Prevention of Significant Air Quality Deterioration Review
Southern LNG Inc. – Elba Island LNG Terminal,
located in Savannah, Georgia (Chatham County)

FINAL DETERMINATION

Title V Permit Application No. TV-16697
April 2007

State of Georgia
Department of Natural Resources
Environmental Protection Division

Air Protection Branch

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BACKGROUND

On April 6, 2006, Southern LNG Inc. – Elba Island LNG Terminal (hereafter "the facility") submitted an application for an air quality permit to expand its Elba Island LNG Terminal (hereinafter the "Elba III Terminal Expansion") to meet the increased need for new natural gas delivery infrastructure to serve markets in the United States. The facility is located at Elba Island in Savannah, Chatham County. The proposed modification involves the installation of six 121.4 MM Btu/hr natural gas fired liquefied natural gas (LNG) vaporizers with ID Nos. V009 – V014, two new LNG storage tanks with ID Nos. D-5 and D-6, each with a capacity of 1.25 million barrels of LNG, which is roughly equivalent to 4.2 billion cubic feet [Bcfe] of vaporized natural gas, one 11.74 MM Btu/hr natural gas fired heated vent stack heater with ID No. B002, and associated LNG pumps and piping.

On February 6, 2007, the Division issued a Preliminary Determination stating that the modifications described in Application No. TV-16697 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the modified equipment.

The Division requested that Southern LNG Inc. place a public notice in a newspaper of general circulation in the area of the existing facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *Savannah Morning News* (legal organ for Chatham County) on February 14, 2007. The public comment period expired on March 16, 2007.

During the comment period, comments were received from U.S. EPA Region IV and the facility. There were no comments received from the general public.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

U.S. EPA REGION 4 COMMENTS

Comments were received from Mr. Gregg M. Worley, Chief, Air Permits Section, U.S. EPA Region 4, by a letter on March 16, 2007, the result of reviews by Mr. James W. Little of U.S. EPA Region 4. The comments are produced, verbatim, below and are followed by EPD's responses.

Comment 1. Impact of Sulfur Dioxide Emissions

The authority for state agency review of new and modified emissions sources is found in 40 CFR part 51, subpart I. In addition to the PSD provisions in 40 CFR 51.166, subpart I also includes general provisions in 40 CFR 51.160 that apply to all sources, including minor sources and emissions of associated mobile sources. The following is an excerpt from these general provisions:

(a) Each plan must set forth legally enforceable procedures that enable the State or local agency to determine whether the construction or modification of a facility, building, structure or installation, or combination of these will result in—

(1) A violation of applicable portions of the control strategy; or

(2) Interference with attainment or maintenance of a national standard in the State in which the proposed source (or modification) is located or in a neighboring State.

At Georgia Environmental Protection Division's (GEPD's) request, Southern LNG provided an estimate of vessel emissions in a letter dated October 31, 2006. The estimates (which include emissions from LNG carrier vessels, assist vessels, and Coast Guard escort vessels, and vessel offloading emissions) represent total annual emissions after completion of the Elba III project and not just vessel emissions attributable to the Elba III expansion project alone. In addition to estimates of emissions for nitrogen oxides (NOx) and carbon monoxide (CO) (the pollutants GEPD determined were subject to PSD review), Southern LNG also provided estimates of emissions for sulfur dioxide (SO_2), particulate matter (as PM_{10}), and volatile organic compounds (VOC). Estimated emissions of PM_{10} and VOC are relatively low. However, total estimated annual SO_2 emissions (including transit emissions) are 528 tons per year (tpy), of which 463 tpy are from carrier vessels at dock.

For purposes of assessing the project's impact on ambient air quality, GEPD only required modeling of NOx and CO emissions. This approach was based on GEPD's conclusion that NOx and CO are the only pollutants subject to PSD review. Consistent with this approach, the only carrier vessel emissions modeled were emissions of NOx and CO.

Even if SO_2 emissions are not strictly subject to PSD review in this case, a stationary SO_2 emissions rate (from carrier vessels at dock) of greater than 450 tpy associated with the Elba Island LNG Terminal leads to the question of how GEPD assessed these emissions in terms of its responsibilities under 40 CFR 51.160(a). From the public record information provided to us for the Elba III project, we are unable to tell if GEPD made a determination that SO_2 emissions would not cause adverse impacts or, if GEPD made such a determination, how it was made. EPA requests that the record be clarified as to include this information.

EPD Response:

The Division agrees with U.S. EPA Region 4 that the total 528-tpy SO_2 emissions, from carrier vessels at dock and during transitions (including carrier vessels, tug assist vessels, and coast guard escort boats), would need to be assessed to determine if any adverse impacts would be caused by such emissions. However, the Division believes that this is a state implementation plan (SIP) issue instead of a permitting issue.

The PSD preliminary determination for the Elba III Terminal Expansion did not include any modeling for SO_2 emissions because the proposed modification is not major for SO_2 emissions under PSD regulations. As discussed under the title of "Common Control Issue" in Section 2.0 of the PSD preliminary determination dated February 2007, emissions from the LNG ships when unloading LNG and hoteling should not be considered toward PSD applicability nor included in SLNG's potential to emit. Therefore, the additional SO_2 emissions caused by the Elba III Terminal Expansion include only SO_2 emissions from Vaporizers V009 – V014 and Heated Vent Stack Heater B002, 1.91 tpy. Since 1.91 tpy SO_2 emissions is less than the PSD significant modification threshold, 40 tpy, SO_2 emissions from this modification is not subject to PSD review. As discussed under U.S. EPA Comment 2.c., the sum of annual visibility-affecting pollutant emission rates over the shortest distance to the Class I Area (the Wolf Island NWR), Q/D, is less than 10. Therefore, it is determined that the Elba III Terminal Expansion lacks the potential to adversely impact Class I Areas, so the Division believes that there is no compelling reason to conduct an air quality related values (AQRV) analysis of the visibility-affecting pollutants, which includes SO_2 emissions.

Although no modeling is required for SO_2 emissions for the Elba III Terminal Expansion PSD application, the Division is still concerned whether the total 528-tpy SO_2 emissions from carrier vessels at dock and during transitions could cause any adverse impact. Since we believe that this is a SIP issue, we have communicated this concern with our SIP development staff.

Comment 2.a. Air Quality Modeling Comments

Significance Analysis – In the preliminary determination's significant impact analysis section, GEPD states that it compared maximum ambient project concentrations to the EPA monitoring significant levels (MSL's). This is probably a misstatement. The estimated project ambient concentrations should be compared to the PSD significant impact levels (SIL's). It appears that the correct SIL values were used in the comparison but they are identified as MSL's.

EPD Response:

The Division agrees with U.S. EPA that this is a misstatement and that all references to MSL's throughout the preliminary determination (page 25 thru 37) should be corrected to refer to SIL's. Below are the corrected Tables 6-4 and 6-12, for example:

Table 6-4: Class II Significance Analysis Results – Comparison to ~~MSLs~~ SILs

Pollutant	Averaging Period	Year	UTM East (km)	UTM North (km)	Maximum Impact (ug/m^3)	~~MSL~~ SIL (ug/m^3)	Significant?
NO_2	Annual	**1986**	500.7	3550	5.404	1	Yes
CO	1-hour	**1984**	500.9	3550	184.2	2000	No
	8-hour	**1982**	501.0	3551	82.7	500	No

Table 6-12: Class I Significance Analysis Results – Comparison to ~~MSLs~~ SILs

Pollutant	Averaging Period	Year	UTM East (km)	UTM North (km)	Maximum Impact (ug/m^3)	~~MSL~~ SIL (ug/m^3)	Significant?
NO_2	Annual (Wolf Island NWR)	**1996**	169	173	0.00210	0.1	No
NO_2	Annual (Okefenokee NWR)	**1992**	75	139	0.00313	0.1	No
NO_2	Annual (Cape Romain NWR)	**1992**	319	346	0.000521	0.1	No

<u>Comment 2.b. Air Quality Modeling Comments</u>

National ambient air quality standards (NAAQS) and PSD Increment Analyses – NAAQS compliance modeling was indicated to be used for the PSD increment compliance assessment (i.e. the same inventories were used). Hence, it would be expected that the maximum NAAQS modeled concentrations in Table 6-5 of the preliminary determination would be the same as the maximum PSD increment concentrations in Table 6 6. Given, that the results of the impact modeling in these tables does not agree, EPA requests that the record include an explanation of the difference between the results in these tables.

EPD Response:

According to the Division's modeling reviewer, Peter Courtney, the supplemental modeling submitted in September 2006 indicates that 104 sources were included in the National Ambient Air Quality Standard modeling for NOx emissions. The concurrently submitted supplemental modeling to assess PSD Class II Increment indicates that 65 sources were included in that analysis. The original modeling submitted with the application in April 2006 shows 93 NAAQS sources and 54 Increment sources were modeled. Therefore, it would be expected to find some differences in the modeling results.

Even if the inventories consisted of the same facilities, it is possible that some individual sources could expand the PSD increment. These sources would be modeled with a negative emission rate in the PSD Increment modeling but would not be modeled at all in the NAAQS modeling. For this reason, there may be occasions when the same "inventory" is used, but different impacts could be predicted.

<u>Comment 2.c. Air Quality Modeling Comments</u>

PSD Class I Area Analysis - The major Elba Island PSD consuming emission sources are identified in Tables 6-8 and 6-9 of the preliminary determination. It is stated that all Elba Island LNG Terminal emissions were used in the PSD increment analyses. This analysis should be performed using the maximum permitted allowable emission rates. It is unclear from the record as to whether the modeled emission rates are those associated with the maximum permitted allowable values. EPA requests that the record contain documentation of the approach and emissions rates used in the analysis.

Secondary emissions of SO_2 and PM_{10} should be included to properly assess air quality related values (AQRV) impacts, per EPA guidelines. Given that the vessel offloading emissions from this project appear to be large, it is unclear as to why they were not included in the AQRV assessment. EPA recommends that the record and final determination include an assessment of SO2 and PM10 secondary emissions on AQRVs or justification as to why these emissions are believed to be insignificant.

The basis for the conclusion of no significant visibility impacts reportedly is based on 98th percentile results. While this approach is often used for regional haze impacts, it is inconsistent with EPA guidelines for determining PSD visibility impacts. We recommend that visibility impacts be assessed per EPA guidelines or a rationale be provided for the approach using 98th percentile results.

EPD Response:

Paragraph 1

According to Section 7.3.1 of the PSD application, Southern LNG presented an analysis of all NOx PSD increment consuming sources at the Elba Island LNG Terminal (i.e., the LNG vaporizers associated with the Elba I, Elba II, and Elba III Terminal Expansion Projects and the auxiliary combustion source associated with the Elba III Terminal Expansion Project). According to the facility's consultant, Ryan Gesser, the NOx PSD increment consuming sources include only the LNG vaporizers installed as part of the three recommissioning and expansion projects (ID Nos. V001 thru V014) and the new heated vent stack heater proposed as part of the Elba III Terminal Expansion Project (ID No. B002). All other sources, including the generator engines with ID Nos. G001/G002, turbine generators with ID Nos. G003/G004, fuel gas heaters with ID Nos. H001/H002, heated vent stack heater with ID No. B001, fire pump engines with ID Nos. X001/X002, and air compressor with ID No. A001, were originally constructed in 1973, before the NOx major source baseline date (February 8, 1988), and are operated as auxiliary or emergency-only units, or are otherwise considered to be trivial and insignificant activities; therefore, they should not be included in the NOx PSD Increment analysis.

The Division agrees with the facility's rationale explaining why the NOx PSD Increment Analysis should include only the vaporizers with ID Nos. V001 – V014 and heated vent stack heater with ID No. B002. Therefore, the Division agrees that Tables 6-8 and 6-9 of the preliminary determination dated February 2007 should be modified as follows:

Table 6-8: Summary of Major Increment-Consuming Sources

Emission Unit	Increment Consuming?	Emission Rates (tpy)
	NOx	NOx
~~Generator Engine G001~~	~~Yes~~	~~6.48~~
~~Generator Engine G002~~	~~Yes~~	~~6.48~~
~~Turbine Generator G003~~	~~Yes~~	~~93.0~~
~~Turbine Generator G004~~	~~Yes~~	~~93.0~~
LNG Vaporizer V001	Yes	44.0
LNG Vaporizer V002	Yes	44.0
LNG Vaporizer V003	Yes	44.0
LNG Vaporizer V004	Yes	44.0
LNG Vaporizer V005	Yes	44.0
LNG Vaporizer V006	Yes	42.5
LNG Vaporizer V007	Yes	42.5
LNG Vaporizer V008	Yes	42.5
LNG Vaporizer V009	Yes	19.7
LNG Vaporizer V010	Yes	19.7
LNG Vaporizer V011	Yes	19.7
LNG Vaporizer V012	Yes	19.7
LNG Vaporizer V013	Yes	19.7
LNG Vaporizer V014	Yes	19.7
~~Fuel Gas Heater H001~~	~~Yes~~	~~0.520~~

Emission Unit	Increment Consuming?	Emission Rates (tpy)
	NOx	NOx
~~Fuel Gas Heater H002~~	~~Yes~~	~~0.520~~
~~Heated Vent Stack Heater B001~~	~~Yes~~	~~4.89~~
Heated Vent Stack Heater B002	Yes	4.89
~~Fire Pump Engine X001~~	~~Yes~~	~~1.67~~
~~Fire Pump Engine X002~~	~~Yes~~	~~4.20~~
~~Air Compressor A001~~	~~Yes~~	~~0.00825~~
	Totals:	~~681~~ **471**

Table 6-9: Data for Calculating Potential Emissions from Major Increment-Consuming Sources

ID No.	NOx Emission Factors/Limits	Capacity	Hours of Operation per Year	NOx PTE
~~G001~~	~~3 g/hp-hr~~	~~3,920 hp~~	~~500~~	~~6.48 tpy~~
~~G002~~	~~3 g/hp-hr~~	~~3,920 hp~~	~~500~~	~~6.48 tpy~~
~~G003~~	~~0.53 lb/MM Btu~~	~~40.07 MM Btu/hr~~	~~8,760~~	~~93.0 tpy~~
~~G004~~	~~0.53 lb/MM Btu~~	~~40.07 MM Btu/hr~~	~~8,760~~	~~93.0 tpy~~
V001	0.114 lb/MM Btu	88.1 MM Btu/hr	8,760	44.0 tpy
V002	0.114 lb/MM Btu	88.1 MM Btu/hr	8,760	44.0 tpy
V003	0.114 lb/MM Btu	88.1 MM Btu/hr	8,760	44.0 tpy
V004	0.114 lb/MM Btu	88.1 MM Btu/hr	8,760	44.0 tpy
V005	0.114 lb/MM Btu	88.1 MM Btu/hr	8,760	44.0 tpy
V006	0.08 lb/MM Btu	121.4 MM Btu/hr	8,760	42.5 tpy
V007	0.08 lb/MM Btu	121.4 MM Btu/hr	8,760	42.5 tpy
V008	0.08 lb/MM Btu	121.4 MM Btu/hr	8,760	42.5 tpy
V009	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
V010	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
V011	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
V012	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
V013	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
V014	0.037 lb/MM Btu	121.4 MM Btu/hr	8,760	19.7 tpy
~~H001~~	~~0.095 lb/MM Btu~~	~~1.25 MM Btu/hr~~	~~8,760~~	~~0.520 tpy~~
~~H002~~	~~0.095 lb/MM Btu~~	~~1.25 MM Btu/hr~~	~~8,760~~	~~0.520 tpy~~
~~B001~~	~~0.095 lb/MM Btu~~	~~11.74 MM Btu/hr~~	~~8,760~~	~~4.89 tpy~~
B002	0.095 lb/MM Btu	11.74 MM Btu/hr	8,760	4.89 tpy
~~X001~~	~~0.031 lb/hp-hr~~	~~215 hp~~	~~500~~	~~1.67 tpy~~
~~X002~~	~~0.024 lb/hp-hr~~	~~700 hp~~	~~500~~	~~1.67 tpy~~
~~A001~~	~~0.011 lb/hp-hr~~	~~15 hp~~	~~100~~	~~0.00825 tpy~~

According to Peter Courtney, the modeled emission rates that are presented in the NOx PSD increment analysis are those associated with the maximum permitted allowable values as shown in the modified Tables 6-8 and 6-9. In addition, Mr. Gesser also pointed out that the analysis may appear to have modeled fewer vaporizers because some stacks are tied together. Table 6-3 of the PSD Application described the association between stacks and emission units and source parameters represented in the models. Among the NOx PSD Increment-affecting emission units, Vaporizers V001 and V002 are tied into a single stack VS01, V003 and V004 are tied into a single stack VS02, and V005 exhausts by itself to stack VS03. Stack IDs VS04 and VS05 are not used for stack designation at Elba Island, and Vaporizers

V006 through V014 each exhaust separately to their own stacks coded VS06 through VS14. The model files represent the stacks rather than individual emission units. The Division agrees with the approaches described above and the NOx PSD Increment Analysis results.

Paragraph 2

According to Section 7.2 of the PSD application, the facility stated that the Clean Air Act and PSD regulations do not define AQRV, do not provide procedures for defining AQRV, and do not provide criteria pollutant loadings at which an adverse impact on AQRV would occur. According to Mr. Courtney, recent FLM AQRV Work Group (FLAG) guidance (see, for instance, John Notar's paper presented at the March 28, 2007 Region 4 EPA Regional Modelers' Workshop; see also John Vimont's paper presented at the April, 2006 Air & Waste Management Specialty Conference on Air Quality Modeling, Denver, CO) indicates that the FLM considers projects, for which a unitless value of Q divided by D is less than or equal to 10, as lacking the potential to adversely impact Class I areas. The term Q is calculated as the sum of annual visibility-affecting pollutants (NOx + SO_2 + SO_4 + PM, including condensables) in tons-per-year, and D is the shortest distance (in km) to each Class I area within 300 km of the project location.

According to Table 1-1 of the preliminary determination dated February 2007, the sum of annual visibility-affecting pollutant emission rates from the Elba III Terminal Expansion Project itself (including Vaporizers V009 – V014 and Heated Vent Stack Heater B002) is 131 tpy.

Sum of Annual Visibility-affecting Pollutant Emission Rates from Elba III (Primary Emissions)
= 123 tpy NOx + 1.91 tpy SO_2 + 6.04 tpy PM/PM_{10}
= 131 tpy Visibility-affecting Pollutants

The facility provided secondary emission estimates associated with the Elba III Terminal Expansion Project in the additional information package dated October 31, 2006. The provided secondary emissions include emissions from LNG vessels offloading/hoteling/transit, assist vessel maneuvering/pushing/transit/standby during offloading and hoteling, and Coast Guard escort vessels. According to Table 11 of this additional information package, the sum of annual visibility-affecting pollutant secondary emission rates associated with the Elba III Terminal Expansion Project is 461 tpy.

Sum of Annual Visibility-affecting Pollutant Emission Rates from Elba III (Secondary Emissions)
= 213 tpy NOx + 223 tpy SO_2 + 25 tpy PM/PM_{10}
= 461 tpy Visibility-affecting Pollutants

Therefore, the total Q (including both primary and secondary emissions) equals to 592 tpy Visibility-affecting Pollutants.

Total Q = 131 + 461 = 592 tpy Visibility-affecting Pollutants

According to Mr. Courtney, the shortest distance from the Elba Island LNG Terminal to the Wolf Island NWR is 85 km. This yields a Q/D value of 6.96, which is less than 10.

Q/D
= 592 / 85
= 6.96 $<$ 10

For this reason, GA EPD believes that there is no compelling reason to conduct an AQRV analysis of the SO_2 and PM_{10} emissions from both the onland modification (V009 – V014 and B002) and LNG vessels at dock associated with the Elba III Terminal Expansion.

Paragraph 3

Trinity Consultants, Inc. (TCI) prepared a written Class I Area Modeling Protocol (dated February 3, 2006) for the Elba III Terminal Expansion Project. In that protocol, TCI presented a compelling rationale for following EPA's Regional Haze Guidance in order to perform the Class I Area Visibility Impacts analysis of the Elba III Terminal Expansion Project emissions. The Class I Area Visibility AQRV analysis was completed in accordance with the project Class I modeling protocol. The FLM was provided with a copy of the project Class I Area Modeling Protocol and asked to respond with objections within 30 days of receipt. No response from the FLM has been received by either Southern LNG or TCI since the protocol was sent to the FLM.

Recent FLM AQRV Work Group (FLAG) guidance (see, for instance, John Notar's paper presented at the March 28, 2007 Region 4 EPA Regional Modelers' Workshop) indicates that the FLM has adopted the EPA Regional Haze Guidance as their preferred means of assessing visibility impacts at Class I areas. Their rationale is based on the widespread technical discussions of visibility impacts analysis which have occurred as a result of the Regional Haze Rule's Best Available Retroactive Technology (BART) visibility modeling and impacts assessment requirements. They believe the adoption of a specific process for visibility analysis, such as the VISTAS BART modeling protocol, which avoids implication of local visibility-affecting weather phenomena, will be of benefit to the FLM goals for such analyses. The ELBA III Terminal Expansion Project visibility analysis was conducted according to the VISTAS BART modeling protocol and the Project's Class I Area Modeling Protocol. The project was required by the FLM to use CALPUFF model version 5.711a, level 040716, and use CALMET-processed MM5 meteorological data for the years 1990, 1992, and 1996. The ELBA III visibility analysis, then, was conducted in accordance with the way U.S. EPA would require it to be conducted at present.

Comment 2.d. Air Quality Modeling Comments

CALPUFF Model - The CALPUFF model used for the Class I impact assessment is indicated to be version 040716. The current regulatory CALPUFF model is version 5.711a. Typically, the regulatory version of a model should be used unless advance approval is received from the reviewing authority and EPA. We recommend that the record provide clarification as to why an alternate version of the model was used.

EPD Response:

The Division would like to clarify that the CALPUFF model used for the Class I impact assessment is not an alternate version of the current regulatory CALPUFF model. The CALPUFF model used for the Class I impact assessment is CALPUFF beta version 5.711a, level 040716. The Division apologizes for allowing the confusion in the preliminary determination.

SOUTHERN LNG INC. – ELBA ISLAND LNG TERMINAL COMMENTS

Comments were received from Mr. James Tangeman, Principal of Eastern Pipelines Group, by a letter on March 16, 2007. The comments are produced, verbatim, below and are followed by EPD's responses.

Comment 1

Page 11 of PSD Preliminary Determination, last sentence under SO2 Emission Standard paragraph: This sentence specifies the exemption of SO2 emission monitoring if fuel supplier certifications are maintained in accordance with 40 CFR 60.47b(g). SLNG agrees with the exemption. SLNG also proposes that their current method of onsite measurement of natural gas sulfur content be allowed to meet this fuel supplier certification requirement. Our current method of onsite measurement of natural gas sulfur content is performed to demonstrate that the sulfur content is much less than the 2.5 percent (below 100 MMBtu/hr) and 3 percent (above 100 MMBtu/hr) limits specified in Georgia Air Quality Control Rule 391-3-1-.02(2)(g). A copy of a recent natural gas sulfur content measurement at Elba Island is included as Attachment 1 to this letter. This is proposed as the documentation showing the natural gas sulfur content measurement. Because the applicable sections of 40 CFR 60, Subpart Db (40 CFR 60.43b(h)(5), 60.45b(k), 60.46b(i), 60.47b(g) and 60.48b(j)) only require the fuel supplier certification to be maintained and not reported to the Georgia EPD, these measurements will be kept on record at the Elba Island facility for a period of at least five (5) years from the date of measurement and suitable for inspection in accordance with 40 CFR 70.6(a)(3)(ii)(B).

EPD Response:

The Division agrees with the facility that their onsite measurement of natural gas sulfur content meets the fuel supplier certification requirement specified in 40 CFR 60.47b(g).

Natural gas contains minimal amounts of sulfur and combusting it is unlikely to generate emissions of more than 0.32 pound of sulfur dioxide (SO_2) per million Btu. The U.S. EPA AP-42 SO_2 emission factor found in Table 1.4-2, 0.6 lb/10^6 ft^3, is based on the assumption that natural gas contains 2,000 grains of sulfur per million cubic of natural gas. In order to emit more than 0.32 pounds of SO_2 per million Btu, the fuel would have to contain more than 1.088 million grains of sulfur per million cubic of natural gas (or 108.8 gr S per 100 ft^3).

$(0.32 \text{ lb } SO_2 / \text{MM Btu}) * (1{,}020 \text{ MM Btu}/10^6 \text{ ft}^3 \text{ NG}) = 326.4 \text{ lbs } SO_2 / 10^6 \text{ ft}^3 \text{ NG}$

$(326.4 \text{ lbs } SO_2 / 10^6 \text{ ft}^3 \text{ NG}) / (0.6 \text{ lb } SO_2 / 10^6 \text{ ft}^3 \text{ NG}) * (2{,}000 \text{ gr S} / 10^6 \text{ ft}^3 \text{ NG})$
$= 1{,}088{,}000 \text{ gr S} / 10^6 \text{ ft}^3 \text{ NG}$
$= 108.8 \text{ gr S} / 100 \text{ ft}^3 \text{ NG}$

The attached copy of a recent natural gas sulfur content measurement at Elba Island indicated that the natural gas contains less than 0.05 gr S per 100 ft^3 NG. It proves that firing such natural gas would never emit more than 0.32 pound of SO_2 per million Btu. The facility must keep such onsite measurements of natural gas sulfur content in order to meet the fuel supplier certification requirement specified in 40 CFR 60.47b(g).

Comment 2

Page 47 of PSD Preliminary Determination, last sentence of fourth paragraph: This sentence currently specifies that the facility "must submit a fuel supplier certification" to satisfy the applicable requirements as noted. However, the regulations being referenced in this sentence do not require the submittal of the fuel supplier certification, but rather "maintain fuel supplier certification(s) of the sulfur content of the fuels burned". Also, the regulations do not specify the use of a natural gas tariff to meet these requirements. SLNG requests that this sentence be modified as follows for consistency with each of the referenced regulations: "In order to satisfy the requirements specified in 40 CFR 60.43b(h)(5), 60.45b(k), 60.46b(i), 60.47b(g), and 60.48b(j), the facility must ~~submit~~ **maintain** a fuel supplier certification ~~or a natural gas tariff~~ for the fuel combusted in LNG vaporizers with ID Nos. V009 – V014."

EPD Response:

The Division agrees with the facility that the referenced regulations only require the facility to maintain the fuel supplier certifications. Therefore, the Division agrees with the facility that the facility only has to maintain the said records; the facility is not required to submit the records. As discussed in response to the facility's Comment 1, the facility may maintain records of onsite measurements of natural gas sulfur content to meet the requirement.

Comment 3

Condition 3.3.8a: This condition specifies a sulfur dioxide (SO2) emission limit of 0.20 pounds per million Btu for proposed vaporizers V009 – V014 as specified by 40 CFR 60.42b(e) and (k). This limit is specified under 40 CFR 60.42(k), but that paragraph also provides exceptions under 40 CFR 60.42b(k)(1) and (k)(2). The exception under 40 CFR 60.42b(k)(1) is spelled out as follows:

> **(k)(1) Units firing only oil that contains no more than 0.3 weight percent sulfur or any individual fuel with a potential sulfur dioxide emission rates of 140 ng/J (0.32 lb/MMBtu) heat input or less are exempt from all other sulfur dioxide emission limits in this paragraph.**

Based on this exception to the sulfur dioxide emission limits, the exclusive use of natural gas at the Elba Island LNG Terminal, and the proposed use of sulfur content measurements to meet the fuel supplier certification requirement to demonstrate that the sulfur dioxide emissions are equal to or less than 0.32 lb/MMBtu, SLNG is requesting that the sulfur dioxide limit of 0.20 lb/MMBtu specified by this permit condition be removed from the permit amendment.

EPD Response:

The Division agrees with Southern LNG's interpretation of 40 CFR 60.42b(k)(1), and that the sulfur dioxide limit specified by Condition 3.3.8.a, 0.20 lb/MM Btu, should be removed from the permit amendment. The 0.20 lb/MM Btu SO_2 limit will be replaced by another requirement that the facility shall not fire any fuel with a potential SO_2 emission rate exceeding 0.32 lb/MM Btu. This operating limit is required because 40 CFR 60.42b(k)(1) exempts the emission units from all SO_2 emission limits other than the 0.32 lb/MM Btu limit. Therefore, the modified condition will read as follows:

3.3.8 The Permittee shall comply with all applicable provisions of the New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart Db – "Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units," for the operation of the LNG vaporizers with ID Nos. V009 – V014~~, and shall not discharge or cause the discharge, into the atmosphere, from each LNG vaporizer with ID Nos. V009 – V014, any gases which~~:

a. ~~Contain sulfur dioxide (SO_2) in excess of 0.20 pound per million Btu on a 30-day rolling average~~ **The Permittee shall not fire any fuel with a potential SO_2 emission rate exceeding 0.32 lb/MM Btu.**
[~~40 CFR 60.42b(e) and (k)~~ **40 CFR 60.42b(k)(1)**]

b. **The Permittee shall not discharge or cause the discharge, into the atmosphere, from each LNG vaporizer with ID Nos. V009 – V014, any gases which** ~~Contain~~ **contain** nitrogen oxides (NOx) in excess of 0.20 pound per million Btu on a 30-day rolling average.
[40 CFR 60.44b(a)(1)(ii) and 40 CFR 60.44b(i)]

Comment 4

Condition 5.2.8(d): This condition specifies that the annual Relative Accuracy Test Audit (RATA) on the Predictive Emission Monitoring System (PEMs) needs to be done between January 16 and March 15 of each year. The current Part 70 Permit for the existing Elba Island LNG Terminal specifies that a Relative Accuracy test be performed at least once every four calendar quarters on the existing PEMs which is consistent with the procedures specified by Performance Specifications 2, 4A, and Appendix F (Section 5.1.1) of 40 CFR 60. It should also be noted that the annual RATA being performed on the existing vaporizers requires nearly a week of setup and implementation and the vaporizer operation is dictated by the frequency of LNG ship unloading and natural gas sendout into the pipelines. The frequency of LNG ships and sendout is determined by customer requirements and it can vary from week to week. Therefore, a significant amount of planning is needed to setup all logistics, personnel, equipment, and scheduling SLNG is concerned that setting a specific and short timeframe for completing the RATA will be extremely challenging to complete each year based on how the terminal and the pipeline operates. To be consistent with the existing permit, the NSPS requirements, and terminal operation, SLNG requests that this condition be revised to allow the RATA to be performed once every four calendar quarters and remove the requirement to complete during the January 16 to March 15 timeframe.

Also, the last sentence in this condition specifies that a procedure subject to review and modification by the Division shall be used to replace emission data during all periods of monitoring system downtime. SLNG requests clarification on the preceding statement to cover all periods of monitoring system downtime and the need to include this requirement within this condition. Would these periods include the time when the vaporizers (V009 to V014) are not operating with zero emissions? Also, this emission data replacement procedure is not included as a requirement in Condition 5.2.6 of the existing Part 70 Permit for the facility encompassing the PEMs on vaporizers V006 to V008. Therefore, SLNG would like to see this requirement removed from this condition or clarification of why this needs to be specified in a permit condition because this procedure will likely be established as part of the PEMs installation and included with the PEMs plan required by proposed Permit Condition 6.2.7.

EPD Response:

The Division agrees that a RATA must be performed at least once every four calendar quarters but that the permit needs not specify that the RATA be done between January 16 and March 15 of each year. The Division also agrees to remove the last sentence of Condition 5.2.8.d. Therefore, the modified condition will read as follows:

5.2.8 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated pollutants on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.

a. Nitrogen oxides (NO_x) and diluent (O_2 or CO_2) emissions from each LNG vaporizer with ID Nos. V009 – V014. The output of the Continuous Emission Monitoring System (CEMS) shall be expressed in pounds NO_x per million BTU heat input. In lieu of a CEMS, the Permittee may use a Predictive Emission Monitoring System (PEMS), as allowed by and in accordance with §60.48b(g)(2) of 40 CFR 60, to monitor the NOx emissions.
[391-3-1-.02(6)(b)1, 40 CFR 52.21, 40 CFR 60.48b(b) and (g)(2), and 40 CFR 70.6(a)(3)(i)]

b. Carbon monoxide (CO) and diluent (O_2 or CO_2) emissions from each LNG vaporizer with ID Nos. V009 – V014. The output of the CEMS shall be expressed in pounds CO per million BTU heat input. In lieu of a CEMS, the Permittee may use a Predictive Emission Monitoring System (PEMS) to monitor the CO emissions.
[391-3-1-.02(6)(b)1, 40 CFR 52.21, and 40 CFR 70.6(a)(3)(i)]

c. If the Permittee uses a CEMS to monitor NOx and/or CO emissions, the Permittee shall perform daily calibration drift tests (assessments) and data accuracy assessments in accordance with Procedure 1 (Appendix F) of the Division’s *Procedures for Testing and Monitoring Sources of Air Pollutants* and 40 CFR Part 60.
[391-3-1-.02(6)(b)1, 40 CFR 60.13, Appendix F to 40 CFR 60, and 40 CFR 70.6(a)(3)(i)]

d. If the Permittee uses a PEMS to monitor NOx and/or CO emissions, ~~between January 16 and March 15 of each year,~~ the Permittee shall**, at least once every four calendar quarters,** conduct a Relative Accuracy Test Audit (RATA) on each PEMS as specified in Performance Specification 2 or 4A, as applicable, contained in the Division's **Procedures for Testing and Monitoring Sources of Air Pollutants**. ~~A procedure subject to review and modification by the Division shall be used to replace emission data during all periods of monitoring system downtime.~~
[391-3-1-.02(6)(b)1, 40 CFR 60.13, and 40 CFR 70.6(a)(3)(i)]

Comment 5

Condition 5.2.9(b), last sentence: SLNG would like this sentence to be revised for consistency with the applicable regulation (40 CFR 60.48c(g)). The sentence would be revised as follows: “Data shall be recorded **during each calendar month** ~~monthly~~.”

EPD Response:

The Division agrees to modify Condition 5.2.9.b as requested. The modified condition will read as follows:

5.2.9 The Permittee shall install, calibrate, maintain, and operate monitoring devices for the measurement of the indicated parameters on the following equipment. Data shall be recorded at the frequency specified below. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. A natural gas consumption meter to continuously measure and record the quantity of natural gas, in cubic feet, burned in each LNG vaporizer with ID Nos. V009 – V014. Data shall be recorded daily.
[40 CFR 60.49b(d)]

b. A natural gas consumption meter to continuously measure and record the quantity of natural gas, in cubic feet, burned in Heated Vent Stack Heater No. 2 (ID No. B002). Data shall be recorded ~~monthly~~ **during each calendar month**.
[40 CFR 60.48c(g)]

<u>Comment 6</u>

Condition 6.2.6 (c): Because initiation of construction of all the vaporizers and heated vent stack heater will likely occur on a single date and it will be difficult to track when commencement of construction actually occurs on each vaporizer due to the staging of construction, SLNG would like to revise this condition to read as follows: "The actual date of commencement of construction **for the** ~~for each~~ LNG vaporizer**s** with ID Nos. V009 – V014 and Heated Vent Stack Heater No. 2 (ID No. B002) within 15 days after such date."

EPD Response:

The Division agrees to modify Condition 6.2.6.c as requested. The modified condition will read as follows,

6.2.6 The Permittee shall furnish the Division written notification as follows:
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. The actual date of initial startup, the design heat capacity, and type of fuel used for each LNG vaporizer with ID Nos. V009 – V014 and Heated Vent Stack Heater No. 2 (ID No. B002) within 15 days after such date.
[40 CFR 60.49b(a)]

b. Certification that a final inspection has shown that construction has been completed in accordance with the application, plans, specifications, and supporting documents submitted in support of the Permit.

c. The actual date of commencement of construction for ~~each~~ **the** LNG vaporizer**s** with ID Nos. V009 – V014 and Heated Vent Stack Heater No. 2 (ID No. B002) within 15 days after such date.

For the purposes of this Permit, "startup" shall mean the setting in operation of a source for any purpose. [40 CFR 52.21 and 40 CFR 60.7]

Comment 7

Condition 6.2.9(b), first sentence: Consistent with comment 5 above, SLNG requests that this condition be revised as follows: **For each calendar month, t**he Permittee shall ~~record each month and~~ maintain records of the amounts of natural gas combusted in Heated Vent Stack Heater No. 2 (ID No. B002).

EPD Response:

The Division agrees to modify Condition 6.2.9.b as requested. The modified condition will read as follows:

6.2.9 The Permittee shall use the natural gas consumption meters required by Condition 5.2.9 of the Permit to determine and record the following:
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. For each vaporizer operating day, the Permittee shall record and maintain records of the amounts of natural gas combusted in each LNG vaporizer with ID Nos. V009 – V014. Records shall be kept for five years after the date of record and be available for inspection by or submission to the Division upon request.
[40 CFR 60.49b(d)]

b. **For each calendar month,** ~~The~~ **the** Permittee shall ~~record each month and~~ maintain records of the amounts of natural gas combusted in Heated Vent Stack Heater No. 2 (ID No. B002). Records shall be kept for five years after the date of record and be available for inspection by or submission to the Division upon request.
[40 CFR 60.48c(g)]

Comment 8

Condition 6.2.10, initial paragraph, first sentence: SLNG requests this statement be clarified or made consistent with the language in permit condition 6.2.2 of the existing Part 70 Operating Permit which is based on the regulatory language in 40 CFR 60.49b(g). The sentence in condition 6.2.10 includes the following phrase "…shall record each vaporizer operating day and maintain the following records…". Is this phrase intended to mean that the records listed in this condition will be maintained for each vaporizer operating day?

EPD Response:

The Division agrees to modify Condition 6.2.10 as requested. The modified condition will read as follows:

6.2.10 The Permittee shall ~~record each vaporizer operating day and maintain the following records~~ **maintain the following records for each vaporizer operating day** for each LNG vaporizer with ID Nos. V009 – V014. The Permittee shall submit a report containing the following information for each semiannual period ending June 30 and December 31 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively.
[391-3-1-.02(6)(b)1, 40 CFR 60.49b(g) and (i), and 40 CFR 70.6(a)(3)]

a. Calendar date.

b. The average hourly nitrogen oxides emission rate (in pounds per million BTU heat input) measured or predicted.

c. The 30-day average nitrogen oxides emission rates (in pounds per million BTU heat input) calculated at the end of each vaporizer operating day from the measured or predicted hourly nitrogen oxides emission rates for the preceding 30 vaporizer operating days.

d. The average hourly carbon monoxide emission rate (in pounds per million BTU heat input) measured or predicted.

e. Identification of the vaporizer operating days when the calculated 30-day average nitrogen oxides emission rate is in excess of the emission limit specified in Condition 3.3.8.b, specifying the reasons for such excess emissions as well as a description of the corrective actions taken.

f. Identification of any operating hour when the calculated 3-hour rolling average nitrogen oxides emission rate is greater than the emission limit specified in Condition 3.3.9.a, specifying the reasons for such exceedances as well as a description of the corrective actions taken.

g. Identification of any operating hour when the calculated 3-hour rolling average carbon monoxide emission rate is greater than the emission limit specified in Condition 3.3.9.b, specifying the reasons for such exceedances as well as a description of the corrective actions taken.

h. Identification of the vaporizer operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data, and a description of corrective actions taken.

i. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding the data.

j. Identification of the "F" factor used for calculations, method of determination, and type of fuel combusted.

k. Identification of the times when the pollutant concentration exceeded the full span of the continuous monitoring system.

Description of any modification to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specifications 2 or 3.

Comment 9

Condition 6.2.11: Consistent with comments 1 and 2 in this letter, SLNG is requesting this condition be revised as follows: "The Permittee shall **maintain records of** ~~ssubmit, with the report required by Condition 6.1.4, a~~ fuel supplier certification**s showing sulfur content** ~~or a natural gas tariff~~ for the fuel combusted in the LNG vaporizers with ID Nos. V009 – V014. **The fuel supplier certification will be performed by the facility/owner measuring the sulfur content of the natural gas on at least a calendar year basis.** ~~during the semiannual reporting period~~.

EPD Response:

As discussed in EPD's response to the facility's Comment 2, the Division agrees that the facility does not need to submit the fuel supplier certification records within their semiannual reports; instead, they only need to maintain the records onsite. They can also use their onsite measurements of natural gas sulfur content to fulfill this record keeping requirement. However, the Division has been requiring other sources to perform similar measurements on a quarterly basis. During a telephone conversation on March 30, 2007, the Division agreed with the facility that semiannual fuel analyses, which the facility has been doing for years, is acceptable. Therefore, the modified condition will read as follows:

6.2.11 ~~The Permittee shall submit, with the report required by Condition 6.1.4, a fuel supplier certification or a natural gas tariff for the fuel combusted in the LNG vaporizers with ID Nos. V009 – V014 during the semiannual reporting period~~.
The Permittee shall conduct, or have conducted, a fuel supplier certification of the sulfur content for the fuel combusted in the LNG vaporizers with ID Nos. V009 - V014, during each semiannual reporting period, which must demonstrate compliance with the standard specified in Condition 3.3.8.a. Alternatively, the Permittee may obtain fuel supplier certifications from another party for the fuel burned in these units. The Permittee shall maintain records of the fuel supplier certifications.
[391-3-1-.02(6)(b)1, 40 CFR 60.43b(h)(5), 60.45b(k), 60.46b(i), 60.47b(g), 60.48b(j), and 40 CFR 70.6(a)(3)(i)]

APPENDIX A

AIR QUALITY PERMIT AMENDMENT

No. 4922-051-0003-02-2

APPENDIX B

WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD