RMRR exemption "applies only to activities that are routine for a generating unit. The exemption does not turn on whether the activity is prevalent within the industry as a whole." 245 F.Supp.2d at 1008 (citing the Plaintiff's Opposition to Defendant's Motion for Summary Judgment at 1). To the extent that courts have found industry experience relevant at all, courts generally only look to the frequency of a project in the industry *in combination with* frequency at an individual unit. *U.S. v. Cinergy Corp.*, Case No. 1:99-cv-1693-LJM-VSS, Order on Pl's Mot. for Partial Sum. J. Regarding the Legal Standard for the Routine Maintenance Repair and Replacement Exclusion, Slip. Op. at 7 (S.D. Ind., Feb. 16, 2006); *see also Sierra Club v. Morgan*, 2007 U.S. Dist. LEXIS 82760, *36-37 (W.D. Wis. Nov. 7, 2007) (looking to frequency of replacing a boiler wall to the number of occurrences at the particular unit at issue and at the other boilers in the same plant to conclude that the project was "expected to be performed only once or twice during *the boiler's life cycle*." (emphasis added)), *id.* at *39 (applying the same analysis to another project that "is expected to occur only 2 maybe 3 times in the life of a boiler" and concluding that the frequency does not support RMRR).

Indeed, the frequency with which certain kinds of activities have been undertaken at another comparable plant can be instructive in determining whether, for example, an activity never before undertaken, or seldom undertaken, at a unit under review should be regarded as "routine." But it is the frequency of the activity at other *individual* units within the industry that seems to us more relevant in this context. The mere fact that a number of different facilities within an industry may have undertaken these projects strikes us as much less instructive with respect to whether a project under review should be considered "routine," than the observation that this kind of replacement is, for an individual unit, an unusual or once or twice-in-a-lifetime occurrence.

TVA, 9 E.A.D. at 395-96 (emphasis original), *id.* at 407 ("Although TVA introduced evidence that it and others in the industry had made similar replacements at other facilities, the evidence did not show that these replacements were other than uncommon

in the lifetime of the unit.”); *see also* *WEPCO*, 893 F.2d at 912 (basing frequency on how often a project would be expected during an individual unit’s expected life and finding that projects occurring only once or twice would not be considered routine).

c) KDAQ’s application of the “frequency” factor is unsupportable by fact, law, or established EPA policy.

Kentucky DAQ’s post-hoc rationalization for ignoring major modifications at the Paradise Plant is based entirely on KDAQ’s uniquely erroneous interpretation of the “frequency” factor. Contrary to interpretations by EPA and the courts, KDAQ’s “analysis” consists only of a determination that *some* cyclones have been replaced at *some* other units. There is no finding that, for example, replacing a single cyclone burner (much less replacing all cyclones in a single project as occurred here) happens more than once or twice at a typical unit during the life of such unit. To the contrary, the facts cited by KDAQ show the opposite. As quoted in full above, KDAQ’s “routine” finding is based solely on this statement:

According to testimony in the factual record, cyclone replacement had clearly become routine within the industry. For example, pre-filed testimony indicated that data from the Cyclone Users Association “revealed that more than 300 cyclones on more than half of the 26,152 MW of electric capacity powered by cyclone-fired boilers had been replaced...A survey of maintenance practice of other coal-burning electric utility units, representing more than 20% of the total electricity generation capability in the United States, revealed that of a population sample of 219 utility boilers, 174 waterwall replacement projects had been performed.” (citing TVA Ex. 4, at 24 (Golden’s pre-filed testimony)).

This statement is relevant to a RMRR analysis, but actually leads to the opposite conclusion as KDAQ reached. The statement shows that only half of all cyclone-fired boilers have *ever* replaced a cyclone. This is the opposite of a finding that each individual unit—or even the average or representative individual unit in the category—replaces cyclones more than once or twice in the unit’s life. An event that happens only once in the lifetime of only half of the units in the country is not routine.⁷ Kentucky DAQ’s statistic supports a finding of non-routine, not of routine replacement.

Furthermore, a “routine at the unit” test is consistent with the purpose of the CAA “to create a program that was technology forcing and that increased the use of air pollution control technology over time.” *TVA*, 9 E.A.D. at 391. Therefore, the Routine Maintenance provision must be narrowly interpreted because the “grandfathering”

⁷ For example, approximately half of marriages in the United States end in divorce. *See* <http://www.divorcestatistics.org/>. However, divorce is not considered a routine occurrence in a marriage or during the average person’s lifetime.

provision for existing plants is “a temporary rather than permanent status,” and because the provision created by regulation and not the statute. *Id.* at 391-92. As the EAB correctly held, TVA’s interpretation (apparently adopted by KDAQ here) based on whether an activity is “common within a relevant source category” is inconsistent with the regulation and the CAA. *TVA*, 9 E.A.D. at 393-96.⁸ The “logical conclusion” of KDAQ’s interpretation would allow operators to rebuild entire plants piecemeal “so long as it did not in increments that can be identified elsewhere in the industry.” *Id.* at 394. This was, in fact, TVA’s apparent intent. *Id.* at 394-95 (quoting internal memoranda of TVA). KDAQ and TVA’s interpretation would, in fact, allow “the rule [to be] controlled by the group behavior of the very industry subject to the regulations.” EPA Post-Hearing Reply Brief at 19, *In re TVA*, attached hereto as Exhibit 13. Such an interpretation and result “simply cannot be reconciled with the objectives of the CAA.” *TVA*, 9 E.A.D. at 395.

v) Summary

All four factors support a finding that none of the replacements come anywhere close to qualifying for the *de minimus* routine maintenance, repair, or replacement exemption.⁹ This is perhaps best represented in Tables 9 through 11 in EPA’s Exhibits 210-212 in the TVA case:

⁸ EPA Enforcement correctly argued that “the fact that a number of facilities within an industry may have undertaken a project which would be viewed as significant in the life of an individual facility does not render such a project ‘routine’ within the meaning of the exemption,” but instead “routineness should be determined according to a broader range of considerations, including, most notably, the significance of the project in the life of the unit in question.” *TVA*, 9 E.A.D. at 394.

⁹ Moreover, it is TVA’s burden to prove the application of the routine maintenance exemption, including providing the basis for such an exemption in its application. 40 C.F.R. § 70.5(c)(6). Routine maintenance is an exception to a broad and otherwise-applicable statutory requirement. Therefore, the entity seeking to take advantage of it bears the burden of proof that its project(s) qualify for special consideration under the exemption. *United States v. Cinergy*, 2006 WL 372726, *4 (S.D.Ind. Feb. 16, 2006) (citing *United States v. First City Nat’l Bank of Houston*, 386 U.S. 361, 366 (1967)); *Ohio Edison*, 276 F. Supp. 2d at 856. Here, TVA is required to show that its projects qualify. *See e.g., In re TVA*, 9 E.A.D. at 391 n.31 (EPA through the EAB finding that the proponent of a Routine Maintenance defense bears the burden of proof). “[B]ased on the general rule that the party claiming the benefit of exemption from a statute bears the burden of proof, the party asserting the RMRR exemption must prove that the work done at its major emitting facility satisfies the RMRR exemption, i.e., are exempt from CAA compliance.” *Sierra Club v. Morgan*, Case No. 07-C-251-S, 2007 U.S. Dist. LEXIS 82760 (W.D. Wis. Nov. 7, 2007), citing *Ohio Edison Co.*, 276 F. Supp. 2d 829, 856 (S.D. Ohio 2003); *United States v. E. Ky. Power Coop., Inc.*, 498 F. Supp. 2d 976, 995 (E.D. Ky. 2007); *U.S. v. Cinergy Corp.*, 495 F. Supp. 2d 909, 931 (S.D. Ind. 2007) (“it ultimately would be [defendant’s] burden at trial to show that its activities are exempt from CAA compliance.”); *U.S. v. Cinergy Corp.*, Case No. 1:99-cv-1693-LJM-VSS, 2006 U.S. Dist. LEXIS 8774, *13-14 (S.D. Ind. Feb. 16, 2006) (requiring the defendant to prove RMRR because “[t]he party claiming the benefit of an exemption to compliance with a statute bears the burden of proof as to the exemption.”); *see also U.S. v. First City Nat’l Bank of Houston*, 386 U.S. 361, 366 (1967) (explaining the “general rule where one claims the benefit of an exception to the prohibition of a statute” carries the burden of proof with respect to that exception); *Commonwealth v. Allegheny Energy, Inc.*, 2008 U.S. Dist. LEXIS 97391 (W.D. Pa. Sept. 2, 2008) (“The party claiming the benefit of the RMRR exemption bears the burden of proving its applicability.”). TVA has never demonstrated that the routine maintenance exception applies, nor submitted information in support of the exemption in its Title V permit application.

Paradise Unit 1 - Table 9

Date in Service:	1963
Gross Design Capacity:	770 MW
Nature of Project:	Replaced cyclones and lower walls, floor, and headers (a)
Date of Project:	1985
Extent of Project:	Total replacement of all (14 cyclones), lower furnace walls, floor and headers (a), during a 6.5-month outage at the unit.
Cost:	\$16.3 million
Frequency of this project at the unit:	one
Purpose:	Improved the availability and forced outage rate of unit. The unit had reached forced outage rate levels exceeding 20 percent and was predicted to reach a level greater than 50 percent by 1987 and cause damage to associated equipment unless replacement is made in 1984 (FY 1985). Boiler tube leaks in the furnace and cyclones accounted for 96 percent of all forced outages. (b) This replacement should "extend the life of this portion of the boiler by approximately 20 years and improve the reliability of the unit." (a)

- a. Work Order, Bates No. 880003180-3182
- b. Capital Resource Requirements, Bates No. 880003184-3187

Paradise Unit 2 - Table 10

Date in Service:	1963
Gross Design Capacity:	770 MW
Nature of Project:	Replaced cyclones and lower walls, floor and headers (a)
Date of Project:	1985-86
Extent of Project:	Replaced all (14 cyclones), lower furnace walls, floor and headers (a), during a 4.5-month outage at the unit.
Cost:	\$15.79 million
Frequency of this project at the unit:	one
Purpose:	Improved the availability and forced outage rate of unit. The unit had reached forced outage rate levels exceeding 20 percent and was predicted to reach a level greater than 50 percent by 1987 and cause damage to associated equipment unless replacement is made in 1984 (FY 1985). Boiler tube leaks in the furnace and cyclones accounted for 96 percent of all forced outages. (b) "This replacement should extend the life of this portion of the boiler by approximately 20 years and improve the reliability of the unit." (a)

- a. Work Order, Bates No. 880003189-3192
- b. Capital Resource Requirements, Bates No. 880003193-3197

Paradise Unit 3 - Table 11

Date in Service:	1970
Gross Design Capacity:	1150 MW
Nature of Project:	Replaced cyclones and lower walls, floor and headers (a)
Date of Project:	1985
Extent of Project:	Replaced all cyclones (23), lower furnace walls, floor and headers (a), during a 6-month outage at the unit.
Cost:	\$29.44 million
Frequency of this project at the unit:	one
Purpose:	Improved the availability and forced outage rate of unit. The unit had reached forced outage rate levels exceeding 20 percent and was predicted to reach a level greater than 50 percent by 1987 and cause damage to associated equipment unless replacement is not made in 1984 (FY 1985). Boiler tube leaks in the furnace and cyclones accounted for 40 percent of all forced outages. (b) "This replacement should extend the life of this portion of the boiler by approximately 20 years and improve the reliability of the unit." (a)

- a. Work Order, Bates No. 880003217-3220
- b. Capital Resource Requirements, Bates No. 880003221-3223

Source: EPA Exhibits 210-212, attached hereto as Exhibit XX14.

2. The Cyclone Replacements Resulted In Significant Emission Increases.

Each of the cyclone replacement modifications at the Paradise Plant resulted in a significant net emission increase. First, it is important to note that KDAQ's response to comments only disagreed with the comments regarding routine maintenance, repair and replacement. It did not disagree—and therefore it is uncontested—that the modifications to the Paradise plant resulted in significant net emission increases.

1. The Actual-to-Potential Test Applies

The 1984 version of 40 C.F.R. § 52.21 applies to projects undertaken at Paradise. In re TVA, 9 E.A.D. 357, 422 (EAB 2000). The 1984 version of 40 C.F.R. § 52.21 requires emission increases to be measured based on the actual-to-potential test. 40 C.F.R. § 52.21(b)(21)(iv) (1984); *see also* 45 Fed. Reg. 52,676, 52,6577 (1980); EPA Enforcement Post-Hearing Brief at 73-90, 116-61 and EPA Enforcement Initial Brief at 34-49, *In re TVA*, 9 E.A.D. 357; EPA Post-Hearing Reply Brief at 25. Under the actual-to-potential test, each of the projects resulted in a significant net emission increase of both NO_x and the projects at units 2 and 3 resulted in a significant net emissions increase

of NOx, PM and SO₂. EPA Exhibits 183-185; EPA Enforcement Post-Hearing Brief and EPA Enforcement Initial Brief, *In re TVA*, 9 E.A.D. 357. Below are EPA's calculated increases under the actual-to- potential test:

**PARADISE UNIT 1
NEW SOURCE REVIEW EMISSIONS SUMMARY**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions – Actual Emissions 2 Years prior to Modification	4-1-83 to 3-31-85	20,608	46,103	11
Potential to Emit – 100% Capacity Factor (CF) Net = PTE - Baseline	Post Modification	37,664 Net: 17,056	42,951 Net: -3,152	19 Net: 8
Potential to Emit – 90% CF	Post Modification	33,898 Net: 13,290		17 Net: 6
Potential to Emit – 80% CF	Post Modification	30,131 Net: 9,523		15 Net: 4
Potential to Emit – 70% CF	Post Modification	26,365 Net: 5,757		13 Net: 2
Potential to Emit – 60% CF	Post Modification	22,598 Net: 1,990		11 Net: 0
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	10-1-85 to 9-30-87	26,923 Net: 6,315	13,898 Net: -32,205	14 Net: 3

**PARADISE UNIT 2
NEW SOURCE REVIEW EMISSIONS SUMMARY**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions – Actual Emissions 2 Years prior to Modification	12-1-83 to 11-30-85	23,449	11,975	274
Potential to Emit – 100% Capacity Factor (CF) Net = PTE - Baseline	Post Modification	37,306 Net: 13,857	19,238 Net: 7,263	464 Net: 190
Potential to Emit – 90% CF	Post Modification	33,575 Net: 10,126	17,314 Net: 5,339	418 Net: 144
Potential to Emit – 80% CF	Post Modification	29,845 Net: 6,396	15,390 Net: 3,415	371 Net: 97
Potential to Emit – 70% CF	Post Modification	26,114 Net: 2,665	13,466 Net: 1,492	325 Net: 51
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	4-1-86 to 3-31-88	25,051 Net: 1,602	12,918 Net: 943	312 Net: 38

**PARADISE UNIT 3
NEW SOURCE REVIEW EMISSIONS SUMMARY**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions - Actual Emissions 2 Years prior to Modification	10-1-82 to 9-30-84	16,249	51,483	33
Potential to Emit - 100% Capacity Factor (CF) Net = PTE - Baseline	Post Modification	59,643 Net: 43,394	190,073 Net: 138,590	122 Net: 89
Potential to Emit - 90% CF	Post Modification	53,678 Net: 37,429	171,066 Net: 119,583	110 Net: 77
Potential to Emit - 80% CF	Post Modification	47,714 Net: 31,465	152,059 Net: 100,586	98 Net: 65
Potential to Emit - 70% CF	Post Modification	41,750 Net: 25,501	133,051 Net: 81,568	86 Net: 53
Potential to Emit - 60% CF	Post Modification	35,786 Net: 19,537	114,044 Net: 62,561	73 Net: 40
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	4-1-85 to 3-31-87	40,395 Net: 24,146	131,628 Net: 80,145	80 Net: 47

Source: EPA Exhibits 183-185, attached hereto as Exhibit 15.

2. The Projects Also Resulted in Emission Increases Under The Representative-Actual Test.

Even if the actual-to-projected-actual test is applied, despite the fact that it was not provided under the express language of the 1984 version of 40 C.F.R. § 52.21, the projects resulted in “significant increases,” as that term is used in the applicable statute and regulations, in emissions of NO_x. *See e.g.* EPA Enforcement Ex. 175-188 and Testimony of Joe Van Gieson, attached as Exhibit 16. Making projections of post-change emissions for the projects above, based on information available to TVA at the time of each project, the projects resulted in significant net emission increases. EPA Enforcement Post-Hearing Brief at 156-57. This should be expected, since TVA’s purpose for the projects was expressly to increase availability and operation of the units. *In re TVA*, 9 E.A.D. at 439-40; EPA Enforcement Post-Hearing Brief at 156-57. Indeed, TVA’s own internal documents, generated at the time of each project, prove that the physical changes were intended to increase operations and, consequently, would result in an emissions increase.” *In re TVA*, 9 E.A.D. at 441; EPA Enforcement Post-Hearing Brief at 27-28.

Based on an actual-to-projected actual test, the projects at the TVA Paradise units referenced above resulted in significant net emission increase of NO_x. *TVA*, 9 E.A.D. 440-41, Table 4; EPA Enforcement Exs. 183-185, 277 (Van Gieson prefiled testimony), attached as Exhibit 16. EPA calculated the emission increases to be as follows:

**PARADISE UNIT 1
NEW SOURCE REVIEW EMISSIONS SUMMARY IF WEPKO RULE APPLIES**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions – Actual Emissions for 2 years with highest emission rate of the 5 Years prior to Modification ("high 2 of 5")	4-1-80 to 3-31-82	25,916	123,409	26
Projected Net Representative Actual Emissions Increase - 138,190 MWH/yr loss during the two years before the modification to be recovered from replacing cyclone furnaces (GADS) 379,887 MWH/yr loss during the two years before the modification to be recovered from replacing furnace walls, headers and floor (GADS)	Post Modification	997	494	1
Total		<u>2,740</u> 3,737	<u>1,359</u> 1,853	<u>1</u> 2
Projected Net Representative Future Actual Emissions Increase - 11,960 MWH/yr loss during high 2 of 5 baseline period to be recovered from replacing cyclone furnaces (GADS) 110,502 MWH/yr loss during high 2 of 5 baseline period to be recovered from replacing furnace walls, headers and floor (GADS)	Post Modification	86	43	<1
Total Net Increase Above 2-yr Actual		<u>797</u> 883	<u>395</u> 438	<u><1</u> <1
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	10-1-85 to 9-30-87	26,923 Net: 1,007	13,898 Net: -109,511	14 Net: -12

**PARADISE UNIT 2
NEW SOURCE REVIEW EMISSIONS SUMMARY IF WEPKO RULE APPLIES**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions – Actual Emissions for 2 years with highest emission rate of the 5 Years prior to Modification ("high 2 of 5")	12-1-80 to 11-31-82	24,630	111,144	589
Projected Net Representative Actual Emissions Increase - 307,386 MWH/yr loss during the two years before the modification to be recovered from replacing cyclone furnaces (GADS) 153,268 MWH/yr loss during the two years before the modification to be recovered from replacing furnace walls, headers and floor (GADS)	Post Modification	2,196	1,133	27
Total		<u>1,095</u> 3,291	<u>565</u> 1,698	<u>14</u> 41
Projected Net Representative Future Actual Emissions Increase - 77,766 MWH/yr loss during high 2 of 5 baseline period to be recovered from cyclone furnaces (GADS) 252,346 MWH/yr loss during high 2 of 5 baseline period to be recovered from replacing furnace walls, headers and floor (GADS)	Post Modification	556	287	7
Total Net Increase Above 2-yr Actual		<u>1,803</u> 2,359	<u>930</u> 1,217	<u>22</u> 29
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	4-1-86 to 3-31-88	25,051 Net: 421	12,918 Net: -98,226	312 Net: -277

**PARADISE UNIT 3
NEW SOURCE REVIEW EMISSIONS SUMMARY IF WEPKO RULE APPLIES**

EMISSIONS CATEGORY	REFERENCE DATES	NOX (TONS/YR)	SO ₂ (TONS/YR)	PARTICULATE MATTER (TONS/YR)
Baseline Emissions – Actual Emissions for 2 years with highest emission rate of the 5 Years prior to Modification (“high 2 of 5”)	11-1-80 to 10-31-82	29,721	133,361	106
Projected Net Representative Actual Emissions Increase - 672,850 MWH/yr loss during two years before the modification to be recovered from replacing cyclone furnaces (GADS) 305,901 MWH/yr during the two years before the modification to be recovered from replacing furnace walls, headers and floor Total	Post Modification	4,689 <u>2,132</u> 6,821	14,943 <u>6,794</u> 21,737	10 <u>4</u> 14
Projected Net Representative Future Actual Emissions Increase - 231,278 MWH/yr loss during high 2 of 5 baseline period to be recovered from from replacing cyclone furnaces (GADS) 102,032 MWH/yr loss during high 2 of 5 baseline period to be recovered from replacing furnace walls, headers and floor Total Net Increase Above 2-yr Actual	Post Modification	1,612 <u>711</u> 2,323	5,136 <u>2,266</u> 7,402	3 <u>1</u> 4
Actual Emissions - 2 Years after Modification Net = Actual Post-Mod Emissions - Baseline	4-1-86 to 3-31-88	40,395 Net: 10,674	131,628 Net: -1,733	80 Net: -26

Source: EPA Exhibits 183-185, attached as Exhibit 15.

Conclusion

Because the Title V permit for the Paradise plant omits several applicable requirement applicable to Units 1, 2 and 3, including the Prevention of Significant Deterioration Program and best available control technology, the Administrator must object or, in the alternative, reopen and deny or revise the permit.

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