112(g) Case-By-Case Maximum Achievable Control Technology Determination
Longleaf Energy Associates, LLC
Construction/Operation of a Coal Fired Power Plant
Located in Hilton, Georgia (Early County)

NOTICE OF MACT APPROVAL

SIP Permit Application No. 18499
June 2009

Reviewing Authority

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch
Stationary Source Permitting Program (SSPP)

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Executive Summary

On October 7, 2008, Longleaf Energy Associates, LLC (Longleaf) submitted an Application for Notice of MACT Approval to the Georgia Environmental Protection Division, Air Protection Branch, subsequently referred to as the Division, providing this maximum achievable control technology (MACT) assessment for hazardous air pollutant (HAP) emissions from the above facility. This assessment provides (1) a plant description; (2) regulatory background on application of maximum achievable control technology to electric generating units under § 112(g) of the Clean Air Act; (3) a discussion of practical factors to be accounted for in determining the appropriate limit; (4) a list of the hazardous air pollutants to be considered; and (5) an assessment of MACT emission limitations under § 112(g).

Table I – Summary of MACT

HAP	Control Technology Employed by Longleaf	MACT Emission Limit	Performance Indicator (or surrogate)
Mercury (Hg)	Activated Carbon Injection (ACI) (including halogen addition)	6.0×10^{-6} lb/MWhr (bituminous) 13×10^{-6} lb/MWhr (sub-bituminous)	Direct via a Mercury CEMS
Non-mercury Metal HAPs	Fabric filter	0.010 lb/MMBtu $PM_{filterable}$	Indirect via a PM CEMS
Hydrochloric Acid (HCl)	Dry scrubber and fabric filter	0.0024 lb/MMBtu (bituminous) 6×10^{-4} lb/MMBtu (sub-bituminous)	Direct compliance tested via stack tests: indirect monitoring via SO_2 and PM CEMS
Hydrogen Fluoride (HF)	Dry scrubber and fabric filter	0.0002 lb/MMBtu	Direct compliance tested via stack tests: indirect monitoring via SO_2 and PM CEMS
Organic HAPs	Good combustion practices	0.10 lb/MMBtu CO	Indirect via a CO CEMS

Assessment

This Case-by-Case Maximum Achievable Control Technology (MACT) Assessment provides (1) background information on the Longleaf Energy Associates, LLC project and its regulatory status, and (2) a MACT Assessment for mercury (Hg), non-mercury metal hazardous air pollutants (HAPs), acid gas HAPs (HF and HCl), and organic HAPs as requested by the Georgia Environmental Protection Division (EPD) – Air Protection Branch.

1. **Plant Description**

   Longleaf Energy Associates, LLC (Longleaf) was issued a Prevention of Significant Deterioration (PSD) Air Quality Permit No. 4911-099-0033-P-01-0 on May 14, 2007 for the construction and operation of a pulverized coal-fired power plant. The Longleaf facility will consist of two nominal 600 MW pulverized coal-fired boilers. The facility will burn primarily either sub-bituminous coal (identified in the PSD Permit as Powder River Basin coal (PRB)) or bituminous coal (identified in the PSD Permit as Central Appalachian coal (CAPP)).

   As will be detailed in the following sections, the Longleaf project will include multiple control technologies and practices to minimize air emissions: low NOx burners, over-fire air, good combustion practices, selective catalytic reduction (SCR) for the control of Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC); fabric filter baghouse for the control of particulate matter (PM), including non-mercury metallic HAPs; dry scrubber for the removal of sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_4); dry scrubber in combination with the fabric filter baghouse will minimize emissions of the acid gas HAPs, hydrochloric acid (HCl) and hydrogen fluoride (HF); halogenated activated carbon injection (HACI) for the control of mercury emissions.

2. **Regulatory Background**

   When the Permit was issued for Longleaf, the Clean Air Mercury Rule (CAMR) was in effect. EPA promulgated the *Clean Air Mercury Rule (CAMR)* on May 18, 2005 which required Georgia and other States to adopt and submit revisions to their State Implementation Plants (SIPs), under the requirements of 40 CFR Part 60 Subpart B, that would eliminate specified amounts of mercury emissions from coal-fired electric utility generating units [EGUs]. Longleaf and all other applicable coal-fired EGU's whose nameplate capacity is greater than or equal to 25 Megawatts (MW) would have become subject to the state rule implementing CAMR on January 1, 2010 (391-3-1-.02(14)). The final PSD permit issued on 5/14/07, already contained limits for Mercury, HCl, and HF.

a. MACT Regulation of EGUs

In February 2008, nine months after EPD issued the PSD Permit, the United States Court of Appeals for the D.C. Circuit vacated the United States Environmental Protection Agency's (EPA) rule de-listing coal-fired electric utility steam generating units (EGU) from Section 112(c) of the Clean Air Act (CAA).[1] Therefore, Longleaf submitted an application to obtain preconstruction review and approval required by Section 112(g)(2)(B) of the CAA and its accompanying regulations, 40 CFR 63.40-44. The Application for Notice of MACT of Approval noted as Application No. 18499, contains a detailed discussion of the regulatory rationale for controlling HAPs in EGUs and the facility's thoughts on the current status of the path of regulation for these sources.

b. Section 112(g) Requirements

Section 112(g) requires a case-by-case MACT for major sources of HAP emissions where EPA has not yet promulgated a MACT standard for a listed source category. Section 112 defines a "major source" of HAPs as one that has the potential to emit of 10 tons per year of any single HAP or 25 tons per year of any combination of HAPs. A major source as defined in Section 112 must determine the following for each of the applicable Hazardous Air Pollutants:

> the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major source.

c. Implementing Section 112(g)

Section 112(g)(2)(B) states that for a new facility that is major for HAP emissions, where EPA has not yet promulgated a MACT standard for a listed category, that a case-by-case MACT analysis and emissions limitations shall be made by the permitting authority. This analysis is set forth in 40 CFR 63.43 (d) as described below.

Section 112(g) requires the setting of emission limits on HAPs using a two-part analysis: (1) a determination of the emission limitation achieved in practice by the best controlled similar source (otherwise known as the MACT Floor); and (2) the level of additional control, if any, that can be achieved by the source taking into consideration, cost, energy requirements, and non-air quality-related healthy and environmental impacts. The case-by-case MACT emission limit cannot exceed the MACT Floor.

[1] *New Jersey v. EPA,* 517 F.3d 574 (D.C. Cir. 2008)

d. Determination of a "Similar Source"

The facility's first step is to identify the emission limit of the best controlled similar source demonstrated in practice or the "MACT Floor." It is important to recognize that reductions in certain pollutants can result in an increase of other pollutants, e.g., lower CO or organic HAP emissions may result in higher NOx emissions. Therefore, the best controlled similar source may not have the lowest emission limit for each individual pollutant. After establishing the MACT Floor for that similar source, the facility must further examine ways to reduce the emissions "beyond the MACT Floor." Thus, the case-by-case MACT analysis starts with a comparison of "similar sources" consistent with EPA's proposed MACT and other categorical MACT rules. In its proposed rule for EGUs, EPA categorized and sub-categorized similar sources by fuel rank and combustion type. EPA has also indicated that it is also appropriate to sub-categorize by design size, and size has been used in setting several MACT standards.

1) Coal Rank

In its proposed MACT, EPA sub-categorized coal-fired EGUs based on the rank of coal (e.g., bituminous, sub-bituminous, lignite, and waste coal).[2] EPA identified fuel rank as an important factor in assessing HAP control technology because of the chemistry of controlling trace amounts of emissions and the variability of HAPs in the various coal ranks. For example, it is recognized that bituminous coal typically contains more chlorine and other halogenated compounds (halides) than sub-bituminous coals. Halides increase acid gas formation; on the other hand higher halide content promotes mercury control.

2) Type of Combustion

In its 2004 proposed rule, EPA noted that the establishment of a MACT Floor for coal-fired EGUs had to take into account unit-specific coal properties and boiler technology. The EPA-proposed rule placed EGUs into categories based on combustion design and further sub-categorized by fuel rank. EPA's sub-categorization according to coal rank recognized that differences in coal rank reflect differences in among other things, carbon content of the coal, volatile-matter content, heating value and agglomerating properties.

3) Design Size

In developing other MACT standards EPA has historically recognized that size is an important factor when designating sub-categories. With respect to EGUs, the design size of the unit is also important when determining the similarity of a source, since size affects the ability to control fuel consumption, air flow, overall cycle efficiency, and emission production – all factors that are relevant for comparison of performance of control technologies.

[2] See 69 Fed. Reg. 4652. 4662-63 (Jan. 30, 2004)

e. Practical Considerations in Comparing Data from Sources

It is also important to note several other practical factors in evaluating data from other sources and determining which one is the best controlled similar source.

1) Achievability

MACT limits must be continuously achievable. That is, they must be able to be met continuously under reasonably foreseeable worst-case conditions[3]. Thus, there is a need for a "safety margin" in setting MACT emission limits. Coal quality, boiler operation, and the control devices are subject to variability in operation, and that variability needs to be addressed in developing emission rates. Coal properties that affect emissions vary widely from mine to mine, from seam to seam and even within a single seam.

In addition, EGU boilers experience different operating conditions, including, but not limited to, varying load operation and maintenance activities such as on line soot blowing. A unit must be able to attain those standards under all operating conditions. Thus, any enforceable permit limit must account for reasonable variations in coal properties, operating conditions, and other factors in order to ensure that MACT limits are continuously achievable.

2) Method of measurement

Related to variability is the issue of how data is measured. In evaluating the emission rates that may have been achieved by other "similar" sources it is important to compare units with similar methods of measurement. As an example, hydrogen chloride (HCl), fluoride (HF) and lead (Pb) emissions are directly related to the amount of the pollutant in the fuel, which also varies even within the same coal seam. A case-by-case MACT standard that will be continuously monitored with mercury CEMS is a fundamentally more stringent limit, since it will record the actual mercury emissions emitted by the facility, including all of the variations in operating conditions, coal properties, mercury content, unburned carbon in fly ash, sorbent reactivity, and other factors that will occur every day.

3) "Demonstrated in practice"

The MACT floor is defined as "[t]he emission limitation which is not less stringent than the emission limitation achieved in practice by the best-controlled similar source . . ."[4]. The case-by-case MACT floor should therefore be established based on the lowest permit limit for which the best-controlled similar source has demonstrated continuous compliance in practice, including consideration of the specific requirements for compliance demonstration (i.e., monitoring method).

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[3] Sierra Club v. EPA, 167 F .3d 658, 665 (D.C. Cir. 1999).
[4] 40 CFR 63.41

f. HAPs to be considered

In its proposed 2004 MACT rule, EPA established a MACT limit only for mercury for coal-fired EGUs. This Assessment goes beyond mercury and evaluates the HAPs that are expected to be emitted from sources similar to Longleaf and is based on EPA's studies conducted under CAA § 112(n). The lists of HAPs that are potentially emitted from a coal-fired power plant are provided in Table II below. As shown in the table, using these properties, all HAPs can be placed into the four categories to be evaluated: mercury; particulate HAPs; acid gas HAPs; and organic HAPs.

Table II – List of HAPs Emitted from Coal-Fired Power Plants

Organics		**Acid Gases**
PAHs	Methyl methacrylate	Hydrochloric Acid
Acetaldehyde	Methyl tert butyl ether	Fluoride
Acetophenone	Methylene chloride	
Acrolein	Phenol	**Non-mercury Metals**
Benzene	Propionaldehyde	Antimony (Sb)
Benzyl chloride	Tetrachloroethylene	Arsenic (As)
Bis(2-ethylhexyl)phthalate	Toluene	Beryllium (Be)
Bromoform	1,1,1-Trichloroethane	Cadmium (Cd)
Carbon disulfide	Styrene	Chromium (Cr)
2-Chloroacetophenone	Xylenes	Cobalt (Co)
Chlorobenzene	Vinyl acetate	Lead (Pb)
Chloroform	Dioxins	Manganese (Mn)
Cumene	Hexachlorobenzene	Nickel (Ni)
Cyanide	Carbon tetrachloride	Selenium (Se)
2,4-Dinitrotoluene	Quinoline	
Dimethyl sulfate	1,1-Dichloroethylene	
Ethyl benzene	N-nitrosodimethylamine	Mercury
Ethyl chloride	1,1,2-Trichloroethane	
Ethylene dichloride	Trichloroethylene	
Ethylene dibromide	Pentachlorophenol	
Formaldehyde	Trans 1,3 – Dichloropropene	
Hexane	Cresols	
Isophorone	Dibuyl phthalate	
Methyl bromide	Methyl isobutyl ketone	
Methyl chloride	Phthalic anhydride	
Methyl ethyl ketone	Methyl iodine	
Methyl hydrazine		

Given the variety of coal ranks that are to be utilized and the suitable combustion technology, it is necessary to assess each HAP that may be emitted and to determine the physical and chemical properties of that HAP that can be utilized to separate it from the flue gas and to capture it.

EPA and the courts have indicated that HAPs can be characterized and controlled together using surrogates for measuring compliance when three factors are met: 1) whether the HAPs to be regulated are "invariably present" in the emissions of the proposed surrogate; 2) whether the pollution control technology used for the surrogate "indiscriminately captures" the HAPs to be regulated along with the emission of the proposed surrogate; and 3) whether the pollution control technology used for the surrogate is the only means by which a facility could reduce the emissions of the HAPs to be regulated.[5] The case-by-case MACT Assessment provided below for Longleaf assesses the control technologies that applies to the separate groupings of HAPs and, where appropriate, the air pollutants that are used as a surrogate. The groupings and surrogates for MACT Assessment are:

- Mercury
- Non-mercury Metal HAPs (filterable particulate matter as surrogate)
- Acid Gases (PM and SO_2 as surrogate monitoring pollutant)
- Organic HAPs (CO as surrogate)

Each HAP category will be addressed to determine the best control mechanism and the best indicator to show maximum control.

[5] *See Sierra Club v. EPA*, 353 F.3d at 984 (citing *Nat'l Lime Ass'n*, 233 F.3d at 639).

3. 112(g) Determination

a. MACT Determination for Mercury Emissions

Applicant's Proposal

In Application 18499, Longleaf submitted a case-by-case MACT Analysis for Mercury. The analysis submitted is summarized below, but the complete analysis is located in the above referenced application.

(1) Mercury MACT Floor

Longleaf evaluated a number of sources to determine the Mercury MACT Floor. These sources included EPA Regulations and background documents, other state regulations, and other information like performance tests from similar sources. Longleaf proposes using two types of coal as fuels in the pulverized coal-fired boilers. The primary fuel is Powder River Basin coal (PRB) which is a sub-bituminous classification of coal. The secondary fuel is Central Appalachian coal (CAPP) which is a bituminous classification of coal. From this point on the coal types will be referenced by the classification type and not their common name. Each coal type has different emissions based on the content in the coal itself. EPA has stated previously that each coal type has different levels of chlorine and mercury which affects the speciation of the mercury and the ability for the control device to remove the mercury from the gas stream. Additionally, differences in heat content and mercury content can also affect mercury emissions. Current technologies are not capable of removing sufficient levels of mercury to justify identical mercury emissions limitations for sub-bituminous and bituminous coals. Therefore, separate MACT analyses are done for the two coal types.

(a) Bituminous Coal-Fired Units

Longleaf reviewed information from EPA Regulations, other state regulations, and recent test data from existing facilities. The EPA Regulations reviewed included the originally proposed MACT standard, 40 CFR Part 63, Subpart UUUUU, and the vacated New Source Performance Standards (NSPS) associated with CAMR. All information regarding any EPA data, rules or regulations are detailed in Air Quality Application No. 18499. After reviewing EPA data, Longleaf identified the Mecklenberg Cogeneration Facility as the "best controlled similar source". The Mecklenberg facility is a bituminous coal-fired unit that is equipped with a fabric filter and dry scrubber, and achieves a mercury removal efficiency of 98.5% and mercury emissions based on stack tests of 1.13 lb Hg/TWhr (Terawatt hour) (1.13×10^{-6} lb/MWhr (Megawatt hour)).

While taking into account the stack test data available from the Mecklenberg facility, EPA chose to propose a mercury emission standard of 6×10^{-6} lb/MWhr for bituminous coal-fired EGUs, a level that is approximately 5.3 times higher than the recorded test value from the Mecklenberg facility. As the EPA explained in the preamble accompanying its proposed MACT emission limits, the agency needed to account for variability in test results to "assure that an emission limitation value could be derived that was representative of what was actually being achieved by the best-performing units under all conditions expected to be encountered by those units."[6] EPA's decision to propose a MACT emission limit for mercury that was 5.3 times higher than the lowest reported stack test data suggests that stack test data, alone, does not provide a sufficient basis upon which to set a MACT emission limitation.

Second, Longleaf reviewed state mercury regulations. Of the multitude of states with current regulations, Connecticut had the lowest mercury emission limit for bituminous coal-fired units. Connecticut has a limit of 6.0×10^{-6} lb/MWhr which is the same limit that EPD established as BACT for the Longleaf Facility while burning bituminous coal.

Finally listed in Table III below is the available test data from an operating facility. The lowest test result for a bituminous coal-fired boiler is located at Santee Cooper Cross, Unit 3.

Table III - Mercury Stack Test Results for Bituminous-Fired Facilities

Plant	Test Date	Test Result	Approx. Lb/MWhr equivalent
Cross	Feb. 9, 2007	6.31×10^{-3} lb/hr	6.3×10^{-6}

Based on the above information Longleaf proposes a MACT floor of 6.0×10^{-6} lb/MWhr for bituminous coal.

[6] 69 FR 4670 (January 30, 2004)

(b) Sub-Bituminous Coal-Fired Units

Longleaf examined the same sources of information as completed for Bituminous coal-fired units. Longleaf identified the Clay Boswell facility as the "best controlled similar source" for sub-bituminous coal-fired units. The Clay Boswell facility utilizes a fabric filter to achieve 86% mercury removal efficiency and mercury emissions based on a stack test of 7.03 lb HG/TWhr (7.03 x 10^{-6} lb/MWhr).

As with the ICR data for bituminous coal-fired EGUs, Longleaf searched EPA's Information Collection Request (ICR) data and identified the Clay Boswell facility as the "best controlled similar source" for subbituminous coal-fired EGUs. The Clay Boswell facility utilizes a fabric filter to achieve 86% mercury removal efficiency. At the time of its stack test, Clay Boswell had 0.0567 ppm of mercury in the coal and emissions of 0.6863 lb/TBtu or 7.03 lb Hg/TWhr (7.03 x 10^{-6} lb/MWhr). While taking into account the Clay Boswell stack test data, however, EPA chose to propose a MACT standard 2.8 times higher (20 x 10^{-6} lb/MWhr) in order to account for the variability in test results.

EPA has provided additional guidance pertaining to the methodology in setting a MACT Floor and allowing for a margin of compliance that sets the MACT floor at a higher level than the tested results at similar facilities.

> The most contentious issues in the rulemaking involved methodologies for determining MACT floors, namely, which sources are best performing, and what is their level of performance. Superficially, these questions have a ready answer: the best performers are the lowest emitters as measured by compliance tests, and those tests fix their level of performance. But compliance tests are snapshots which do not fully capture sources' total operating variability. Since the standards must be met at all times, picking lowest compliance test data to set the standard results in standards best performing sources themselves would be unable to meet at all times.
>
> To avoid this impermissible results, EPA selected approaches that reasonably estimate best performing sources' total variability. Certain types of variability can be quantified statistically, and EPA did so here (using standard statistical approaches) in all of the floor methodologies used in the rule. There are other components of variability, however, which cannot be fully quantified, but nonetheless must be accounted for in reasonably estimating best performing sources' performance over time. EPA selected ranking methodologies which best account for this total variability. . .
>
> . . . When HAP feed control is not feasible, notably where HAP is contributed by raw material and fossil fuel inputs, EPA determined best performers and their level of performance using a methodology that selects the lowest emitters using the best air pollution control technology. This methodology reasonably estimates

the best performing sources' level of performance, and better accounts for total variability in emissions levels of the best performing sources. [7]

In addition to EPA regulations, Longleaf reviewed recent state regulatory actions. Connecticut regulations require 90% removal of mercury and an emission limit of 0.6 lb/Tbtu (Tbtu = trillion british thermal units). Longleaf believes is not applicable to the facility due to the following reasons: First unlike the mercury limit for sub-bituminous coal in Longleaf's PSD Permit, the Connecticut limit can be altered by the permitting authority if the Permittee cannot maintain compliance; Second, while the Connecticut limit applies to sub-bituminous coal, the particular sub-bituminous coal being burned at the subject facility is Indonesian sub-bituminous. Available samples of Indonesian sub-bituminous coal (as identified in the ICR database) have less than half the mercury content of the domestic sub-bituminous coal that Longleaf facility plans to burn. Longleaf also considered Georgia EPD's mercury emission regulation, which requires a BACT analysis for mercury emissions for new units. Georgia EPD applied this standard to Longleaf in its PSD Permit and concluded that BACT for mercury while burning sub-bituminous coal is 15 x 10^{-6} lb/MWhr.

Finally listed in Table IV below is the available test data from operating facilities.

Table IV - Mercury Stack Test Results for Sub-bituminous-Fired Facilities

Plant	Test Date	Test Result	Approx. Lb/MWhr equivalent
Sub-bituminous – co-controls			
Tucson Electric Springerville Unit 3	Aug. 24-25, 2006	2.27 x 10^{-6} lb/MMBtu	21.7 x 10^{-6}
Sub-bituminous - ACI			
MidAmerican Walter Scott, Jr	Dec. 20, 2007 (Optimization Test)	1.11 ug/m3	10 x 10^{-6}
MidAmerican Walter Scott, Jr	Aug. 14-18, 2007	1.2 x 10^{-6} lb/MMBtu	10.5 x 10^{-6} (1)
Weston 4	July 7-11, 2008	1.4 lb/TBtu	~8.79 x 10^{-6} (2)
Newmont Nevada TS Power Plant	June 23-24, 2008	<0.0076 lb/GWhr	<7.6 x 10^{-6}
MidAmerican Walter Scott, Jr	May 8-12, 2007	0.72 x 10^{-6} lb/MMBtu	6.48 x 10^{-6} (1)
~~Newmont Nevada TS Power Plant~~ (3)	~~April 6-14, 2008~~	~~39 x 10^{-6} lb/MWhr~~	~~39 x 10^{-6}~~

(1) The test reports identified that when values fell below the Practical Quantification Level (PQL), the PQL was reported. As a result, these values represent the maximum possible emissions.[8]
(2) LEA wasn't able to find specific MMBtu/hr nor MW data to make the conversion so generic values of 3,675 MMBtu/hr (back calculated from PM data) and 585 MW (provided in overview of report) were used.

[7] 70 Fed. Reg. at 59419, (Oct. 12, 2005).
[8] The average mercury concentrations of the Walter Scott tests were 0.902 and 1.3 µg/dscm for May and August, respectively. The average mercury concentration of the Newmont test was 0.943 µg/dscm. All of these levels fall below the level at which the Ontario Hydro method experiences poor precision, 3 µg/dscm.

(3) As part of the June report, Fluor identified that the April results were shown to have mercury contamination of the testing equipment and were subsequently withdrawn. These results were previously presented as accurate data but are now lined out so as to make it clear to EPD, these Newmont results are no longer valid.

Based on the above information Longleaf proposes a MACT floor of 15.0 x 10^{-6} lb/MWhr for sub-bituminous coal.

(2) Beyond the Floor Analysis

Activated carbon injection is widely recognized as the top control for mercury from coal-fired boilers and is the technology proposed at the Longleaf facility. As part of Longleaf's additional review, Department of Energy's National Energy Technology Laboratory (DOE/NETL) research papers were examined. The DOE/NETL has results of its performance testing of various ACI, activated carbon enhancement additives, and mercury oxidation catalysts. Longleaf reviewed several DOE/NETL study results for facilities burning bituminous and sub-bituminous coal as fuels and the results are listed below in Table V.

Table V – Mercury Study Test Results for Bituminous Coal-Fired EGUs

Technologies Investigated	Coal Type* and Unit	Average Total Hg Removal (co-benefits and new tech)
Mer-Cure + ACI	Bit – Portland Station Unit 1	95%
Halogenated ACI	Sub/Bit Blend – St. Clair Unit 1	94%
ACI	Bit – Yates	50 to 86%
Halogenated ACI	Bit – Lee Unit 1	85% (No SO_3** injection)
Combustion Modification	Bit – Lee Station	80%
ACI	Sub/Bit Blend – Monroe Unit 4	78%
ACI	Bit – Merrimack Unit 2	50% to 65%
Amended Silicates	Bit – Miami Fort Unit 6	40%
ACI	Bit – Conesville	30% (SO_3 interference)

* Bit = bituminous, Sub = Sub-bituminous
** SO_3 = Sulfur trioxide

The results listed in the above table indicate that existing facilities have failed to attain the mercury removal efficiency for bituminous coal-fired units that will be required for Longleaf to meet the MACT Floor. Specifically, to comply with a MACT floor of 6.0 x 10^{-6} lb/MWhr for bituminous coal, Longleaf would have to achieve approximately 97.3% removal efficiency. This level is higher than any of the removal efficiencies reported in the DOE/NETL study. DOE/NETL indicates that a mercury limit beyond the MACT floor as proposed by Longleaf for bituminous coal is not currently achievable.

Table VI – Mercury Study Test Results for Sub-bituminous Coal-Fired EGUs

Technologies Investigated	Coal Type* and Unit	Average Total Hg Removal (co-benefits and new tech)
Halogenated ACI	Sub – Holcomb Unit 1	93%
Halogenated ACI	Sub – Meramec Unit 2	92.6%
Mer-Cure + ACI	Sub – Dave Johnson Unit 3	92%
Mer-Cure + ACI	Sub – Fayette Unit 3	90%
Toxecon	Sub – Presque Isle	90% to >90% (ash self heating/ignition issues)
ACI + SEA	Sub – Hawthorne 5A	85% to >90%
Toxecon	Sub – Independence Unit 1	90%
Halogenated ACI	Sub – Hardin	90%
Sorben Enhancement Additives (SEA)	Sub/Lig – Monticello Unit 3	86%
Halogenated ACI	Sub – Stanton Unit 1	85%
Concrete Friendly ACI	Sub – Crawford Unit 7	81%
Halogenated ACI	Sub – Labadie	80% (>90% seen with no SO_3 injection and ACI upstream of air preheater)
ACI	Sub – Pleasant Prairie	65%

* Sub = Sub-bituminous, Lig = Lignite

For sub-bituminous coal Longleaf also reviewed DOE/NETL studies for several facilities burning sub-bituminous coal as a fuel which are listed above in Table VI. For sub-bituminous coal-fired units to meet a MACT floor that will be required, Longleaf would have to achieve approximately 93.5% removal efficiency. This level is higher than all but one of the removal efficiencies reported in the DOE/NETL study. In sum, recent data from the DOE/NETL study of advanced mercury control technology demonstrates that the mercury removal efficiencies that Longleaf will be required to achieve in order to comply with the MACT floor represent the maximum degree of mercury reduction that can be achieved. Mercury limits beyond the MACT floor identified above therefore are not warranted.

Longleaf also reviewed recently issued draft or final permits for mercury. These permits are listed below in Table VII.

Table VII - MACT Limits for Mercury in Recent Permits and Draft Permits

Facility	State	Permit Limit	(Draft) Permit Date	Notes
Coal Blends (including waste coal and bituminous coal)				
NRG Limestone	Texas	12 to 15 x 10^{-6} lb/MWhr	August 2008	Draft MACT Permit
Santee Cooper Pee Dee	South Carolina	8.0 x 10^{-6} lb/MWhr	Dec 2008	Final MACT Permit
Sub-bituminous Coal				
SWEPCO John Turk	Arkansas	1.7 lb/TBtu (approx. equal to 16 x 10^{-6} lb/MWhr)	Nov 2008	Final MACT Permit
Comanche	Colorado	20 x 10^{-6} lb/MWhr	June 2005	PSD Permit

In addition to the facilities listed in Table VII, Longleaf examined several fluidized bed combustor (FBC) facilities that have low mercury limits. These facilities include: Dominion – Virginia City; Nevco-Sevier; and Wolverine. All of these facilities were not used in Longleaf's evaluation due to the major differences in coal type. The following are the differences in coal between Longleaf and the listed facilities: Dominion is permitted to use waste coal; Nevco will burn a substantially lower mercury content Utah bituminous coal; Wolverine is permitted to use of high quantities of pet coke.

Based on the above information that Longleaf has reviewed, no available information justifies MACT emission limits for mercury that are beyond the proposed MACT floor.

(3) The MACT Emissions Limitation for Mercury

Longleaf proposes as MACT for mercury the use of ACI (to include the likelihood of halogenated ACI and/or halogen injection and non-halogenated ACI), along with mercury limits of:

6 x 10^{-6} lb/MWhr (gross) for bituminous coal; and

15 x 10^{-6} lb/MWhr (gross) for sub-bituminous coal.

For any year in which a blend of bituminous and sub-bituminous coals are combusted, Longleaf proposes that the applicable limit be based on a computed weighted average based on the proportion of energy output (based on MMBtu input) contributed by each coal type burned during the compliance period and its applicable mercury limit. Longleaf also proposes that a mercury CEMS be utilized to demonstrate compliance with the proposed 12-month rolling average limit.

EPD Review

(4) Mercury MACT Floor

EPD requested additional information to complete the review of this Case-by-Case MACT application. Specifically, EPD requested more detailed information on how the US Coal Quality (COALQUAL) database was used to gather data on the content of mercury, chlorine, and fluorine in the coal. EPD requested more information as to what coal types were included in (and excluded from) the collected data. In addition, EPD requested that Longleaf show the average value and standard deviation for mercury, chlorine, and fluorine samples. Longleaf submitted a copy of the COALQUAL database (downloaded and put into spreadsheet form) used to generate the numbers presented in the original application.

EPD requested detailed calculations showing how Longleaf converted the contaminant content (ppm) of mercury, chlorine, and fluorine to uncontrolled emissions (tpy). As a part of letter dated December 3, 2008 (Response to October 29, 2008 EPD Letter for more information) Longleaf detailed how these calculations were completed and submitted sample calculations. In a subsequent email dated December 8, 2008 from Kathy French to Anna Aponte, several minor errors in the sample calculations were identified and corrected.

a. Bituminous Coal-Fired Units

The proposed mercury limit for the combustion of sub-bituminous (PRB) coal is much higher than the proposed mercury limit for the combustion of bituminous (CAPP) coal. EPD requested that Longleaf provide more explanation and documentation regarding the reason for the difference between the proposed mercury emission rate from sub-bituminous and bituminous coal.

Longleaf submitted the following response in a letter dated December 3, 2008 and portions of this discussion are included above in the applicant's proposal of this document for the case-by-case MACT determination for Mercury:

> In its 2004 proposed MACT, EPA explained why bituminous coal-fired units and sub-bituminous coal-fired units achieve different levels of mercury removal. In brief, EPA explained that differing chlorine content in coal types affects the speciation of mercury, and that the speciated form of mercury in the coal in turn affects the level of mercury removal that control devices can achieve.[9] Additionally, differences in mercury content and heat content of the coal were also found to affect mercury emissions. As LEA explained in its original submission, bituminous and sub-bituminous coals have differing chlorine content, mercury content and heat content which explain the different mercury limits for these coal types.
>
> LEA reviewed data from other similar facilities to determine whether the best mercury control technologies were capable of removing a sufficient amount of

[9] 69 Fed. Reg. at 4671-72, (Jan. 30, 2004).

mercury so as to negate the effects of the differing chlorine, mercury and heat contents of sub-bituminous and bituminous coals. As explained below, LEA's research indicates that available mercury control technologies — in particular, activated carbon injection (ACI)[10] — are not currently capable of achieving a sufficient level of mercury removal to justify identical mercury emission limitations for sub-bituminous and bituminous coals.

The available test data from similar facilities utilizing the most effective mercury add-on control, ACI, demonstrate that the limit proposed for bituminous coals cannot be met by sub-bituminous coals. None of the test results from sub-bituminous coal-fired facilities utilizing ACI have been able to meet the proposed limit for bituminous coal. As shown by Cross in Table 2 below, only an additional 5% of removal is necessary for it to meet LEA's proposed bituminous limit. In contrast, Springerville Unit 3[11] requires 45% removal to meet LEA's proposed sub-bituminous limit and 72% removal to meet the proposed bituminous limit. Of the three DOE test results on sub-bituminous coal-fired facilities, only one was able to meet greater than 72% additional removal.[12] Since uncontrolled mercury was not identified in most of those results, it isn't possible to evaluate the percent removal being obtained in those tests, but the results of the testing show that none of the facilities have been able to meet the proposed bituminous coal-fired limit.

Table VIII – Summary of Mercury Stack Test Results on New Units

Plant	Test Date	Test Result	Approx. Lb/MWhr equivalent
Bituminous – co-controls			
Cross	Feb. 9, 2007	6.31×10^{-3} lb/hr	6.3×10^{-6}
Sub-bituminous – co-controls			
Tucson Electric Springerville Unit 3	Aug. 24-25, 2006	2.27×10^{-6} lb/MMBtu	21.7×10^{-6}
Sub-bituminous - ACI			
MidAmerican Walter Scott, Jr	Dec. 20, 2007 (Optimization Test)	1.11 ug/m3	10×10^{-6}
MidAmerican Walter Scott, Jr	Aug. 14-18, 2007	1.2×10^{-6} lb/MMBtu	10.5×10^{-6} (1)
Weston 4	July 7-11, 2008	1.4 lb/TBtu	~8.79×10^{-6} (2)

[10] ACI is used generically and is intended to include halogenated ACI.

[11] In the prior submittal it was not made clear by LEA that ACI is not used at Springerville Unit 3 – LEA apologizes for any confusion.

[12] ACI provides approximately 68%, 82%, and 37% additional removal at the sub-bituminous coal-fired facilities of Pleasant Prairie, Holcomb, and Meramec. (http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/41005/41005_Final_Report.pdf, http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/Topical_Report_for_Holcomb_Station.pdf, http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/control-tech/pubs/Topical%20Report%20for%20Meramec%20Station.pdf)

Plant	Test Date	Test Result	Approx. Lb/MWhr equivalent
Newmont Nevada TS Power Plant	June 23-24, 2008	<0.0076 lb/GWhr(4)	<7.6 x 10^{-6}
MidAmerican Walter Scott, Jr	May 8-12, 2007	0.72 x 10^{-6} lb/MMBtu	6.48 x 10^{-6} (1)
~~Newmont Nevada TS Power Plant~~ (3)	~~April 6-14, 2008~~	~~39 x 10^{-6} lb/MWhr~~	~~39 x 10^{-6}~~

(1) The test reports identified that when values fell below the Practical Quantification Level (PQL), the PQL was reported. As a result, these values represent the maximum possible emissions.[13]

(2) LEA wasn't able to find specific MMBtu/hr nor MW data to make the conversion so generic values of 3,675 MMBtu/hr (back calculated from PM data) and 585 MW (provided in overview of report) were used.

(3) As part of the June report, Fluor identified that the April results were shown to have mercury contamination of the testing equipment and were subsequently withdrawn. These results were previously presented as accurate data but are now lined out so as to make it clear to EPD, these Newmont results are no longer valid.

(4) GW = Gigawatt

To further address EPD's question for a basis for the difference between the proposed bituminous and sub-bituminous limits, additional support for setting MACT limits is provided by EPA as part of the Hazardous Waste Combustors (HWC) MACT. Section 7.0 of the Technical Support Document for the HWC MACT Standards provides detailed calculations for the determination of the MACT Floor for air pollution control devices approach. EPA used this methodology for setting the PM MACT floor, a limit governed by the use of control devices, typically baghouses. For HWC, metals and chlorides were not set with this methodology as the feedrate was determined to be the critical issue. For coal-fired boilers, however, the use of activated carbon, i.e. the pollution control device, will determine emissions. If EPA's Air Pollution Control Technology Approach and Universal Variability Factor (UVF) are utilized to calculate a MACT floor for sub-bituminous coal, a limit of 16.1 x 10^{-6} lb/MWhr (gross) can be calculated.[14] This is based on taking into account the test-to-test and run-to-run variability inherent in the operation of mechanical equipment and relies on the test results available from the Newmont TS Power Plant, MidAmerican Walter Scott, and Weston 4 generating stations.[15] The Hazardous Waste Combustor MACT did not utilize the UVF for new sources, but rather relied upon the upper 99^{th} percentile prediction limit for the best performing new source MACT pool.[16] The 99^{th} percentile of the available test runs is equivalent to the average of the data plus 2.8 standard deviations and is equal to 13.1 x 10^{-6} lb/MWhr (gross).

[13] The average mercury concentrations of the Walter Scott tests were 0.902 and 1.3 µg/dscm for May and August, respectively. The average mercury concentration of the Newmont test was 0.943 µg/dscm. All of these levels fall below the level at which the Ontario Hydro method experiences poor precision, 3 µg/dscm.

[14] For calculation details, please see MACT spreadsheet, Hg tab included on the attached CD.

[15] Mercury test data wasn't found for Wygen II nor Hardin and the data from Tucson Electric Springerville is not based on the use of ACI.

[16] Revised Technical Support Document for HWC MACT Standards Volume III: Selection of MACT Standards, EPA-HQ-OAR-2004-0022-0634 October 2008, page 9-1.

b. Sub-Bituminous Coal-Fired Units

The above discussion on differences in coal type also applies to this section. In addition, EPD noticed an apparent discrepancy in the required mercury reduction for sub-bituminous coal between page 13 (93.5% reduction) and page 17 (92.7% reduction). EPD requested that Longleaf resolve this apparent discrepancy. Longleaf apologized for the error and the correct percent reduction should be 93.5%. The calculation method is shown below.

(1 - 0.043 TPY controlled Hg / 0.66 TPY uncontrolled Hg) * 100% = 93.5% reduction

Footnote 54 references Connecticut's use of Indonesian sub-bituminous coal as part of their State Clean Air Mercury Rule. EPD is unable to locate the Indonesian sub-bituminous coal data in the ICR data downloaded from the cited website. EPD requested that Longleaf provide a copy of the ICR data used as part of LS Power's review so that EPD can verify all information submitted.

Longleaf submitted additional information of a CD which has a spreadsheet where they downloaded the 4 individual ICR data spreadsheets, combined them, and sorted the data to combine all of the Indonesian sub-bituminous data together. Longleaf has hidden the additional data to make it easier for EPD to find that data among the 40,527 lines of data.

(5) Beyond the Floor Analysis

In the discussion on beyond the floor analysis, Longleaf discusses the Holcomb Unit 1 and the corresponding mercury concentrations. EPD asked Longleaf to provide more explanation regarding their analysis and their relevance to the proposed mercury limit.

Longleaf submitted the following response in a letter dated December 3, 2008:

The Holcomb and Clay Boswell facilities reported the following information as part of the DOE and ICR studies.

Table IX – Summary of Critical Hg Information

	Reported Boiler Outlet (lb/TBtu)	**Reported % Removal**	**Calculated Uncontrolled (lb/TBtu)**
Clay Boswell	0.686	86%	4.9
Holcomb	0.83	93%	11.9

The only point that LEA was attempting to make in the last three sentences is that both the percent removal and the uncontrolled emissions should be considered in evaluating what limit should be set. The Clay Boswell Unit had significantly less mercury in its uncontrolled emissions and thus only achieved 86% removal, but had it started with the uncontrolled mercury emission level of the Holcomb unit and still achieved the same outlet level, the Clay Boswell Unit would have achieved 94% removal.

EPD is aware of Mid-Michigan Energy, LLC that is currently being reviewed by Michigan Department of Environmental Quality, Air Quality Division (Michigan DEQ). Mid-Michigan submitted a letter dated January 12, 2009 to Michigan DEQ proposing a mercury limit of 13×10^{-6} lb/MWhr while firing sub-bituminous coal as a fuel in the boilers[17]. EPD believes this provides substantiation to lower the current proposed mercury limit from 15×10^{-6} lb/MWhr to 13×10^{-6} lb/MWhr while firing sub-bituminous coal.

(6) The MACT Emissions Limitation for Mercury

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for mercury while firing bituminous coal. EPD has chosen to lower the sub-bituminous coal limit as stated above.

(7) Conclusions

EPD sets as the MACT emission limitations for mercury the use of ACI (to include halogenated ACI and/or halogen injection and non-halogenated ACI), along with the mercury limits of:

- 6×10^{-6} lb/MWhr (gross) for bituminous coal; and
- 13×10^{-6} lb/MWhr (gross) for sub-bituminous coal.

For any year in which a blend of bituminous and sub-bituminous coals are combusted, the applicable limit be based on a computed weighted average based on the proportion of energy output (based on MMBtu input) contributed by each coal type burned during the compliance period and its applicable mercury limit. Mercury CEMS will be utilized to demonstrate compliance with the proposed 12-month rolling average limit.

[17] Letter dated January 12, 2009, Mid-Michigan Energy, LLC to Michigan Department of Environmental Quality, Air Quality Division

b. MACT Determination for Non-Mercury Metals Emissions

Applicant's Proposal

(1) $PM_{filterable}$ as a Surrogate for Non-Metal Mercury Metal HAP Emissions

Longleaf proposes to use filterable particulate matter ($PM_{filterable}$) as a surrogate for non-mercury metal HAPs. In general, the use of a surrogate in MACT standards has been widely accepted by EPA, state permitting agencies, and the courts. Longleaf cites multiple EPA federal register notices, draft or issued Notice of MACT approval permits for several states, and several court cases in the case-by-case MACT application No. 18499. As one court noted, the reasonableness of the use of a surrogate depends on several factors, including (1) whether the HAPs to be regulated are "invariably present" in the emissions of the proposed surrogate; (2) whether the pollution control technology used for the surrogate "indiscriminately captures" the HAPs to be regulated along with emissions of the proposed surrogate; and (3) whether the pollution control technology used for the surrogate is the only means by which a facility could reduce the emissions of the HAPs to be regulated.[18]

Longleaf states that for non-mercury metal HAPs, the use of $PM_{filterable}$ satisfies all of these factors and therefore is an appropriate surrogate for continuous compliance with the associated permit limits.

(2) Non-Mercury Metal MACT Floor

Longleaf evaluated a number of sources to determine the non-mercury metal MACT Floor. These sources included EPA Regulations and background documents, and other information like performance tests from similar sources. Stack test and $PM_{filterable}$ permit limits from other similar sources in operation are listed below in Table X.

Table X - $PM_{filterable}$ Limits and Test Results at Select Facilities

Facility	Filterable Permit Limit (lb/MMBtu)	Test Result (lb/MMBtu)	Test Date
Wygen II	0.012	0.001	March 2008
MidAmerican - Walter Scott, Jr.	0.018	0.003	May 2007
Santee Cooper - Cross Unit 3	0.015	0.006	Jan. 2007
Tucson Electric - Springerville Unit 3	0.015	0.0020(1)	Nov. 2006
Hardin	0.015	0.0072	May 2006

(1) Retest results – the initial test failed the limit due to incorrect installation of bags in the baghouse.

[18] *See Sierra Club v. EPA*, 353 F.3d at 984 (citing *Nat'l Lime Ass'n*, 233 F.3d at 639).

While the test results suggest that emission levels of $PM_{filterable}$ lower than 0.012 lb/MMBtu have been achieved in single stack tests, the results of these stack tests do not provide a sufficient basis upon which to establish a MACT floor below the permitted limits. A stack test is a one-time picture of emissions over a 3-hour period and cannot always accurately represent emissions over the long term. Relying on stack test results to inform a MACT determination is difficult due to Longleaf will utilize a CEMS to ensure compliance with its $PM_{filterable}$ permit limit. The CEMS will measure $PM_{filterable}$ emissions at all times. For these reasons, the reported stack test results from similar sources do not establish MACT floor levels.

Based on the above information, Longleaf proposes the use of a fabric filter and a $PM_{filterable}$ limit of 0.012 lb/MMBtu as the MACT floor for non-mercury metal HAPs.

(3) Beyond the Floor Analysis

Longleaf reviewed information about adding additional particulate control devices such that technologies in series could have the potential to remove more particulate matter than just one device. Longleaf found data to support the contrary. Since $PM_{filterable}$ is a solid material that cannot be incinerated, absorbed in a carbon bed or scrubber, the devices designed to remove it from the gas stream are extremely efficient (>99%). There is no data to suggest that the use of an additional control device in series with the fabric filter will result in any measurable increase in $PM_{filterable}$ removal efficiency already achieved.

Longleaf also reviewed recent draft and final permitting decisions throughout the United States. These facilities and their corresponding $PM_{filterable}$ limits are listed below in Table XI.

Table XI - $PM_{filterable}$ Limits in Recent Permits and Draft Permits

Facility	State	Filterable Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
SWEPCO John Turk	Arkansas	0.012	Nov 2008	Final MACT Permit
NRG Limestone	Texas	0.012	August 2008	Draft MACT Permit
Desert Rock	EPA Region 9 (New Mexico Tribal Lands)	0.010	July 2008	PSD Permit
Santee Cooper - Pee Dee	South Carolina	0.012	Dec 2008	Final MACT Permit
Comanche	Colorado	0.012	June 2005	PSD Permit

After reviewing these permit limits and test results from recently constructed facilities, Longleaf has determined that a $PM_{filterable}$ limit beyond the floor — specifically, 0.010 lb/MMBtu on a 3-hour average — may be achievable over the life of the facility.

(4) The MACT Emissions Limitation for Non-Mercury Metal HAPs

Longleaf proposes as MACT for non-mercury metal HAPs the use of a fabric filter and a $PM_{filterable}$ emission limit of 0.010 lb/MMBtu. Longleaf proposes that the PM CEMS be utilized as a surrogate for the direct measurement of non-mercury metal HAPs. This CEMS system will allow for continuous monitoring of $PM_{filterable}$ ensuring that the facility remains in compliance with the corresponding permit limits.

<u>EPD Review</u>

(5) $PM_{filterable}$ as a Surrogate for Non-Metal Mercury Metal HAP Emissions

Longleaf cited several permits and Notice of MACT Approvals for facilities using PM filterable as a surrogate for non-mercury metal HAPs. EPD was unable to verify the use of PM filterable as a surrogate for non-mercury metal HAPs in the Colorado Dept. of Natural Resources, PSD Permit for Xcel Energy's Comanche Unit 3 (June 29, 2005). EPD does have the referenced PSD Permit as part of the additional documents but the permit does not reference PM filterable as a surrogate for non-mercury metal HAPs. EPD requested that Longleaf provide a copy of the relevant documents that support this surrogate approach for the Comanche facility.

Longleaf submitted the following response in Letter dated December 3, 2008:

The Xcel Energy Comanche permit was issued without a notice of MACT approval as a result of CAMR so PM filterable was not used explicitly as a surrogate for non-mercury metal HAPs as part of the permit. However, as part of the Preliminary Analysis (provided as document ComanchePAfinal.pdf), the Colorado Dept. of Natural Resources identified on page 7, in footnote 1 to the table identifying the potential to emit that "Metallic HAPs are controlled by the baghouse and emissions are estimated based on the filterable PM_{10} BACT limit." Thus, EPD is correct in that it was not permitted as a surrogate as part of a MACT analysis, but $PM_{filterable}$ was used to meet the regulatory requirement for determination of the quantity of each of the metallic HAPs being emitted.

(6) Non-Metal Mercury MACT Floor

EPD requested Longleaf to provide additional documentation to demonstrate that the facility will be using the best baghouse filters available for capturing non-mercury metallic HAPs.

Longleaf submitted the following response in Letter dated December 3, 2008:

LEA is not aware of any studies or test data that document the HAP removal efficiencies for different baghouse bag materials. LEA's additional research into non-mercury metal HAP removal is consistent with the findings in the Air & Waste Management Association (AWMA) article provided as part of LEA's MACT submittal: the removal of $PM_{filterable}$ indiscriminately achieves non-mercury metal HAP removal. Therefore, any baghouse bag material capable of meeting a $PM_{filterable}$ MACT level will also effectively capture non-mercury metal HAPs.

Baghouse filter bags are available from a wide variety of manufacturers. These manufacturers provide technical assistance to aid the proper selection of fabric filter material and design. This selection is based on the baghouse type, operating temperature, pressure, and other unique operating conditions such as acid dew point or corrosiveness of the collected materials. The selection of the appropriate baghouse fabric filter would be supported by the manufacturer's engineering group to ensure that all environmental requirements would be fulfilled.

A paper was presented at the 2008 101st Air and Waste Management Association annual conference that addressed improvements in baghouse bags.[19] The ETV program for baghouses is based on the performance of $PM_{2.5}$ and does not address HAP removal. As shown in the paper, the performance of baghouse bags has been steadily increasing for the last several years. Given that baghouse technology will likely continue improving in the future, coupled with the fact that LEA has an extremely stringent PM limit, LEA believes that it is important not to commit to a particular baghouse bag/filter at this time.

(7) Beyond the Floor Analysis

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for non-mercury metal HAPs.

(8) The MACT Emissions Limitation for Non-Mercury Metals

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for non-mercury metal HAPs.

(9) Conclusions

EPD sets as the MACT emission limitation for non-mercury metal HAPs the use of a fabric filter and a $PM_{filterable}$ emission limit of 0.010 lb/MMBtu. PM CEMS will be utilized as a surrogate for the direct measurement of non-mercury metal HAPs because compliance with a $PM_{filterable}$ permit limit of 0.010 lb/MMBtu on a 3-hour average will ensure that these particulate HAPs are being captured effectively. Longleaf will use a continuous emissions monitoring system ("CEMS") for $PM_{filterable}$.

[19] http://www.epa.gov/nrmrl/std/etv/pubs/600etv08023.pdf

c. MACT Determination for Acid Gases

Applicant's Proposal

(1) Acid Gases MACT Floor

Two acid gas HAPs, Hydrochloric Acid (HCl) and Hydrogen Fluoride (HF), will be emitted from the coal-fired boilers due to trace concentrations of chlorine and fluorine compounds naturally found in the coal. Very little information is available from EPA on HCl and HF emissions from coal-fired power plants. Listed below in Table XII is available stack test results for similar facilities emitting HF and HCl.

Longleaf identified the best controlled similar sources for HCl as the Newmont facility at 6×10^{-4} lb/MMBtu (sub-bituminous) and Santee-Cooper Cross Unit 3 at 2.4×10^{-3} lb/MMBtu (bituminous). For HF, the best controlled similar source is Santee-Cooper Cross Unit 3 at 3.0×10^{-4} lb/MMBtu.

Table XII - HF and HCl Stack Test Results

Plant	Stack Test Date	Reported Emissions Lb/MMBtu	Permit Limit Lb/MMBtu
HF			
Newmont Nevada TS Power Plant	April 6 to 14, 2008	1×10^{-4}	1×10^{-3} (1)
Wygen II	Jan 31, 2008	3.8×10^{-5} (1)	3.7×10^{-4} (1)
MidAmerican - Walter Scott, Jr.	Aug. 14-18, 2007	$<2.9 \times 10^{-5}$	9×10^{-4}
MidAmerican - Walter Scott, Jr.	May 8-12, 2007	$<1.08 \times 10^{-4}$	9×10^{-4}
Santee Cooper - Cross Unit 3	Jan 16 & 19, 2007	$<4.15 \times 10^{-5}$	3.0×10^{-4}
Tucson Electric - Springerville Unit 3	Aug. 24 & 25, 2006	6.3×10^{-5}	4.4×10^{-4}
Hardin	May 31, 2006	5×10^{-5}	5.1×10^{-4}
HCl – Bituminous			
Santee Cooper - Cross Unit 3	Jan 16 & 19, 2007	2.77×10^{-4}	2.4×10^{-3}
HCl – Sub-bituminous			
Newmont Nevada TS Power Plant	April 6 to 14, 2008	4×10^{-4}	6×10^{-4} (1)

Wygen II	Jan 31, 2008	3.8×10^{-4} (1)	8.6×10^{-4} (1)
MidAmerican - Walter Scott, Jr.	Aug. 14-18, 2007	5.8×10^{-5}	2.9×10^{-3}
MidAmerican, Walter Scott, Jr.	May 8-12, 2007	3.8×10^{-5}	2.9×10^{-3}
Hardin	May 31, 2006	5×10^{-5}	1.18×10^{-3}

(1) Calculated from lb/hr.

Longleaf proposes as the MACT floor to use a dry scrubber/fabric filter combinations with HCl limits of 6.0×10^{-4} lb/MMBtu (sub-bituminous) and 2.4×10^{-3} lb/MMBtu (bituminous), and a single HF limit of 3.0×10^{-4} lb/MMBtu, all on a 3-hour averaging time.

(2) Beyond the Floor

EPA has indicated that Longleaf's proposal of dry scrubber/fabric filter combination provides the highest level of control for acid gas emissions that has been demonstrated; new information is available suggesting the addition of a wet electrostatic precipitator (WESP) would provide additional removal of HCl and HF. Longleaf provided basic cost analysis on adding a WESP system to the facility. In addition to the higher costs, the use of a WESP will cause additional environmental impacts. Specifically would place greater demands on the limited water supply in the region. Longleaf believes that these cost, environmental impacts and increased energy demands do not justify the use of a WESP at the facility.

Listed below in Table XIII are recent draft and final permits for similar facilities.

Table XIII – Acid Gas Limits in Recent Permits and Draft Permits

Facility	State	HF Permit Limit (lb/MMBtu)	HCl Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
Coal Blends (including waste coal and bituminous coal)					
NRG Limestone	Texas	5.0×10^{-4}	2.3×10^{-3}	August 2008	Draft MACT Permit
Santee Cooper - Pee Dee	South Carolina	No set limits – uses SO_2 as a surrogate		Dec 2008	Final MACT Permit
Sub-bituminous					
SWEPCO John Turk	Arkansas	2.0×10^{-4}	6.0×10^{-4}	Nov 2008	Final MACT Permit
Desert Rock	EPA Region 9 (New Mexico Tribal Lands)	2.4×10^{-4} or 98% removal	--	July 2008	PSD Permit
Comanche	Colorado	4.9×10^{-4}	--	June 2005	PSD Permit

There are no facilities that have HCl limits lower than what Longleaf designated as the MACT floor for operation of the coal-fired boilers while firing sub-bituminous coal. The HF permit limit for SWEPCO- John Turk, 2.0 x 10^{-4} lb/MMBtu is lower than the proposed MACT floor of 3.0 x 10^{-4} lb/MMBtu. Longleaf believes that 2.0 x 10^{-4} lb/MMBtu may be achievable from the facility for HF.

(3) MACT Emission Limitation for Acid Gas HAPs

Longleaf proposes as MACT for acid gas HAPs at the facility the use of a dry scrubber and fabric filter. The corresponding MACT emission limits will be 6 x 10^{-4} lb/MMBtu (sub-bituminous) and 2.4 x 10^{-3} lb/MMBtu (bituminous) for HCl, and 2.0 x 10^{-4} lb/MMBtu for HF. All three limits will be based on a 3-hour averaging time.

Longleaf proposes using Method 26A stack testing which will be conducted initially and thereafter as EPD may direct to demonstrate compliance with the proposed limits. Longleaf also proposes using SO_2 and PM CEMS as a means of demonstrating that LEA acid gas pollution control devices are operating effectively. Monitoring the major pollutants (SO_2 and PM) that are removed from the same pollution control devices i.e. dry scrubber/fabric filter combination will serve as a valid means of providing compliance assurance monitoring between the acid gas stack tests. Also once the Title V Operating permit is issued Compliance Assurance Monitoring (CAM) will provide an opportunity for reevaluating the proposed compliance methods to meet the actual performance data of the boilers.

EPD Review

(4) Acid Gases MACT Floor

EPD requested additional information to complete the review of this Case-by-Case MACT application. Specifically, EPD requested more detailed information on how the COALQUAL database was used to gather data on the content of mercury, chlorine, and fluorine in the coal. EPD requested more information as to what coal types were included in (and excluded from) the collected data. In addition, EPD requested that Longleaf show the average value and standard deviation for mercury, chlorine, and fluorine samples. Longleaf submitted a copy of the COALQUAL database (downloaded and put into spreadsheet form) used to generate the numbers presented in the original application.

EPD requested detailed calculations showing how Longleaf converted the contaminant content (ppm) of mercury, chlorine, and fluorine to uncontrolled emissions (tpy). As a part of letter dated December 3, 2008 (Response to October 29, 2008 EPD Letter for more information) Longleaf detailed how these calculations were completed and submitted sample calculations. In a subsequent email dated December 8, 2008 from Kathy French to Anna Aponte, several minor errors in the sample calculations were identified and corrected.

(5) Beyond the Floor

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for acid gas HAPs.

(6) MACT Emission Limitation for Acid Gas HAPs

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for acid gas HAPs.

(7) Conclusions

EPD sets as MACT for acid gas HAPs at the Longleaf facility the use of a dry scrubber and fabric filter. The corresponding MACT emission limits will be 6×10^{-4} lb/MMBtu (sub-bituminous) and 2.4×10^{-3} lb/MMBtu (bituminous) for HCl, and 2.0×10^{-4} lb/MMBtu for HF. All three limits will be based on a three-hour averaging time.

For any compliance period in which a blend of bituminous and sub-bituminous coals are combusted, the applicable HCl limit would be based on a computed weighted average based on the proportion of energy output (based on MMBtu input) contributed by each coal type burned during the compliance period and its applicable HCl limit. Method 26A stack testing will be conducting initially and thereafter as EPD may direct to demonstrate compliance with the proposed limits.

SO_2 and PM CEMS will be utilized as a means of demonstrating that Longleaf's acid gas pollution controls are operating effectively. The dry scrubber/fabric filter combination provides the best level of control for both HCl and HF according to EPA's findings, thus monitoring the emissions of the pollutants (SO_2 and PM) that are controlled by this combination will serve as a valid means of providing compliance assurance monitoring between the acid gas stack tests.

d. MACT Determination for Organics

Applicant's Proposal

Unlike the previously discussed HAPs, organic emissions are not controlled through add-on pollution control technologies, but rather through good combustion practices. A complete listing of estimated emission from all organic HAPs is detailed in the Notice of MACT Approval application no. 18499.

(1) CO as a Surrogate for Organic HAP emissions

Longleaf proposes the use of CO as a surrogate for organic HAPs. CO satisfies the factors discussed previously for non-mercury metal HAPs. CO and organics are both products of incomplete combustion. Thus, the good combustion practices that serve as effective pollution control to reduce CO emissions will also indiscriminately act to reduce the emissions of organic HAPs. CO will also be continuously monitored with a CEMS.

(2) Organic HAP MACT Floor

EPA has not provided any information pertaining to setting a MACT floor for organic HAPs. Good combustion practices refer to the optimization of the design, operation, and maintenance of the furnace and combustion system. Factors that affect combustion in a pulverized coal (PC) fired boiler include the continuous mixing of air and fuel in the proper proportions, extended residence time, and consistent high temperatures in the combustion chamber. Longleaf confirmed via EPA's RACT/BACT/LEAR Clearinghouse (RBLC) database that good combustion practices are the only demonstrated control for CO emissions and that no facility utilizes add-on control technology to reduce CO emissions.

Stack tests from similar facilities are listed below in Table XIV.

Table XIV - CO Stack Test Results

Plant	Stack Test Date	Reported Emissions Lb/MMBtu	Permit Limit Lb/MMBtu
Newmont Nevada TS Power Plant	April 6 to 14, 2008	0.002	0.15
Wygen II	Jan 31, 2008	0.07	0.15
MidAmerican - Walter Scott, Jr.	Aug. 14-18, 2007	0.003	0.154
MidAmerican - Walter Scott, Jr.	May 8-12, 2007	0.039	0.154
Santee Cooper - Cross Unit 3	Jan 16 & 19, 2007	0.177	0.16
Tucson Electric -Springerville Unit 3	Aug. 24 & 25, 2006	0.062	0.15
Hardin	May 31, 2006	0.001	0.15

Unlike other HAPs discussed here, CO emissions have an effect on the corresponding NOx emissions. The lower the CO emissions are tuned in the boiler the higher the NOx emissions (in a very simplistic relationship). Longleaf identified facilities in the RBLC database that have CO permit limits below 0.15 lb/MMBtu but it also reveals that the corresponding NOx limits are much higher than the NOx limit required by Longleaf's PSD Permit.

Longleaf proposes a MACT floor for organic HAP emissions from the facility is the use of combustion controls and good combustion practices with an emission limit of 0.15 lb/MMBtu on a 30-day rolling average.

(3) Beyond the Floor

Longleaf stated they are not aware of any means of reducing organic HAP emissions that are more effective than the good combustion practices discussed previously. Listed below in Table XV are recent permits and draft permits for similar facilities and corresponding CO emissions limits.

Table XV – CO Limits in Recent Permits and Draft Permits

Facility	State	CO Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
SWEPCO John Turk	Arkansas	0.15	Nov 2008	Final MACT Permit
NRG Limestone	Texas	0.15	August 2008	Draft MACT Permit
Desert Rock	EPA Region 9 (NM Tribal Lands)	0.10	July 2008	PSD Permit
Santee Cooper Pee Dee	South Carolina	0.15	Dec 2008	Final MACT Permit
Comanche	Colorado	0.13	June 2005	PSD Permit

Longleaf inquired among vendors whether a CO limit beyond the MACT floor may be achievable at the facility. As a result of this investigation, Longleaf proposes to reduce its CO limit beyond the MACT floor to 0.10 lb/MMBtu.

(4) MACT Emissions Limitation for Organic HAPs

Longleaf proposes as MACT for organic HAP emissions the use of good combustion practices and a CO emission limit of 0.10 lb/MMBtu on a 30-day average. Longleaf will use a CEMS to continuously monitor and ensure compliance with the permitted limit. Compliance with the CO permit limit will satisfy MACT for the organic HAPs that the Longleaf facility may emit.

EPD Review

(5) CO as a Surrogate for Organic HAP emissions

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's surrogate analysis for organic HAPs.

(6) Organic HAP MACT Floor

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's MACT floor analysis for organic HAPs.

(7) Beyond the Floor

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for organic HAPs.

(8) MACT Emissions Limitation for Organic HAPs

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for organic HAPs.

(9) Conclusions

EPD sets as MACT for organic HAP emissions at the Longleaf facility the use of good combustion practices and a CO emission limit of 0.10 lb/MMBtu on a 30-day average. CO CEMS will be used to continuously monitor and ensure compliance with the permitted CO emission limit. For the reasons set forth above regarding the use of CO as a surrogate for organic HAPs, compliance with the CO permit limit will satisfy MACT for the organic HAPs that the Longleaf facility may emit.

4. Auxiliary Boiler Case-by-Case MACT

a. MACT Determination for Metal HAPs

Applicant's Proposal

Longleaf has placed mercury and non-mercury metal HAPs in a single category for the purposes of this application for several reasons. First, there is no mercury specific control technology that has been demonstrated to consistently achieve reductions in mercury emissions from new liquid fuel-fired industrial/commercial/institutional boilers like the boiler to be installed at the facility. Second, although mercury emissions may exist in different forms as compared to non-mercury metal HAPs, Longleaf believes that if any mercury emission reductions are to be achieved from the auxiliary boiler, particulate-bound mercury can be effectively controlled through use of the same control technology used to reduce non-mercury metal HAPs.

(1) PM as a Surrogate for Metal HAP Emissions

Longleaf proposes the use of particulate matter (PM) as a surrogate for metal HAPs. In general, the use of a surrogate to set MACT standards has been widely accepted by EPA, state permitting agencies, and the courts. Longleaf cites multiple EPA federal register notices, draft or issued Notice of MACT approval permits for several states, and several court cases in the case-by-case MACT application No. 18499. As one court noted, the reasonableness of the use of a surrogate depends on several factors, including (1) whether the HAPs to be regulated are "invariably present" in the emissions of the proposed surrogate; (2) whether the pollution control technology used for the surrogate "indiscriminately captures" the HAPs to be regulated along with emissions of the proposed surrogate; and (3) whether the pollution control technology used for the surrogate is the only means by which a facility could reduce the emissions of the HAPs to be regulated.[20]

Longleaf states that for metal HAPs, the use of PM satisfies all of these factors and therefore is an appropriate surrogate for the associated permit limits. In addition EPA has previously stated that PM would be an appropriate surrogate for metal HAPs for the following reasons:

> Most, if not all, non-mercury metallic HAP emitted from combustion sources will appear on the flue gas fly-ash. Therefore, the same control techniques that would be used to control the fly-ash PM will control non-mercury metallic HAP. Particulate matter was also chosen instead of specific metallic HAP because all fuels do not emit the same type and amount of metallic HAP but most generally emit PM. The use of PM as a surrogate will also eliminate the cost of performance testing to comply with numerous standards for individual metals.[21]

[20] *See Sierra Club v. EPA*, 353 F.3d at 984 (citing *Nat'l Lime Ass'n*, 233 F.3d at 639).
[21] 69 Fed. Reg. at 55223 (Sept. 13, 2004).

(2) Metal HAP Floor

Unlike with the coal-fired boilers above, EPA has not identified control technologies for the removal of metal HAPs for the type of auxiliary boiler to be utilized at the facility (liquid fuel; limited use). The RBLC data also does not identify any sources with mercury limits for liquid fuel-fired auxiliary boilers.[22] For non-mercury metal HAPs, EPA established a MACT floor of 0.03 lb/MMBtu of $PM_{filterable}$ emissions. EPA similarly identified no control as MACT for PM emissions in 40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants: Standards for Industrial/Commercial/Institutional Boilers and Process Heaters (here after known as the Boiler Rule) for liquid and gas-fired boilers. Longleaf proposes the use of PM_{total} as a better surrogate for metal HAPs due to the exit gas temperature for the auxiliary boiler is above the boiling point of some of the potential metal HAPs. Longleaf is unaware of any ultra low sulfur distillate fuel oil-fired auxiliary boilers test data and associated permit limits that are below the existing PSD permit limit of 0.05 lb/MMBtu. Longleaf proposes the use of ultra low sulfur distillate fuel oil (15 ppm sulfur content, by weight) and a PM_{total} limit of 0.05 lb/MMBtu as the MACT floor for metal HAPs.

(3) Beyond the MACT Floor Analysis

PM emissions control technology for new distillate oil-fired boilers indicates that no new distillate oil-fired boilers are designed with a PM control device. Longleaf is not aware of any distillate oil-fired, limited use boiler that has a PM control device. Longleaf has determined that the use of a control device beyond fuel selection is not necessary to comply with MACT.

Longleaf does recognize that the use of natural gas – as opposed to ultra low sulfur distillate fuel oil- has the potential to slightly reduce PM emissions. Longleaf rejected fuel switching to natural gas as a potential control option due to the lack of reliable source of natural gas in the vicinity of the facility. EPA has stated previously that fuel switching was not considered a control technology to be considered in the beyond-the-floor analysis for new industrial/commercial/institutional boilers.[23]

Longleaf also reviewed recent draft and final permitting decisions throughout the United States. These facilities and their corresponding PM limits are listed below in Table XVI.

[22] Longleaf provided RBLC database search of Dec. 3, 2008 (a copy was provided on CD with supporting documentation)
[23] 68 Fed. Reg. at 1684-85 (Jan. 13, 2003). See also 69 Fed. Reg. at 55233 (Sept. 13, 2004).

Table XVI – PM Limits in Recent Permits and Draft Permits

Facility	State	Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
Desert Rock – 86.4 MMbtu/hr	EPA Region 9 (New Mexico Tribal Lands)	0.0236 (total) 0.0142 (filterable)	July 2008	PSD Permit
Wolverine – 72.4 MMBtu/hr	Michigan	0.03 (total) 0.015 (filterable)	September 2008	Draft PSD/MACT Permit
Plum Point Unit I	Arkansas	0.023	Jan 2008	PSD Permit
Virginia Commonwealth University East Plant	Virginia	0.02	March 2003	RBLC Database

Unlike the pulverized coal-fired boilers previously discussed, the exit gas temperature for the auxiliary boiler is above the boiling point of some of the potential metal HAPs. This means that some of the metal HAPs can be in a gas or solid form instead of primarily solid form with the coal-fired boilers. To more accurately account for all of the metal HAPs present in the flue gas stream of the auxiliary boiler, Longleaf believes the PM_{total} is a better surrogate for metal HAPs. After reviewing these permit limits from recently constructed facilities, Longleaf has determined that a PM_{total} limit beyond the floor – specifically, 0.023 lb/MMBtu on a 3-hour average – may be achievable over the life of the facility.

(4) The MACT Emission Limitation for Metal HAPs

Longleaf proposes as MACT for metal HAPs the use of ultra low sulfur distillate fuel oil and a PM_{total} emissions limit of 0.023 lb/MMBtu. Longleaf proposes that a PM stack test and fuel certifications for each fuel shipment be utilized as a surrogate in lieu of direct measurement of metal HAPs because compliance with the use of ultra low sulfur distillate fuel oil will ensure low emissions of metal HAPs.

EPD Review

(5) PM as a Surrogate for Metal HAP Emissions

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's surrogate analysis for metal HAPs.

(6) Metal HAP Floor

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's MACT floor analysis for metal HAPs.

(7) Beyond the MACT Floor Analysis

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for metal HAPs.

(8) The MACT Emission Limitation for Metal HAPs

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for metal HAPs.

(9) Conclusions

EPD sets as MACT for metal HAP emissions at the Longleaf facility the use of ultra low sulfur distillate fuel oil (15 ppm sulfur content, by weight) and a PM_{total} emission limit of 0.023 lb/MMBtu. A PM stack test and fuel certifications for each fuel shipment will be utilized as a surrogate for direct measurement of metal HAPs.

b. MACT Determination for Inorganic HAPs

Applicant's Proposal

(1) HCl as a Surrogate for Inorganic HAP Emissions

Longleaf proposes the same approach as addressed by EPA in Boiler Rule and utilize HCl as a surrogate for all inorganic HAP emissions from the facility's auxiliary boiler. EPA set forth the following:

> The emissions test information available indicate that the primary inorganic HAP emitted from boilers and process heaters are acid gases, with HCl present in the largest amounts. Other inorganic compounds emitted are found in much smaller quantities. Also, control technologies that would reduce HCl would also control other inorganic compounds that are acid gases. Thus, the best controls for HCl would also be the best controls for other inorganic HAP that are acid gases. Therefore, HCl is a good surrogate for inorganic HAP because controlling HCl will result in a corresponding control of other inorganic HAP emissions.[24]

State permitting authorities in Michigan and the National Association of Clean Air Agencies (NACAA) model guidance have similarly approved the use of HCl as a surrogate for inorganic HAP emissions in case-by-case MACT determinations for other industrial boilers.

(2) Inorganic MACT Floor

In the Boiler Rule, EPA promulgated a MACT floor for new liquid fuel-fired, limited use boilers burning only liquid fossil fuels other than residual oils of a limit of 0.0009 lb/MMBtu and requirement for certification of fuel combusted.[25]

Longleaf proposes as the MACT floor for the facility the use of distillate oil with an HCl limit of 0.0009 lb/MMBtu on a 3-hour averaging time.

(3) Beyond the MACT Floor Analysis

In addition to using ultra low sulfur distillate fuel oil as a means for reducing emissions, Longleaf examined the addition of a wet electrostatic precipitator (WESP) to further reduce the acid gas emissions, sulfur dioxide emissions, and sulfuric acid mist emissions. The complete discussion is listed in Attachment 1 of letter dated December 3, 2008.

Longleaf concluded that the cost, environmental impacts and increased energy demands do not justify the use of a WESP or scrubber at the facility for the additional control of HF and HCl emissions, especially considering that neither HF nor HCl emissions from limited use, liquid fuel boilers present a health risk.

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[24] 69 Fed. Reg. at 55223(Sept. 13, 2004).
[25] 69 Fed. Reg. at 55255 (Sept. 13, 2004).

Longleaf also reviewed recent draft and final permitting decisions throughout the United States. These facilities and their corresponding Inorganic limits are listed below in Table XVII.

Table XVII – Inorganic Limits in Recent Permits and Draft Permits

Facility	State	HF Permit Limit (lb/MMBtu)	HCl Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
Desert Rock	EPA Region 9 (New Mexico Tribal Lands)	No limit	No limit	July 2008	PSD Permit
Wolverine	Michigan	No limit	0.0007	September 2008	Draft PSD/MACT Permit

The results in Table XVII show that Michigan has issued a draft permit with a limit beyond the MACT floor of 0.0009 lb/MMBtu, but the draft permit does not offer any additional documentation that the proposed limit can be met beyond the three test results presented in the NACAA report. As a result of the paucity of information presented regarding that proposed limit, Longleaf does not believe that a limit beyond the floor is appropriate.

(4) The MACT Emissions Limitation for Inorganic HAPs

Longleaf proposes as MACT for inorganic HAPs at the Longleaf facility the use of ultra low sulfur distillate fuel oil. The corresponding MACT emission limit will be 0.0009 lb/MMBtu for HCl based on a three-hour averaging time. This limit is the same as the limit in the Longleaf facility PSD permit.[26]

Longleaf proposes to use fuel certifications for compliance assurance monitoring. Since ultra low sulfur distillate fuel oil contains less impurities including fluorine and chlorine, fuel certifications will serve as a valid means of providing compliance assurance monitoring between the HCl stack tests.

[26] See Condition 2.16(g) of LEA's PSD Permit.

EPD Review

(5) HCl as a Surrogate for Inorganic HAP Emissions

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's surrogate analysis for inorganic HAPs.

(6) Inorganic MACT Floor

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's MACT floor analysis for inorganic HAPs.

(7) Beyond the MACT Floor Analysis

EPD completed additional research on the health impacts of HCl in liquid fuel-fired boilers. EPA does not provide much information pertaining to HCl emissions in liquid fuel-fired boilers and subsequently does not list in AP-42 *Section 1.3 Fuel Oil Combustion* either Fluorine or Chlorine in the trace element analysis of distillate oil. EPD believes that EPA determined in its evaluation of the Boiler Rule and AP-42 that only fuel oil certifications were sufficient to verify compliance due to the low HCl emissions expected from the limited use boiler.

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for inorganic HAPs.

(8) The MACT Emissions Limitation for Inorganic HAPs

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for inorganic HAPs.

(9) Conclusions

EPD sets as MACT for inorganic HAP emissions at the Longleaf facility the use of ultra low sulfur distillate fuel oil and an HCl emission limit of 0.0009 lb/MMBtu on a 3-hour average. Longleaf will use fuel certifications for compliance monitoring. Since ultra low sulfur distillate fuel oil contains fewer impurities including fluorine and chlorine, fuel certifications will serve as a valid means of providing compliance assurance monitoring between the HCl stack tests.

c. MACT Determination for Organic HAPs

Applicant's Proposal

(1) VOC as a Surrogate for Organic HAP emissions

Longleaf proposes to use VOC as a surrogate for organic HAP. VOC emissions are a direct measure of organic HAP emissions as organic HAPs are a subset of VOCs. Longleaf is aware that EPA utilized CO as a surrogate for organic HAPs in the Boiler Rule when it set the MACT standard of 400 ppm CO. Subsequent research by Longeaf indicates CO may not be an appropriate surrogate for organic HAPs as the low CO emission levels that the auxiliary boiler may be capable of achieving. Longleaf has reviewed a technical document prepared by the NACAA, in which they relied on recent stack test data from oil-fired boilers to propose a CO limit of 10 ppm for new oil-fired boilers. However, as EPA and various commenters have observed, no data exists to confirm that CO emissions remain a valid surrogate for organic HAP emissions at concentrations below 100 ppm.[27] For this reason, Longleaf proposes to use VOC as a surrogate for organic HAP emissions. A review of recent case-by-case MACT determinations by other permitting authorities reveals that organic HAP emissions are through the use of either CO or volatile organic compounds ("VOC") emissions as a surrogate.[28]

(2) Organic MACT Floor

First in establishing the MACT Floor for organic HAPs, Longleaf reviewed EPA documents to determine what the level of controls and the emissions should be for this category of HAPs. EPA promulgated a MACT standard of 400 ppm CO at 3% oxygen for organic HAPs in the Boiler Rule. After the vacatur of the Boiler Rule, NACAA put out a guidance document suggesting that MACT for new boilers might be 10 ppm CO.[29] The NACAA document does not, however, identify what the appropriate MACT floor would be in terms of VOC emissions.

Second, Longleaf researched types of control technologies used to achieve the level of control needed to meet the MACT floor. Good combustion practices refer to the optimization of the design, operation, and maintenance of the furnace and combustion system. Factors that affect combustion in an auxiliary boiler include the continuous mixing of air and fuel in the proper proportions, extended residence time, and consistent high temperatures in the combustion chamber. Longleaf reviewed EPA's RBLC database and confirmed that good combustion practices are the only demonstrated control for VOC emissions and that no facility utilizes add-on control technology to reduce VOC emissions.

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[27] 70 Fed. Reg. 59461-59462 (October 12, 2005).

[28] Examples include (1) Michigan's use of VOC as a surrogate for Wolverine; (2) Arkansas' use of CO as a surrogate for organic HAP emissions in a recent case-by-case MACT determination for SWEPCO - John Turk. All of these materials are available on the attached CD-ROM.

[29] National Association of Clean Air Agencies, "Reducing Hazardous Air Pollutants from Industrial Boilers: Model Permit Guidance", June 2008.

For the above reasons, Longleaf concludes that the MACT floor for organic HAP emissions from the facility is the use of combustion controls and good combustion practices sufficient to comply with a VOC emission limit of 0.003 lb/MMBtu on a 3-hour average.

(3) Beyond the MACT Floor Analysis

Longleaf examined add-on controls that have been used at other types of facilities to lower CO and VOC emissions — specifically, flares, afterburning, catalytic oxidation, and external thermal oxidation — but none of these are technically feasible at the Longleaf facility. Good combustion practies are considered the only technically feasible option for the control of CO and VOC emissions. This finding is supported by the RBLC database which lists combustion controls as the only BACT controls strategy for auxiliary boilers. Accordingly, no additional control technology beyond good combustion practices is required to achieve the maximum degree of reduction of VOC emissions.

Longleaf also reviewed recent draft and final permitting decisions throughout the United States. These facilities and their corresponding organic limits are listed below in Table XVIII.

Table XVIII – VOC Limits in Recent Permits and Draft Permits

Facility	State	VOC Permit Limit (lb/MMBtu)	(Draft) Permit Date	Notes
Desert Rock	EPA Region 9 (NM Tribal Lands)	0.0024(1)	July 2008	PSD Permit
Wolverine	Michigan	0.0042	Sept 2008	Draft PSD Limit
Miller Brewing Company	Ohio	0.0016(2)	2005	RBLC – SIP limit (OH-0241)
Plum Point Unit 1	Arkansas	0.005	2003	PSD Permit

(1) Calculated from lb/hr and MMBtu size of the auxiliary boiler.
(2) Calculated from lb/hr and MMBtu size of the auxiliary boiler – limit is a 12-month rolling limit.

The above table shows that there are limits lower than that proposed by Longleaf. The Desert Rock limit is a lb/hr limit in the permit and while testing is required, the permit does not specify that the unit is required to run at 100% capacity during the testing, thus the lb/MMBtu limit calculated above is not applicable. The Wolverine limit identified above does not have an averaging time specified as the draft permit identifies that it will be set by the testing protocol and thus it is not comparable to Longleaf's proposed 3-hour average limit of 0.003. Similarly, the Miller Brewing Company limit is a 12-month rolling limit based on the RBLC database and also is not comparable. Therefore, based on the above-listed information, Longleaf does not believe that a limit beyond the MACT floor is appropriate.

(4) The MACT Emissions Limitation for Organic HAP

Longleaf proposes as MACT for organic HAP emissions at the facility the use of good combustion practices and a VOC emission limit of 0.003 lb/MMBtu on a 3-hour average. Longleaf will use stack tests and documentation of good combustion practices to continuously monitor and ensure compliance with the permitted VOC emission limit.

EPD Review

(5) VOC as a Surrogate for Organic HAP emissions

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's surrogate analysis for organic HAPs.

(6) Organic MACT Floor

In reviewing permits issued or under review in other states, EPD has found the following discussion in Michigan's Wolverine facility that provides additional information about VOC as a surrogate and some other permitted facilities.

> For organic HAPs, VOCs is recommended as the surrogate for organic HAPs because they are a subset of all VOC emissions. Good combustion control will reduce potential emissions of VOCs. Two fuel oil-fired units have been identified with VOC emission limits. A 20 MMBtu/hr boiler at the Daimler Chrysler Toledo Paint Shop, using No. 2 fuel oil as back-up fuel, has a VOC limit of 0.0015 lb/MMBtu, and a 99 MMBtu/hr auxiliary boiler at AES Red Oak in New Jersey has a VOC emission limit of 0.005 lb/MMBtu. However, it is unknown whether compliance with either limit has been demonstrated by testing. Wolverine has proposed a VOC emission limit of 0.0042 lb/MMBtu as MACT which is considered reasonable and achievable based on available data. Good combustion practices, and periodic stack testing for VOCs will serve to make the emission limitation enforceable as a practical matter.

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's MACT floor analysis for organic HAPs.

(7) Beyond the MACT Floor Analysis

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's beyond the MACT floor analysis for organic HAPs.

(8) The MACT Emissions Limitation for Organic HAP

EPD reviewed the provided information, verified footnotes and references throughout the application and additional information submittals and agrees with Longleaf's selection of the MACT emission limitations for organic HAPs.

(9) Conclusions

EPD sets as MACT for organic HAP emissions at the Longleaf facility the use of good combustion practices and a VOC emission limit of 0.003 lb/MMBtu on a 3-hour average. Longleaf will use stack tests and documentation of good combustion practices to continuously monitor and ensure compliance with the permitted VOC emission limit.

5. Proposed MACT Limits and Requirements

The facility is subject to 40 CFR 63 Subpart A and Subpart B which contain the requirements for case-by-case MACT. The following sections detail the applicable requirements from these subparts. This information is not explicitly listed in the permit.

a. General Requirements

(1) The owner/operator shall comply with 40 CFR 63, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories, Subparts A (General Provisions) and B (Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Sections 112(g)) and Georgia Air Quality Rules and Regulations 391-3-1-.02(9)(b)16, as applicable.

(2) All provisions contained in this Notice of MACT Approval shall be federally enforceable upon the effective date of issuance as such notice, as provided by Georgia Air Quality Rules and Regulations 391-3-1-.02(9)(b)16.

(3) This Notice of MACT Approval applies to two nominal 6,139 MMBtu/hr (600 MW net output) pulverized coal fired boilers and an auxiliary boiler, 175 MMBtu/hr firing ultra low sulfur distillate fuel (15 ppm, % sulfur by weight) to be located at the proposed site described as the Longleaf Energy Station at State Highway 370, Hilton, Georgia (Early County).

(4) The following pollution control devices shall be installed and operated on each of the two boilers.

i. Fabric Filters (FF) for the control of $PM_{filterable}$, Mercury, and Non-mercury Metal HAPs
ii. Dry Scrubber and Fabric Filter (FF) for control of SO_2, Mercury, and Acid Gas HAPs
iii. Activated Carbon Injection (ACI) in combination with FF for the control of Mercury

During operation of these boilers, all control devices shall be operated consistent with the technological limitations, manufacturer's specifications, and good engineering and maintenance practices for the control devices.

(5) These boilers are permitted to burn bituminous coal, sub-bituminous coal, clarifier sludge, other sources of bituminous coal and/or pet coke as fuel. Ultra low sulfur diesel fuel can be used for startup in the coal-fired boilers. The use of any other substances as fuel is prohibited without prior written approval from the Division.

(6) All official correspondence, plans, application forms, and written statements are an integral part of this Notice of MACT Approval.

(7) The owner/operator shall submit written notification to the Division of the date construction is commenced, postmarked no later than 30 days after such date, and written notification of the actual date of initial startup of each no or altered source, postmarked within 15 days after such date.

(8) The owner/operator shall comply with all terms, conditions, and limitations of this Notice of MACT Approval

b. Emission Limits

(9) Pursuant to 40 CFR 63.43(g) and Georgia Air Quality Regulation 391-3-1-.02(9)(b)16, MACT determination, the Permittee shall comply with the following emission limitations for HAP emissions for the pulverized coal-fired boilers:

Table XIX – Emission Limitations

Pollutant	Emission limit (Per Unit)	Averaging Period
Mercury	6×10^{-6} lb/MWhr (bituminous) 13×10^{-6} lb/MWhr (sub-bituminous)	12-month rolling average
Filterable PM (as a surrogate for Non-Mercury Metal HAPs)	0.010 lb/MMBtu	3-hour average
Acid Gases	HCl (bituminous) 0.0024 lb/MMBtu HCl (sub-bituminous) 6×10^{-4} lb/MMBtu; HF – 0.0002 lb/MMBtu	3-hour average
CO (as a surrogate for Organic HAPs)	0.10 lb/MMBtu	30-day average

c. General Compliance Requirements

(10) The owner/operator must be in compliance with the emissions limitations in Table XIX, including operating limits, at all times, except as provided by applicable laws and regulations.

d. Initial Compliance Requirements

(11) In order to demonstrate initial compliance with the emissions limitations in Table XIX, the owner/operator must conduct performance tests, set operating limits, and conduct monitoring equipment performance evaluations within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup.

Table XX – Initial Compliance Requirements

Pollutant	Emission Limit (Per Unit)	Compliance Monitoring
Mercury	6×10^{-6} lb/MWhr (bituminous) 13×10^{-6} lb/MWhr (sub-bituminous)	Direct via Mercury CEMS
Non-Mercury Metal HAPs	0.010 lb/MMBtu ($PM_{filterable}$ as a surrogate)	Indirect via PM CEMS
Acid Gases – HCl	0.0024 lb/MMBtu (bituminous) 6×10^{-4} lb/MMBtu (sub-bituminous)	Direct compliance tested via stack tests; indirect monitoring via SO_2 or PM CEMS
Acid Gases – HF	0.0002 lb/MMBtu	Direct compliance tested via stack tests; indirect monitoring via SO_2 or PM CEMS
Organic HAPs	0.10 lb/MMBtu (CO as a surrogate)	Indirect via CO CEMS

(12) The owner/operator shall conduct each performance test listed in Table XX in accordance with paragraphs (a) through (d).

a. The owner/operator must conduct each performance test according to 40 CFR 63 Section 63.7 and the Division's **Procedures for Testing and Monitoring Sources of Air Pollutants**.

b. The owner/operator may not conduct performance tests during periods of startup, shutdown, or malfunction.

c. The owner/operator must conduct each performance test at representative performance (i.e., performance based on normal operating conditions) and must demonstrate initial compliance based on this test.

d. Notification of intent to source test, submittal of site-specific test plans, performance of source tests, and the reporting of source test results shall comply with 40 CFR 63 Section 63.7, 63.10 and with the Division's **Procedures for Testing and Monitoring Sources of Air Pollutants**. The owner/operator shall submit a site specific test plan at least 60 calendar days before the performance test is scheduled to take place. The Division must be notified at least two weeks prior to a source test so that a Division representative may be present.

e. Continuous Compliance Requirements

(13) Pursuant to 40 CFR 63.43 (g)(2)(ii) and Georgia Rules for Air Quality 391-3-1-.02(6)(b)1, the owner/operator shall conduct the following monitoring to assure continuous compliance with the applicable emission limitations in Table XIX:

Table XXI – Continuous Compliance Requirements

Pollutant	Monitoring (Per Unit)
Mercury	CEMS
Non-Mercury Metal HAPs ($PM_{filterable}$ as a surrogate)	CEMS
Acid Gases	Performance test for HCl and HF. SO_2 and PM CEMS for continuous monitoring
Organics (CO as a surrogate)	CEMS

(14) All source tests shall be conducted in accordance with 40 CFR 63.7 and the Division's **Procedures for Testing and Monitoring Sources of Air Pollutants** and is required in the "Initial Compliance Requirements" section of this Notice of MACT Approval.

(15) The owner/operator shall install, operate, and maintain continuous emissions monitoring systems (CEMS) for monitoring and reporting of emissions of CO, Mercury, $PM_{filterable}$, and SO_2.

(16) The owner/operator must install, operate, and maintain CEMS according to the requirements in 40 CFR 63.8 and in paragraphs (a) through (f) of this section.

a. Install, operate, and maintain each CEMS according to 40 CFR 63.8(c) and the appropriate Performance Specification in 40 CFR 60, Appendix B.
b. Conduct a performance evaluation of each CEMS according to requirements of 40 CFR 63.8 and the appropriate Performance Specification in 40 CFR 60, appendix B.
c. As specified in 63.8(c)(4)(ii), each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.
d. Reduce CEMS data as specified in 40 CFR 63.8(g)(2).
e. Record the results of each inspection, calibration, and validation check.

f. Except for monitor malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner/operator must monitor continuously (or collect data at all required intervals) at all times that the affected source is operating.

(17) To demonstrate continuous compliance with the $PM_{filterable}$ emission limitations in Table XIX, the owner/operator shall utilize the CEMS data to calculate and record a 3-hour rolling average emission rate on a daily basis. A new 3-hour rolling average emission rate is calculated as the average of all of the hourly $PM_{filterable}$ emission data for the preceding 3 operating hours. For purposes of calculating data averages, data recorded during periods of monitoring malfunctions, associated repairs, out-of control periods, required quality assurance or control activities shall not be used. All the data collected during all other periods in assessing compliance must be used. Any period for which the monitoring system is out of control (as defined in 40 CFR 63.8(c)(7)) and data are not available for required calculations constitute a deviation from the monitoring requirements.

(18) To demonstrate continuous compliance with the CO emission limitation in Table XIX, the owner/operator shall utilize the CEMS data to calculate and record a 30-day rolling average emission rate on a daily basis. A new 30-day rolling average emission rate is calculated as the average of all of the hourly CO emission data for the preceding 30 operating days. For purposes of calculating data averages, data recorded during periods of monitoring malfunctions, associated repairs, out-of control periods, required quality assurance or control activities shall not be used. All the data collected during all other periods in assessing compliance must be used. Any period for which the monitoring system is out of control (as defined in 40 CFR 63.8(c)(7)) and data are not available for required calculations constitute a deviation from the monitoring requirements.

(19) To demonstrate continuous compliance with the mercury emission limitations in Table XIX, the owner/operator shall install, calibrate and maintain a continuous emission monitoring system. Compliance with the mercury emission limitations shall be based on the total mercury emissions from each boiler and total gross MWh from each boiler during the compliance period. The owner/operator shall calculate the mercury emission rate in lb/MWh for each calendar month of the year using hourly mercury concentrations measured by the CEMS and hourly gross electrical outputs. Compliance with the lb/MWh mercury emission limits shall be determined on a 12-month rolling average basis.

(20) A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. Any period for which the monitoring system is out-of-control (as defined in 40 CFR 63.8(c)(7)) and data are not available for required calculations constitutes a deviation from the monitoring requirements.

(21) To demonstrate continuous compliance with the HCl and HF emission limitations in Table XIX, the owner/operator shall conduct performance testing for the applicable acid gases.

f. Notification Requirements

(22) The owner/operator shall submit all of the notifications in 40 CFR 63.6(h)(4) and 63.6(h)(5), 63.7(c), 63.8(e), 63.8(f)(4) and 63.8(f)(6), 63.9(b) through (h) that apply to the owner/operator by the dates specified.

(23) The owner/operator shall submit a Notification of Compliance Status report according to 40 CFR 63.9(h)(2)(ii) and the requirements specified in paragraphs (a) through (c) of this section.

a. For each initial compliance demonstration, the owner/operator shall submit the Notification of Compliance Status report, including all performance test results, before the close of business on the 60th day following the completion of the performance test and/or other initial compliance demonstrations according to 40 CFR 63.10(d)(2).

b. The Notification of Compliance Status report shall contain all the information specified in paragraphs (i) through (iv) of this section, as applicable.

(i) A description of the affected source(s) including identification of which subcategory the source is in, the capacity of the source, a description of the add-on controls used on the source description of the fuel(s) burned, and justification for the worst-case fuel burned during the performance test.
(ii) Summary of the results of all performance tests, fuel analyses, and calculations conducted to demonstrate initial compliance including all established operating limits.
(iii) A signed certification that the owner/operator has met all emissions limitations.
(iv) If had a deviation from any emission limitation, the owner/operator shall also submit a description of the deviation, the duration of the deviation, and the corrective action taken in the Notification of Compliance Status report.

(24) The owner/operator shall submit notification for the CEMS as required by 40 CFR 63 Subpart A.

g. Recordkeeping Requirements

(25) The owner/operator shall keep records as required by 40 CFR 63 Subpart A.

(26) The owner/operator shall keep records according to paragraphs (a) through (c) of this section.

a. A copy of each notification and report that the owner/operator submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that the owner/operator submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv).
b. The records in 40 CFR 63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.
c. Records of performance tests or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii).

(27) For each monitoring system required by this subpart, the owner/operator shall keep records according to paragraphs (a) through (c) of this section.

a. Records described in 40 CFR 63.10(b)(2)(iv) through (xi).
b. Previous (i.e. superseded) versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3).
c. Records of the date and time of each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period.

(28) The owner/operator records shall be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1).

(29) As specified in 40 CFR 63.10(b)(1), the owner/operator shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(30) The owner/operator shall keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, according to 40 CFR 63.1(b)(1). The owner/operator can keep the records offsite for the remaining 3 years.

(31) The owner/operator shall maintain on file all measurements including continuous monitoring system or monitoring device performance measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required in a permanent form.

h. Reporting Requirements

(32) The owner/operator shall submit reports as required by 40 CFR 63 Subpart A.

(33) The Permittee shall submit a written compliance report for each quarterly period ending March 31, June 30, September 30, and December 31 of each year. All reports shall be postmarked by the 30^{th} day following the end of each reporting period, April 30, July 30, October 30, and January 30, respectively. Reporting required by this condition shall begin at the end of the quarter in which initial startup is completed. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state.

(34) The compliance report shall contain the information required in paragraphs (a) through (e) and, as applicable, paragraphs (f) through (h).

a. Company name and address.
b. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.
c. Date of report and beginning and ending dates of the reporting period.
d. A summary of the results of the annual performance tests and documentations of any operating limits that were reestablished during this test, if applicable.
e. If the owner/operator had a startup, shutdown, or malfunction during the reporting period and the owner/operator took actions consistent with the SSMP, the compliance report shall include the information ins 40 CFR 63.10(d)(5)(i).
f. If there are no deviations from any of the emission limitations or operating limits, a statement that there were no deviations from the emissions limitations during the reporting period. A deviation occurs when monitoring data shows exceedance of 112(g) requirements.
g. If there are no periods during which a CEMS was out-of-control as specified in 63.8(c)(7), a statement that there were no periods during which the CEMS were out-of-control during the reporting period.
h. For each deviation from an emissions limitation, the owner/operator shall include the information in (i) through (xi). This includes periods of startup, shutdown, and malfunction.

   i. The date and time that each malfunction started and stopped and description of the nature of the deviation.
   ii. The date and time that each CEMS was inoperative, except for zero (low-level) and high-level checks.
   iii. The date, time, and duration that each CEMS was out-of-control (as defined in 40 CFR 63.8(c)(7)), including the information in 40 CFR 63.8(c)(8).
   iv. The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period.
   v. A summary of the total duration of the deviation during the reporting period and the total duration as a percent of the total source operating time during that reporting period.
   vi. A breakdown of the total duration of the deviations during the reporting period into those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and other unknown causes
   vii. A summary of the total duration of CEMS downtime during the reporting period and the total duration of CEMS downtime as a percent of the total source operating time during that reporting period.
   viii. A brief description of the source for which there was a deviation.
   ix. A brief description of each CEMS for which there was a deviation
   x. The date of the latest CEMS certification or audit for the system for which there was a deviation.

xi. A description of any changes in CEMS, processes, or controls since the last reporting period for the source for which there was a deviation.

(35) If an action taken by the owner/operator during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with the procedures specified in boilers' startup, shutdown, and malfunction plan, and either boiler exceeds any emission limitation in Table XIX, then the owner/operator shall record the actions taken for that event and shall report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with 40 CFR 63.10(d)(5) (unless the owner/operator makes alternative reporting arrangements, in advance, with the Division).

i. Other Requirements

(36) In addition to complying with this MACT determination, the owner/operator shall comply with the electric utility MACT Standard upon promulgation, within the timeframes allowed by 40 CFR 63, Subpart B and Georgia Rules for Air Quality 391-3-1-.02(9)(b)16.

(37) The owner/operator shall install equipment associated with the boilers in a manner that should future specific controls for mercury be required, the installed equipment will accommodate the anticipated space necessary for the future mercury controls.