



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

January 10, 2012
NOC-AE-12002780
10CFR54
STI: 33206600
File: G25

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Clarification of Information in Support of the Review of the
South Texas Project License Renewal Application (TAC Nos. ME5122 and ME5123)

- References:
1. STPNOC Letter dated October 25, 2010, from G. T. Powell to NRC Document Control Desk, "License Renewal Application," (NOC-AE-10002607) (ML103010257)
 2. Summary of Telephone Conference Call Held on December 15, 2011, Between the U.S. Nuclear Regulatory Commission and STP Nuclear Operating Company, Concerning Requests for Additional Information Pertaining to the South Texas Project License Renewal Application" (ML11350A222)

By Reference 1, STP Nuclear Operating Company (STPNOC) submitted a License Renewal Application (LRA) for South Texas Project (STP) Units 1 and 2. By Reference 2, the NRC staff requested clarification of information contained in the STP LRA. The Enclosure to this letter provides the clarifying information.

There are no regulatory commitments in this letter.

Should you have any questions regarding this letter, please contact either Arden Aldridge, STP License Renewal Project Lead, at (361) 972-8243 or Ken Taplett, STP License Renewal Project regulatory point-of-contact, at (361) 972-8416.


A. Wayne Harrison
Manager, Licensing

KJT

Enclosure: Response to Requests for Additional Clarification

A147
NRC

cc:

(paper copy without copy of attachments to
to the enclosure)

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Enclosure

Response to Requests for Additional Clarification

Attachments

1. STPNOC 2006 Emissions Inventory Report (Partial) dated March 29, 2007
(NOC-TX-07015917)
2. STPNOC 2007 Emissions Inventory Report (Partial) dated March 26, 2008
(NOC-TX-08017925)
3. STPNOC 2008 Emissions Inventory Report (Partial) dated March 30, 2009
(NOC-TX-09019517)
4. STPNOC 2009 Emissions Inventory Report (Partial) dated March 23, 2010
(NOC-TX-10021083)
5. STPNOC 2010 Emissions Inventory Report (Partial) dated March 30, 2010
(NOC-TX-11022689)

Response to Requests for Additional Clarification

REQUESTS FOR ADDITIONAL CLARIFICATION

LICENSE RENEWAL APPLICATION DECEMBER 15, 2011

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of STP Nuclear Operating Company (STPNOC) held a telephone conference call on December 15, 2011, to discuss and clarify the applicant's information contained in the STP License Renewal Application (ML103010257).

LRA supplement for Air Emissions Inventory Updated-Reports is needed for clarification purpose.

Background Information:

The applicant's Environmental Report (ER), Section 2.13, Meteorology and Air Quality, discusses total air emissions from all sources at STP from 2004 to 2009, using data from Air Emissions Inventory Update reports submitted annually to the Texas Commission on Environmental Quality (TCEQ). Consistent with the staff's Standard Review Plan, clarification is needed for the review with air emissions data broken up as constituent parts (to supplement the summed up data in the ER).

Clarification needed:

For the purpose of providing clarification for the information contained in the LRA, please, provide the following data.

Sections of the emission reports of interest:

Emission Calculations and Maximum Allowable Emission Rate Tables for the years 2006, 2007, 2008, 2009, and 2010, which contain the following constituents:

CO = carbon monoxide
HAPs = hazardous air pollutants
NO_x = nitrogen oxides
PM₁₀ = particulate matter ≤10 μm
SO_x = sulfur oxides
VOCs = volatile organic compounds

Discussion:

During the conference call, the applicant confirmed understanding of the request and the action of providing the supplement in January 2012. There is no need for a follow-up request for additional information.

STPNOC Response

Constituent data is provided in Attachments 1 through 5 to this enclosure with the following exception. The only required HAP (hazardous air pollutant) that STPNOC is required to report is the emission of lead. However, the lead emission for the years 2006, 2007, 2008, 2009 and 2010 was zero for each year. Therefore, there is no report of lead emission in the requested sections of the emission reports.

Sections of the emissions reports of interest are provided in Attachments 1 through 5 to this enclosure. The report sections of interest provided are as follows:

- (i) Cover letter of the report
- (ii) Emissions Calculations section
- (iii) Maximum Allowable Emission Rates Table

Attachment 1

STPNOC 2006 Emissions Inventory Report (Partial)

Dated March 29, 2007 (NOC-TX-07015917)



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

March 29, 2007
NOC-TX- 07015917
STI: 32137874
PFN: W01; W12.02

CERTIFIED MAIL (7003 2260 0001 6287 0152)

Emissions Inventory Data, MC 166
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

**Re: 2006 Emissions Inventory
STP Nuclear Operating Company
South Texas Project Electric Generating Station
TNRCC Account ID Number MH-0028-D
Wadsworth, Matagorda County
RN: 102395654
CN: 601658669**

Pursuant to 30 T.A.C. §101.10 requirements, the STP Nuclear Operating Company is providing the enclosed calendar year 2006 Air Emissions Inventory update and supporting documentation for the South Texas Project Electric Generating Station. Changes in reported station emissions for 2006 from the previous year reflect different equipment operating rates and adjustments to calculated emission factors used for sulfur dioxide emissions. Minor corrections are indicated on the emissions inventory questionnaire (EIQ) and Contact Information form.

If you have any questions or require additional information, please contact Ms. Peggy Travis at (361) 972-8573 or via e-mail at pltravis@stpegs.com.

Sincerely,

R. A. Gangluff
Chemistry/Environmental/Health Physics
Manager

PLT/plt

Enclosure

cc: Mr. Joel Anderson, Houston Region Air Section Manager, TCEQ Region 12 – w/ enclosures

bcc: K. L. Coates (electronic, w/out enclosure)
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**2006
Emission Inventory
EMISSIONS CALCULATIONS**

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

2006 EMISSION INVENTORY EVALUATION SHEET

	Auxiliary Boiler	Standby Diesel Generators						TSC Generators		BOP Generators		LDG Generator	EOF Generator	NSC Generator	Combined Small Fac. DGs	Tanks		Outdoor Sandblasting Facility	TOTAL
		11	12	13	21	22	23	1	2	1	2					Oil	Gas		
Annual																			
Fuel Oil Burned (gal/yr)	3,883	34,170	30,312	31,898	22,920	27,744	30,438	1,843	1,994	551	791	1,988	3,086	1,412	1,296	--	--	Annual Tons Usage:	
Heat Content (mmBtu/bbl)	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	--	--		
Fuel Oil Burned (mmBtu/yr)	532	4,881	4,153	4,343	3,140	3,801	4,170	252	273	75	108	270	423	193	178	--	--	16	--
Ozone Season (Jun 1 - Aug 31)																			
Fuel Oil Burned (gal/ozone season)	1,121	15,194	12,150	5,298	5,208	5,130	5,262	485	821	76	286	1,523	1,476	733	236	--	--		
Fuel Oil Burned (mmBtu/ozone season)	154	2,219	1,685	726	713	703	721	64	85	10	41	209	202	100	32	--	--		
Seasonal Operating %																			
Winter (Jan/Feb/Dec)	13%	13%	18%	16%	22%	25%	42%	22%	31%	32%	36%	9%	17%	0%	10%	58%	0%	19%	21%
Spring (Mar/Apr/May)	26%	25%	20%	52%	24%	38%	23%	29%	22%	13%	17%	4%	28%	48%	72%	21%	25%	25%	28%
Summer (Jun/Jul/Aug)	29%	47%	40%	17%	23%	18%	17%	25%	31%	14%	37%	77%	48%	52%	18%	16%	50%	27%	33%
Fall (Sep/Oct/Nov)	32%	15%	22%	15%	31%	19%	18%	24%	16%	41%	10%	10%	7%	0%	0%	5%	25%	29%	18%
Design Capacity (mmBtu/hr)	189	55	55	55	55	55	55	12	12	7	7	7	7	2.5	1.2	--	--		
% of Max Potential Emissions	0.03%	0.97%	0.86%	0.90%	0.65%	0.79%	0.87%	0.24%	0.26%	0.12%	0.18%	0.44%	0.69%	0.88%	1.69%	--	--	10.60%	--
Ozone Season Process Rate	0.012	0.178	0.132	0.058	0.057	0.058	0.057	0.005	0.007	0.001	0.003	0.017	0.016	0.008	0.003	0.245	0.196	0.047	--
Emission Factors (lb/mmBtu)																		Emission Factors (ton/ton)	
TSP	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00286
PM10	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00034
PM2.5	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00034
VOC	0.0055	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	--
NO _x	0.1300	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	--
SO ₂	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.0439	0.5050	0.5050	--	--	--
CO	0.0686	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	--
Annual Emissions (tn/yr)																			
TSP	0.0125	0.1631	0.1447	0.1513	0.1094	0.1325	0.1453	0.0088	0.0095	0.0026	0.0038	0.0094	0.0147	0.0067	0.0062	--	--	0.0488	0.9882
PM10	0.0125	0.1631	0.1447	0.1513	0.1094	0.1325	0.1453	0.0088	0.0095	0.0026	0.0038	0.0094	0.0147	0.0067	0.0062	--	--	0.0054	0.9261
PM2.5	0.0125	0.1631	0.1447	0.1513	0.1094	0.1325	0.1453	0.0088	0.0095	0.0026	0.0038	0.0094	0.0147	0.0067	0.0062	--	--	0.0054	0.9261
VOC	0.0018	0.1873	0.1861	0.1737	0.1256	0.1520	0.1668	0.0101	0.0109	0.0030	0.0043	0.0108	0.0169	0.0077	0.0071	0.0215	0.7498	--	1.8153
NO _x	0.0346	7.4901	6.6444	6.9482	5.0241	6.0815	6.6720	0.4040	0.4371	0.1208	0.1734	0.4314	0.6765	0.3095	0.2841	--	--	4.17315	41.7315
SO ₂	0.0117	0.1028	0.0912	0.0953	0.0889	0.0834	0.0915	0.0055	0.0060	0.0017	0.0024	0.0059	0.0093	0.0488	0.0448	--	--	0.6882	6.882
CO	0.0183	1.9899	1.7949	1.8456	1.3343	1.6164	1.7723	0.1073	0.1161	0.0327	0.0461	0.1146	0.1797	0.0822	0.0778	--	--	1.0040	10.040
Ozone Season Emissions (lb/day)																			
TSP	0.0785	1.6808	1.2611	0.6488	0.6406	0.6326	0.6482	0.0483	0.0645	0.0079	0.0307	0.1581	0.1532	0.0761	0.0244	--	--	0.2869	6.0184
PM10	0.0785	1.6808	1.2611	0.6498	0.6406	0.6325	0.6482	0.0483	0.0645	0.0079	0.0307	0.1581	0.1532	0.0761	0.0244	--	--	0.0317	5.7642
PM2.5	0.0785	1.6808	1.2611	0.6498	0.6406	0.6325	0.6482	0.0483	0.0645	0.0079	0.0307	0.1581	0.1532	0.0761	0.0244	--	--	0.0317	5.7642
VOC	0.0092	1.9282	1.4474	0.6312	0.6204	0.6111	0.6269	0.0554	0.0740	0.0091	0.0353	0.1814	0.1758	0.0873	0.0280	0.1248	4.2781	--	10.9244
NO _x	0.2170	7.1678	6.8974	2.52461	24.8173	24.4456	25.0748	2.3168	2.8592	0.3622	1.4108	7.2674	7.0336	3.4928	1.1188	--	--	260.7172	260.7172
SO ₂	0.0733	1.0586	0.7943	0.3483	0.3405	0.3354	0.3440	0.0304	0.0406	0.0050	0.0194	0.0998	0.0985	0.5512	0.1767	--	--	4.3117	4.3117
CO	0.1148	20.4977	15.9790	6.7050	6.5921	6.4934	6.6804	0.8886	1.0789	0.0962	0.3747	1.9278	1.8683	6.9278	0.2976	--	--	68.9890	68.9890

Sources of Emission Factors:

Auxiliary Boiler:

TSP, NO_x, CO: METCO emission tests (July/August 1986).
 PM10: Assumes total particulate matter is <= 2.5.
 PM2.5: Assumes total particulate matter is <= 2.5.
 VOC: AP-42, Section 1.3, Table 1.3-3 (9/86).
 SO₂: Calculated using actual sulfur content (attached).

Generators (Standby, TSC, BOP, LDG, EOF, NSC, Bldg.):

TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (10/86).
 VOC, NO_x, CO: AP-42, Section 3.4, Table 3.4-1 (10/86).
 SO₂ (Except NSC & Bldg.): Calculated using actual sulfur content (attached).
 SO₂ (NSC & Bldg.): AP-42, Section 3.4, Table 3.4-1 (10/86). Calculated for 500 ppm fuel oil sulfur content (based on purchase specification).

Outdoor Sandblasting Facility:

TSP, PM10,
 PM2.5: TCEQ Technical Guidance Package for Dry Abrasive Blast Cleaning (DRAFT RG-169; 3/01). (converted to ton/ton). (Assumed PM2.5 = PM10)

Tanks: Emissions were calculated using Tanks 4.09d.

2006 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

PART A: EMISSION FACTOR AND FUEL OIL HEATING CONSTANT CALCULATIONS

1. Fuel Oil No. 2 (Diesel) Heat Content (mmBtu/bbl):

$$137,000 \text{ Btu/gallon of Diesel}^a \times 42 \text{ gallons/bbl} \times 1 \text{ mmBtu}/10^6 \text{ Btu} = 5.754 \text{ mmBtu/bbl}$$

2. SO₂ Emission Factor (Boiler, Diesel Generators *except* NSC and GRPBLDG):

$$6.1 \text{ lb/gallon of diesel}^b \div 137,000 \text{ Btu/gallon}^a \times 10^6 = 44.5 \text{ lbs/mmBtu}$$

$$44.5 \text{ lbs/mmBtu} \times 0.0493/100 \text{ (actual \% sulfur weight)}^c \times 64 \text{ lbs SO}_2/32 \text{ lbs S} = 0.0439 \text{ lb SO}_2/\text{mmBtu}^d$$

3. SO₂ Emission Factor (NSC and GRPBLDG Diesel Generators):

$$1.01 \times 0.5^e = 0.5050 \text{ lb/mmBtu}^f$$

4. Boiler VOC Emission Factor:

$$0.76 \text{ lb}/10^3 \text{ gal No. 4 Oil}^g \times 42 \text{ gallons/bbl} \times 1 \text{ bbl}/5.754 \text{ mmBtu} = 0.0055 \text{ lb/mmBtu}^h$$

5. Boiler CO Emission Factor:

$$12.7 \text{ lbs/hr}^i \times 1 \text{ hr}/185 \text{ mmBtu}^j = 0.0686 \text{ lb/mmBtu}$$

6. Diesel Generator VOC Emission Factor:

$$0.09 \text{ lb/mmBtu}^k \times 0.91^l = 0.08 \text{ lb/mmBtu}^l$$

^a AP-42, Fifth Edition, Volume I; Appendix A, "Typical Parameters of Various Fuels," 9/85 (Reformatted 1/95); p. A-5.

^b AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_v , W_{vc} , P_{vA} , W_L) of Selected Petroleum Liquids, 9/97; P. 7.1-49.

^c Actual measured value (analysis sheet included in package).

^d TNRCC Technical Guidance Package for Combustion Section Sources: Boilers & Heaters, Section III: Emissions Calculations Instructions for Boilers and Heaters, March 1995.

^e Fuel oil purchase specification = 0.5% sulfur.

^f Adjusted emission factor for SO_x as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^g Auxiliary Boiler 11 utilizes No. 2 Fuel Oil which is not listed in AP-42 Table 1.3-3.

^h AP-42, Fifth Edition, Volume I; Section 1.3; Table 1.3-3: Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, 9/98; p. 1.3-14.

ⁱ Mullins Environmental Testing Co. Inc.; *Source Emissions Survey of Houston Lighting & Power Company South Texas Project Auxiliary Boilers Number 11 and Number 12 Stack, Wadsworth, TX*; July and August 1986; p. 10.

^j Design capacity (mmBtu/hour)

^k Emission Factor for Diesel Fuel TOC as found in AP-42, Fifth Edition, Volume I; Section 3.4;

Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^l Fn. f of AP-42 Table 3.4-1 assumes that TOC is 91% nonmethane by weight.

2006 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

PART B: EMISSION INVENTORY CALCULATED VALUES

1. Annual Fuel Oil Combusted (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{mmBtu/yr}} = (\text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

2. Gallons Fuel Oil Combusted during Ozone Season (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{gal/ozone season}} = \text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Seasonal Operating \%}_{\text{Summer}}$$

$$\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

3. Percent of Maximum Potential Emissions (Aux. Boiler, Diesel Gen.):

$$\text{PMEP} = (\text{Emissions}_{\text{actual}} / \text{Emissions}_{\text{potential}}) \times 100 = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} / [\text{Design Capacity}_{\text{mmBtu/hr}} \times 8,760_{\text{hrs/yr}}]) \times 100$$

4. Percent of Maximum Potential Emissions (Outdoor Sandblast Facility):

$$\text{PMEP} = (\text{Actual Annual Blast Grit Usage}_{\text{TPY}} / 150_{\text{TPY Maximum Potential Blast Grit Usage}}) \times 100$$

5. Annual Emissions (Aux. Boiler, Diesel Gen., Sandblast Facility):

$$\text{Annual Emission}_{\text{tn/yr}} = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 2000_{\text{lbs/tn}}$$

$$\text{Annual Emission}_{\text{tn/yr}} = \text{Annual Tons Usage}_{\text{blast grit}} \times \text{Emission Factors}_{\text{ton/ton}}$$

6. Ozone Season Emissions (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 92_{\text{days/ozone season}}$$

7. Ozone Season Emissions (Outdoor Sandblast Facility):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Annual Emissions}_{\text{tn/yr}} \times 2000_{\text{lbs/tn}} \times \text{Seasonal Operating \%}_{\text{Summer}}) / 92_{\text{days/ozone season}}$$

8. Ozone Season Process Rate (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Fuel Oil Burned}_{\text{gal/O3 season}} / 92_{\text{days/ozone season}}) / 1000_{\text{gal}}$$

9. Ozone Season Process Rate (Tanks):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Annual Process Rate}_{\text{Mgal/year}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

10. Ozone Season Process Rate (Outdoor Sandblast Facility):

$$\text{Ozone Season Process Rate}_{\text{tons/day}} = (\text{TPY}_{\text{actual usage}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank FOP O-00801 Designation: T114 EPN: STPTG1 FIN: TG1

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	3.00
Net Throughput(gal/yr):	36,017.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	All	69.81	64.30	75.32	67.93	4.2398	3.8011	4.7184	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	247.23	1,252.51	1,499.75

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	STPTG1
City:	Wadsworth
State:	Texas
Company:	STP Nuclear Operating Company
Type of Tank:	Horizontal Tank
Description:	Fuel Island Gasoline Storage Tank FOP O-00801 Designation: T114 EPN: STPTG1 FIN: TG1

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	3.00
Net Throughput(gal/yr):	36,017.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	76.90	71.00	82.60	67.93	4.8534	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	76.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	0.00	393.59	393.59

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.59

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status**Quantity**

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	75.16	66.01	84.31	70.15	0.0105	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	1.45	0.76	40.70	0.00	42.91

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.59

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status

Quantity

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Gulde-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Metereological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	0.44	0.12	10.89	0.00	11.46

**2006
Emission Inventory**

MAXIMUM ALLOWABLE EMISSION RATES TABLE

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 7410

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
1	Start-Up Boiler (185 MMBtu/hr)	NO _x	55.00	241.00
		SO ₂	44.40	194.48
		PM	18.30	80.30
		CO	15.24	66.75
		VOC	1.01	4.42

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources use area name or fugitive source name.
- (3) PM - particulate matter, suspended in the atmosphere, including PM₁₀
 PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
 NO_x - total oxides of nitrogen
 SO₂ - sulfur dioxide
 CO - carbon monoxide
 VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated December 23, 2004

Attachment 2

STPNOC 2007 Emissions Inventory Report (Partial)

Dated March 26, 2008 (NOC-TX-08017925)



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

March 26, 2008
NOC-TX-08017925
STI: 32284554
PFN: W01; W12.02

CERTIFIED MAIL (7003 2260 0001 6287 0787)

Emissions Inventory Data, MC 166
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

**Re: 2007 Emissions Inventory
STP Nuclear Operating Company
South Texas Project Electric Generating Station
TNRCC Account ID Number MH-0028-D
Wadsworth, Matagorda County
CN: 601658669**

Pursuant to 30 T.A.C. §101.10 requirements, the STP Nuclear Operating Company is providing the enclosed calendar year 2007 Air Emissions Inventory update and supporting documentation for the South Texas Project Electric Generating Station. Changes in reported station emissions for 2007 from the previous year reflect different equipment operating rates and adjustments to calculated emission factors used for sulfur dioxide emissions. Minor corrections are indicated on the emissions inventory questionnaire (EIQ) including contact information previously submitted in 2007 on the Contact Information form.

If you have any questions or require additional information, please contact Ms. Peggy Travis at (361) 972-8573 or via e-mail at pltravis@stpegs.com.

Sincerely,

R. A. Gangluff
Chemistry/Environmental/Health Physics
Manager

17)
PLT/plt

Enclosure

cc: Mr. Joel Anderson, Houston Region Air Section Manager, TCEQ Region 12 – w/ enclosures

bcc: K. L. Coates (electronic, w/out enclosure)
S. L. Dannhardt (electronic)
R. N. Hotstream (electronic)
M. A. Ruvalcaba (electronic)
D. V. Zink (electronic)
M. S. Clark (electronic)
Correspondence, N2002

**2007
Emission Inventory**

EMISSIONS CALCULATIONS

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

2007 EMISSION INVENTORY FINAL CALCULATIONS SHEET

	Auxiliary Boiler 11	Standby Diesel Generators						TSC Generators		BOP Generators		LDG Generator	EOF Generator	NSC Generator	Combined Small Fac. DGs	Tanks		Outdoor Sandblast Facility	TOTAL
		11	12	13	21	22	23	1	2	1	2					Fuel Oil	Gas		
Annual																			
Fuel Oil Burned (gal/yr)	961	22,602	22,358	29,466	28,968	28,422	19,422	2,045	1,920	924	640	759	664	525	440	--	--	Annual Tons Usage:	
Heat Content (mmBtu/bbl)	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	5.754	--	--		
Fuel Oil Burned (mmBtu/yr)	132	3,096	3,069	4,037	3,969	3,894	2,661	280	263	127	88	104	91	72	60	--	--	18	--
Ozone Season (Jun 1 - Aug 31)																			
Fuel Oil Burned (gal/ozone season)	0	6,781	5,376	5,304	5,214	4,548	5,050	450	566	201	148	80	246	0	128	--	--		
Fuel Oil Burned (mmBtu/ozone season)	0	929	736	727	714	623	692	62	78	27	20	11	34	0	17	--	--		
Seasonal Operating %																			
Winter (Jan/Feb/Dec)	0%	23%	23%	24%	43%	44%	23%	21%	29%	36%	12%	31%	44%	0%	10%	28%	20%		37%
Spring (Mar/Apr/May)	100%	24%	23%	17%	15%	22%	25%	15%	16%	23%	19%	24%	0%	79%	13%	37%	20%		25%
Summer (Jun/Jul/Aug)	0%	30%	24%	18%	18%	15%	26%	22%	30%	22%	23%	11%	37%	0%	29%	25%	20%		10%
Fall (Sep/Oct/Nov)	0%	23%	30%	41%	24%	18%	26%	42%	25%	19%	46%	35%	19%	21%	48%	10%	40%		28%
Design Capacity (mmBtu/hr)	185	55	55	55	55	55	55	12	12	7	7	7	7	3	1.2	--	--		--
% of Max Potential Emissions	0.01%	0.64%	0.64%	0.84%	0.82%	0.81%	0.55%	0.27%	0.25%	0.21%	0.14%	0.17%	0.15%	0.33%	0.57%	--	--		11.93%
Ozone Season Process Rate	0.000	0.074	0.058	0.058	0.057	0.049	0.055	0.005	0.006	0.002	0.002	0.001	0.003	0.000	0.001	0.647	0.098		0.019
Emission Factors (lb/mmBtu):																			Emission Factors (ton/ton):
TSP	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	--	--		0.00286
PM10	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	--	--		0.00034
PM2.5	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	--	--		0.00034
VOC	0.0055	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	--	--		--
NO _x	0.1300	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	--	--		--
SO ₂	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	0.0373	--	--		--
CO	0.0686	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	--	--		--
Annual Emissions (tn/yr):																			
TSP	0.0031	0.1079	0.1069	0.1407	0.1383	0.1357	0.0927	0.0098	0.0092	0.0044	0.0031	0.0036	0.0032	0.0025	0.0021	--	--		0.0512
PM10	0.0031	0.1079	0.1069	0.1407	0.1383	0.1357	0.0927	0.0098	0.0092	0.0044	0.0031	0.0036	0.0032	0.0025	0.0021	--	--		0.0061
PM2.5	0.0031	0.1079	0.1069	0.1407	0.1383	0.1357	0.0927	0.0098	0.0092	0.0044	0.0031	0.0036	0.0032	0.0025	0.0021	--	--		0.0061
VOC	0.0004	0.1239	0.1227	0.1815	0.1587	0.1558	0.1064	0.0112	0.0105	0.0051	0.0035	0.0042	0.0036	0.0029	0.0024	0.0281	0.7808		1.6797
NO _x	0.0086	4.9544	4.9096	6.4589	6.3498	6.2301	4.2573	0.4483	0.4209	0.2025	0.1403	0.1664	0.1455	0.1151	0.0964	--	--		34.8041
SO ₂	0.0025	0.0577	0.0572	0.0753	0.0740	0.0726	0.0496	0.0052	0.0049	0.0024	0.0016	0.0019	0.0017	0.0182	0.0152	--	--		0.4401
CO	0.0045	1.3160	1.3041	1.7157	1.6867	1.6549	1.1308	0.1191	0.1118	0.0539	0.0373	0.0442	0.0387	0.0306	0.0256	--	--		9.2738
Ozone Season Emissions (lb/day):																			
TSP	0.0000	0.7038	0.5579	0.5505	0.5412	0.4720	0.5241	0.0467	0.0588	0.0208	0.0153	0.0083	0.0255	0.0000	0.0132	--	--		0.1113
PM10	0.0000	0.7038	0.5579	0.5505	0.5412	0.4720	0.5241	0.0467	0.0588	0.0208	0.0153	0.0083	0.0255	0.0000	0.0132	--	--		0.0132
PM2.5	0.0000	0.7038	0.5579	0.5505	0.5412	0.4720	0.5241	0.0467	0.0588	0.0208	0.0153	0.0083	0.0255	0.0000	0.0132	--	--		0.0132
VOC	0.0000	0.8078	0.6404	0.6319	0.6212	0.5417	0.6016	0.0536	0.0675	0.0239	0.0176	0.0095	0.0293	0.0000	0.0152	0.1267	5.0347		9.2224
NO _x	0.0000	32.3110	25.6153	25.2741	24.8470	21.6639	24.0630	2.1439	2.6390	0.9555	0.7045	0.3604	1.1707	0.0000	0.6080	--	--		162.4426
SO ₂	0.0000	0.3766	0.2986	0.2946	0.2896	0.2626	0.2805	0.0250	0.0315	0.0111	0.0082	0.0044	0.0136	0.0000	0.0960	--	--		1.9823
CO	0.0000	8.6826	6.8041	6.7134	6.6000	5.7961	6.3917	0.5695	0.7189	0.2538	0.1871	0.1010	0.3110	0.0000	0.1618	--	--		43.1488

Sources of Emission Factors:

Auxiliary Boiler:

TSP, NO_x, CO: METCO emission tests (July/August 1986).
 PM10: Assumes total particulate matter is <= 2.5.
 PM2.5: Assumes total particulate matter is <= 2.5.
 VOC: AP-42, Section 1.3, Table 1.3-3 (9/98).
 SO₂: Calculated using sulfur content (attached).

Generators (Standby, TSC, BOP, LDG, EOF, NSC, Bldg):

TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (10/96).
 VOC, NO_x, CO: AP-42, Section 3.4, Table 3.4-1 (10/96).
 SO₂: Calculated using sulfur content (attached).

Outdoor Sandblasting Facility:

TSP, PM10,
 PM2.5: TCEQ Technical Guidance Package
 for Dry Abrasive Blast Cleaning
 (DRAFT RG-169, 3/01).
 (converted to ton/ton).
 (Assumed PM2.5 = PM10)

Tanks: Emissions were calculated using Tanks 4.09d and AP-42, Section 7.1.3.2.2 (11/06) for Fuel Oil Tank roof landings in 2007. No roof landing episodes occurred during the ozone season.

2007 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

PART A: EMISSION FACTOR AND FUEL OIL HEATING CONSTANT CALCULATIONS

1. Fuel Oil No. 2 (Diesel) Heat Content (mmBtu/bbl):

$$137,000 \text{ Btu/gallon of Diesel}^a \times 42 \text{ gallons/bbl} \times 1 \text{ mmBtu}/10^6 \text{ Btu} = 5.754 \text{ mmBtu/bbl}$$

2. SO₂ Emission Factor (Boiler, Diesel Generators *except* NSC and GRPBLDG):

$$7.1 \text{ lb/gallon of diesel}^b + 137,000 \text{ Btu/gallon}^a \times 10^6 = 51.8 \text{ lbs/mmBtu}$$

$$51.8 \text{ lbs/mmBtu} \times 0.0360/100 \text{ (actual \% sulfur weight)}^c \times 64 \text{ lbs SO}_2/32 \text{ lbs S} = 0.0373 \text{ lb SO}_2/\text{mmBtu}^d$$

3. SO₂ Emission Factor (NSC and GRPBLDG Diesel Generators):

$$1.01 \times 0.5^e = 0.5050 \text{ lb/mmBtu}^f$$

4. Boiler VOC Emission Factor:

$$0.76 \text{ lb}/10^3 \text{ gal No. 4 Oil}^g, \text{ }^h \times 42 \text{ gallons/bbl} \times 1 \text{ bbl}/5.754 \text{ mmBtu} = 0.0055 \text{ lb/mmBtu}$$

5. Boiler CO Emission Factor:

$$12.7 \text{ lbs/hr}^i \times 1 \text{ hr}/185 \text{ mmBtu}^j = 0.0686 \text{ lb/mmBtu}$$

6. Diesel Generator VOC Emission Factor:

$$0.09 \text{ lb/mmBtu}^k \times 0.91^l = 0.08 \text{ lb/mmBtu}^l$$

^a AP-42, Fifth Edition, Volume I; Appendix A, "Typical Parameters of Various Fuels," 9/85 (Reformatted 1/95); p. A-5.

^b AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_v , W_{VC} , P_{VA} , W_D) of Selected Petroleum Liquids, 11/06; P. 7.1-63.

^c Actual measured value (analysis sheet included in package).

^d TNRCC Technical Guidance Package for Combustion Section Sources: Boilers & Heaters, Section III: Emissions Calculations Instructions for Boilers and Heaters, March 1995 and TCEQ Air Permits Division: New Source Review (NSR) Emission Calculations (Reciprocating Engines) as viewed March 2008 at http://www.tceq.state.tx.us/permitting/air/Guidance/NewSourceReview/emiss_calc_engine.pdf.

^e Fuel oil purchase specification $\leq 0.5\%$ sulfur (Fuel oil purchase specification amended to $\leq 0.05\%$ in June 2007).

^f Adjusted emission factor for SO_x as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^g Auxiliary Boiler 11 utilizes No. 2 Fuel Oil which is not listed in AP-42 Table 1.3-3.

^h AP-42, Fifth Edition, Volume I; Section 1.3; Table 1.3-3: Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, 9/98; p. 1.3-14.

ⁱ Mullins Environmental Testing Co. Inc.; *Source Emissions Survey of Houston Lighting & Power Company South Texas Project Auxiliary; Boilers Number 11 and Number 12 Stack, Wadsworth, TX; July and August 1986; p. 10.*

^j Design capacity (mmBtu/hour)

^k Emission Factor for Diesel Fuel TOC as found in AP-42, Fifth Edition, Volume I; Section 3.4;

Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^l Fn. f of AP-42 Table 3.4-1 assumes that TOC is 91% nonmethane by weight.

2007 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

PART B: EMISSION INVENTORY CALCULATED VALUES

1. Annual Fuel Oil Combusted (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{mmBtu/yr}} = (\text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

2. Gallons Fuel Oil Combusted during Ozone Season (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{gal/ozone season}} = \text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Seasonal Operating \%}_{\text{Summer}}$$

$$\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

3. Percent of Maximum Potential Emissions (Aux. Boiler, Diesel Gen.):

$$\text{PMEP} = (\text{Emissions}_{\text{actual}} / \text{Emissions}_{\text{potential}}) \times 100 = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} / \{ \text{Design Capacity}_{\text{mmBtu/hr}} \times 8,760_{\text{hrs/yr}} \}) \times 100$$

4. Percent of Maximum Potential Emissions (Outdoor Sandblast Facility):

$$\text{PMEP} = (\text{Actual Annual Blast Grit Usage}_{\text{TPY}} / 150_{\text{TPY Maximum Potential Blast Grit Usage}}) \times 100$$

5. Annual Emissions (Aux. Boiler, Diesel Gen., Sandblast Facility):

$$\text{Annual Emission}_{\text{tn/yr}} = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 2000_{\text{lbs/tn}}$$

$$\text{Annual Emission}_{\text{tn/yr}} = \text{Annual Tons Usage}_{\text{blast grit}} \times \text{Emission Factors}_{\text{ton/ton}}$$

6. Ozone Season Emissions (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 92_{\text{days/ozone season}}$$

7. Ozone Season Emissions (Outdoor Sandblast Facility):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Annual Emissions (TSP, PM10, PM2.5)}_{\text{tn/yr}} \times 2000_{\text{lbs/tn}} \times \text{Seasonal Operating \%}_{\text{Summer}}) / 92_{\text{days/ozone season}}$$

8. Ozone Season Process Rate (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Fuel Oil Burned}_{\text{gal/O3 season}} / 92_{\text{days/ozone season}}) / 1000_{\text{gal}}$$

9. Ozone Season Process Rate (Tanks):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Annual Process Rate}_{\text{Mgal/Year}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

10. Ozone Season Process Rate (Outdoor Sandblast Facility):

$$\text{Ozone Season Process Rate}_{\text{tons/day}} = (\text{TPY}_{\text{actual usage}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

2007 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

PART C: TANK AND ROOF LANDINGS (AUTHORIZED) CALCULATIONS

Site and Tank Information

Regulated entity reference number:	RN102395654
Air account number:	MH0028D
Tank FIN:	T1
Tank EPN:	STPFOS11
Tank category:	Drain-dry tank (EFR)
Tank shell color:	Gray/Light
Tank diameter:	44 ft.
Height of vapor space:	6 ft.
Average temperature of vapor and liquid below floating roof:	70.15 °F ^m
Atmospheric pressure at tank location:	14.7 psia ^m
Date(s) this episode occurred:	01/27/2007 – 02/12/2007
Total number of standing idle loss days including partial days:	11
Total number of filling loss days including partial days:	5

Parameter Symbols, Descriptions and Values

Symbol	Description	Value
L_{TL}	Total losses during roof landing, lbs.	Calculated
L_{SI}	Standing idle losses during roof landing, lb per landing episode	Calculated
L_{FL}	Filling losses during roof landing, lb per landing episode	Calculated
C_S	Clingage factor, bbl/1,000 ft ²	0.0000015 ⁿ
W_1	Density of the liquid, lb/gal	7.1 ^o
Area	Area of the tank bottom, ft ²	Calculated
P	True vapor pressure of the liquid inside the tank, psia	0.0090 ^o
V_V	Volume of the vapor space, ft ³	Calculated
R	Ideal gas constant, psia ft ³ /lb-mole °R	10.731
T	Average temperature of the vapor and liquid below floating roof, °R	530.15
S	Filling saturation factor	0.15 ^p
M_V	Stock vapor molecular weight, lb/lb-mole	130 ^o

^m Obtained from TANKS 4.09d.

ⁿ AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-10: Average Clingage Factors, C_S (bbl/10³ ft²), 11/06; p. 7.1-81.

^o AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_V , W_{VC} , P_{VA} , W_L) of Selected Petroleum Liquids, 11/06; P. 7.1-63.

^p AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-19: Roof Landing Losses for All Drain-Dry Tanks, 11/06; p. 7.1-89.

2007 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
RN102365654
South Texas Project Electric Generating Station

Equations and Calculations

1. Total Loss During Roof Landing^g (Tons)

$$L_{TL} = ((L_{SL} \times \text{No. of total idle loss days}) + (L_{FL} \times \text{No. of total filling loss days}))/2000$$

$$= ((0.6801_{\text{lbs/day}} \times 11_{\text{days}}) + (0.2808_{\text{lbs/day}} \times 5_{\text{days}}))/2000_{\text{lbs/ton}}$$

$$= 0.0044 \text{ Tons}$$

2. Standing Idle Loss^h (lbs/day)

$$L_{SL} = 42_{\text{gal/bbl}} \times C_S W_1 (\text{Area})$$

$$= 42_{\text{gal/bbl}} \times 0.0000015_{\text{bbl/1,000 sq. ft.}} \times 7.1_{\text{lbs/gal}} \times 1520.5344_{\text{sq. ft.}}$$

$$= 0.6801 \text{ lbs}$$

3. Area of Tank Bottom^f (ft²)

$$\text{Area} = \pi D^2/4$$

$$= (3.1416 \times 44_{\text{ft}}^2)/4$$

$$= 1520.5344 \text{ ft}^2$$

4. Filling Loss^g (lbs/day)

$$L_{FL} = PV_v/RT \times M_v \times S$$

$$= ((0.0090_{\text{psia}} \times 9123.1851_{\text{cu. ft.}})/(10.731_{\text{cu. ft./lb-mole } ^\circ\text{R}} \times 530.15_{\text{ } ^\circ\text{R}})) \times 130_{\text{lb/lb-mole}} \times 0.15$$

$$= 0.2808 \text{ lbs}$$

5. Vapor Space^h (ft³)

$$V_v = \pi r^2 h$$

$$\approx 3.1416 \times 22_{\text{ft}} \times 22_{\text{ft}} \times 6_{\text{ft}}$$

$$= 9123.1851 \text{ ft}^3$$

6. Temperature Conversion from Fahrenheit to Rankin

$$^{\circ}\text{R} = ^{\circ}\text{F} + 460$$

$$= 70.15_{\text{ } ^\circ\text{F}} + 460$$

$$= 530.15 \text{ } ^\circ\text{R}$$

Annual Tank Emissions for FIN T1/EPN STPF0ST1 in Tons per Year = Total Losses^m
[from Tanks4.09d] + Landing Losses [as calculated in C.1 above]

$$\text{Annual Tank Emissions for FIN T1/EPN STPF0ST1}_{\text{TPY}} = 0.0217_{\text{Tons}} + 0.0044_{\text{Tons}}$$

Note: No landing losses occurred during the ozone season.

^g AP-42, Fifth Edition, Volume I; Section 7.1.3.2.2; 11/06; p. 7.1-27.

^f AP-42, Fifth Edition, Volume I; Section 7.1.3.2.2; 11/06; p. 7.1-31.

^h AP-42, Fifth Edition, Volume I; Section 7.1.3.2.2; 11/06; p. 7.1-32.

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.99

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status

Quantity

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	75.16	66.01	84.31	70.15	0.0105	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	1.45	1.29	40.70	0.00	43.44

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: External Floating Roof Tank
Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
Volume (gallons): 240,000.00
Turnovers: 0.99

Paint Characteristics

Internal Shell Condition: Light Rust
Shell Color/Shade: Gray/Light
Shell Condition: Good

Roof Characteristics

Type: Double Deck
Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
Primary Seal: Liquid-mounted
Secondary Seal: Rim-mounted

Deck Fitting/Status**Quantity**

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	0.44	0.32	10.89	0.00	11.66

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft): 32.00
Diameter (ft): 7.84
Volume (gallons): 12,000.00
Turnovers: 3.75
Net Throughput(gal/yr): 45,030.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	All	69.81	64.30	75.32	67.93	4.2398	3.8011	4.7184	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	309.10	1,252.51	1,561.62

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	STPTG1
City:	Wadsworth
State:	Texas
Company:	STP Nuclear Operating Company
Type of Tank:	Horizontal Tank
Description:	Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	3.75
Net Throughput(gal/yr):	45,030.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	78.90	71.00	82.80	67.93	4.8634	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	76.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	69.61	393.59	463.19

**2007
Emission Inventory**

MAXIMUM ALLOWABLE EMISSION RATES TABLE

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 7410

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
1	Start-Up Boiler (185 MMBtu/hr)	NO _x	55.00	241.00
		SO ₂	44.40	194.48
		PM	18.30	80.30
		CO	15.24	66.75
		VOC	1.01	4.42

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources use area name or fugitive source name.
- (3) PM - particulate matter, suspended in the atmosphere, including PM₁₀
 PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
 NO_x - total oxides of nitrogen
 SO₂ - sulfur dioxide
 CO - carbon monoxide
 VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated December 23, 2004

Attachment 3

STPNOC 2008 Emissions Inventory Report (Partial)

Dated March 30, 2009 (NOC-TX-09019517)



South Texas Project Electric Generating Station R.O. Box 289 Wadsworth, Texas 77483

March 30, 2009
NOC-TX-09019517
STI: 32451278
PFN: W01; W12.02

CERTIFIED MAIL (7003 2260 0001 6287 0244)

Emissions Inventory Data, MC 166
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

**Re: 2008 Emissions Inventory
STP Nuclear Operating Company
South Texas Project Electric Generating Station
TNRCC Account ID Number MH-0028-D
Wadsworth, Matagorda County
CN601658669
RN102395654**

Pursuant to 30 T.A.C. §101.10 requirements, the STP Nuclear Operating Company is providing the enclosed calendar year 2008 Air Emissions Inventory update and supporting documentation for the South Texas Project Electric Generating Station. Changes in reported station emissions for 2008 from the previous year reflect different equipment operating rates and adjustments to calculated emission factors used for sulfur dioxide emissions. Minor corrections are indicated on the emissions inventory questionnaire (EIQ).

If you have any questions or require additional information, please contact Ms. Peggy Travis at (361) 972-8573 or via e-mail at pltravis@stpegs.com.

Sincerely,

R. A. Gangluff
Chemistry/Environmental/Health Physics
Manager

11/1
PLT/plt

Enclosure

cc: Mr. Manuel Bautista, Houston Region Air Section Manager, TCEQ Region 12 – w/ enclosures

bcc: S. L. Dannhardt (electronic)
R. N. Hotstream (electronic)
D. F. Klockentager (electronic)
D. V. Zink (electronic)
C. R. Corporon (electronic)
A. Duke, III (electronic)
Correspondence, N2002

**2008
Emission Inventory**

EMISSIONS CALCULATIONS

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

2008 EMISSION INVENTORY EVALUATION SHEET

	Auxiliary Boiler	Standby Diesel Generators						TSC Generators		BOP Generators		LDG Generator	EOF Generator	NSC Generator	Combined Small Fac. DOs	Tanks Fuel Oil Gas		Outdoor Sandblast Facility	TOTAL
	11	11	12	13	21	22	23	1	2	1	2								
Annual																			
Fuel Oil Burned (gal/yr)	3,017	30,750	29,922	25,104	30,836	35,424	30,126	3,818	3,121	673	737	434	7,116	4,127	5,403	--	--	Annual Tons Usage:	
Heat Content (mmBtu/bbl)	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	5.764	--	--	17	--
Fuel Oil Burned (mmBtu/yr)	413	4,213	4,099	3,439	4,197	4,853	4,127	495	428	92	101	59	975	565	740	--	--		
Ozone Season (Jun 1 - Aug 31)																			
Fuel Oil Burned (gal/ozone season)	645	7,242	5,112	5,136	12,714	5,364	12,744	1,282	1,063	0	423	0	4,673	2,983	3,165	--	--	--	
Fuel Oil Burned (mmBtu/ozone season)	88	992	700	704	1,742	735	1,746	172	146	0	68	0	640	409	434	--	--	--	
Seasonal Operating %																			
Winter (Jan/Feb/Dec)	22%	42%	42%	33%	17%	32%	17%	14%	25%	20%	17%	0%	28%	26%	29%	26%	26%	15%	15%
Spring (Mar/Apr/May)	46%	17%	16%	26%	17%	17%	23%	28%	15%	23%	0%	5%	3%	0%	11%	9%	25%	22%	22%
Summer (Jun/Jul/Aug)	21%	24%	17%	20%	41%	15%	42%	35%	34%	0%	57%	0%	66%	72%	59%	56%	25%	36%	36%
Fall (Sep/Oct/Nov)	11%	17%	23%	21%	25%	36%	18%	23%	26%	57%	26%	95%	2%	2%	1%	9%	25%	27%	27%
Design Capacity (mmBtu/hr)	185	55	55	55	55	55	55	12	12	7	7	7	7	3	1.2	--	--	--	--
% of Max Potential Emissions	0.03%	0.97%	0.85%	0.71%	0.97%	1.01%	0.96%	0.47%	0.41%	0.15%	0.16%	0.10%	1.59%	2.68%	7.04%	--	--	11.27%	--
Ozone Season Process Rate	0.007	0.079	0.066	0.066	0.138	0.058	0.139	0.014	0.012	0.000	0.005	0.000	0.061	0.032	0.034	1.449	0.122	0.066	0.066
Emission Factors (lb/mmBtu)																			Emission Factors (ton/ton)
TSP	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00296
PM10	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00034
PM2.5	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.00034
VOC	0.0055	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	--
NOx	0.1300	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	--
SO2	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	--
CO	0.0686	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	--
Annual Emissions (tn/yr)																			
TSP	0.0097	0.1468	0.1429	0.1199	0.1463	0.1691	0.1438	0.0173	0.0149	0.0032	0.0035	0.0021	0.0340	0.0197	0.0258	--	--	0.0483	1.0473
PM10	0.0097	0.1468	0.1429	0.1199	0.1463	0.1691	0.1438	0.0173	0.0149	0.0032	0.0035	0.0021	0.0340	0.0197	0.0258	--	--	0.0067	1.0047
PM2.5	0.0097	0.1468	0.1429	0.1199	0.1463	0.1691	0.1438	0.0173	0.0149	0.0032	0.0035	0.0021	0.0340	0.0197	0.0258	--	--	0.0067	1.0047
VOC	0.0011	0.1685	0.1640	0.1376	0.1679	0.1941	0.1681	0.0188	0.0171	0.0037	0.0040	0.0024	0.0390	0.0228	0.0296	0.0217	0.7498	--	1.9081
NOx	0.0269	6.7404	6.5589	5.5026	6.7154	7.7849	6.6038	0.7928	0.6841	0.1475	0.1616	0.0951	1.5398	0.9046	1.1843	--	--	--	45.4427
SO2	0.0032	0.0326	0.0318	0.0267	0.0326	0.0376	0.0320	0.0036	0.0033	0.0007	0.0006	0.0006	0.0076	0.0143	0.0187	--	--	--	0.2460
CO	0.0142	1.7904	1.7422	1.4617	1.7838	2.0626	1.7841	0.2106	0.1817	0.0392	0.0429	0.0253	0.4143	0.2403	0.3146	--	--	--	12.0779
Ozone Season Emissions (lb/day)																			
TSP	0.0451	0.7517	0.5306	0.5331	1.3196	0.5567	1.3227	0.1299	0.1103	0.0000	0.0439	0.0000	0.4850	0.3096	0.3285	--	--	0.3783	6.9451
PM10	0.0451	0.7517	0.5306	0.5331	1.3196	0.5567	1.3227	0.1299	0.1103	0.0000	0.0439	0.0000	0.4850	0.3096	0.3285	--	--	0.0450	6.5119
PM2.5	0.0451	0.7517	0.5306	0.5331	1.3196	0.5567	1.3227	0.1299	0.1103	0.0000	0.0439	0.0000	0.4850	0.3096	0.3285	--	--	0.0450	6.5119
VOC	0.0053	0.8927	0.6090	0.6119	1.5146	0.6390	1.5182	0.1492	0.1266	0.0000	0.0504	0.0000	0.5587	0.3554	0.3770	0.1309	5.0484	--	12.5652
NOx	0.1248	34.8097	24.3598	24.4742	60.5850	25.5606	60.7279	5.9681	5.0654	0.0000	2.0167	0.0000	22.2879	14.2146	18.0819	--	--	--	294.9536
SO2	0.0149	0.1672	0.1180	0.1185	0.2935	0.1239	0.2942	0.0289	0.0245	0.0000	0.0096	0.0000	0.1079	0.2243	0.2380	--	--	--	1.7634
CO	0.0659	9.1666	6.4706	6.5009	16.0929	6.7895	16.1309	1.5847	1.3455	0.0000	0.5354	0.0000	5.9149	3.7768	4.0081	--	--	--	78.3796

Sources of Emission Factors:

Auxiliary Boiler:

TSP, NOx, CO: METCO emission tests (July/August 1986).
 PM10: Assumes total particulate matter is <= 2.5.
 PM2.5: Assumes total particulate matter is <= 2.5.
 VOC: AP-42, Section 1.3, Table 1.3-3 (9/96).
 SO2: Calculated using sulfur content (attached).

Generators (Standby, TSC, BOP, LDG, EOF):

TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (10/96).
 VOC, NOx, CO: AP-42, Section 3.4, Table 3.4-1 (10/96).
 SO2: Calculated using sulfur content (attached).

Generators (NSC, Bldg):

TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (10/96).
 VOC, NOx, CO: AP-42, Section 3.4, Table 3.4-1 (10/96).
 SO2: Calculated using purchase specification for sulfur content and adjusted in accordance with AP-42, Section 3.4, Table 3.4-1 (10/96). (attached).

Outdoor Sandblasting Facility:

TSP, PM10, PM2.5: TCEQ Technical Guidance Package for Dry Abrasive Blast Cleaning (DRAFT RG-169; 3/01). (converted to ton/ton). (Assumed PM2.5 = PM10)

Tanks: Emissions were calculated using Tanks 4.09d.

2008 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

PART A: EMISSION FACTOR AND FUEL OIL HEATING CONSTANT CALCULATIONS

1. Fuel Oil No. 2 (Diesel) Heat Content (mmBtu/bbl):

$$137,000 \text{ Btu/gallon of Diesel}^a \times 42 \text{ gallons/bbl} \times 1 \text{ mmBtu}/10^6 \text{ Btu} = 5.754 \text{ mmBtu/bbl}$$

2. SO₂ Emission Factor (Boiler, Diesel Generators *except* NSC and GRPBLDG):

$$7.1 \text{ lb/gallon of diesel}^b \div 137,000 \text{ Btu/gallon}^a \times 10^6 = 51.8 \text{ lbs/mmBtu}$$

$$51.8 \text{ lbs/mmBtu} \times 0.015/100 \text{ (actual \% sulfur weight)}^c \times 64 \text{ lbs SO}_2/32 \text{ lbs S}^d = 0.0155 \text{ lb SO}_2/\text{mmBtu}$$

3. SO₂ Emission Factor (NSC and GRPBLDG Diesel Generators):

$$1.01 \times 0.05^e = 0.0505 \text{ lb/mmBtu}^f$$

4. Boiler VOC Emission Factor:

$$0.76 \text{ lb}/10^3 \text{ gal No. 4 Oil}^g,^h \times 42 \text{ gallons/bbl} \times 1 \text{ bbl}/5.754 \text{ mmBtu} = 0.0055 \text{ lb/mmBtu}$$

5. Boiler CO Emission Factor:

$$12.7 \text{ lbs/hr}^i \times 1 \text{ hr}/185 \text{ mmBtu}^j = 0.0686 \text{ lb/mmBtu}$$

6. Diesel Generator VOC Emission Factor:

$$0.09 \text{ lb/mmBtu}^k \times 0.91^l = 0.08 \text{ lb/mmBtu}^l$$

^a AP-42, Fifth Edition, Volume I; Appendix A, "Typical Parameters of Various Fuels," 9/85 (Reformatted 1/95); p. A-5.

^b AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_v , W_{VC} , P_{VA} , W_1) of Selected Petroleum Liquids, 11/06; P. 7.1-63.

^c Actual measured value (analysis sheet included in package).

^d TNRCC Technical Guidance Package for Combustion Section Sources: Boilers & Heaters, Section III: Emissions Calculations Instructions for Boilers and Heaters, March 1995 and TCEQ Air Permits Division: New Source Review (NSR) Emission Calculations (Reciprocating Engines) as viewed March 2009 at http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_engine.pdf.

^e Fuel oil purchase specification $\leq 0.05\%$ sulfur.

^f Adjusted emission factor for SO_x as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^g Auxiliary Boiler 11 utilizes No. 2 Fuel Oil which is not listed in AP-42 Table 1.3-3.

^h AP-42, Fifth Edition, Volume I; Section 1.3; Table 1.3-3: Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, 9/98; p. 1.3-14.

ⁱ Mullins Environmental Testing Co. Inc.; *Source Emissions Survey of Houston Lighting & Power Company South Texas Project Auxiliary Boilers Number 11 and Number 12 Stack, Wadsworth, TX*; July and August 1986; p. 10.

^j Design capacity (mmBtu/hour)

^k Emission Factor for Diesel Fuel TOC as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^l Fn. f of AP-42 Table 3.4-1 assumes that TOC is 91% nonmethane by weight.

2008 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

PART B: EMISSION INVENTORY CALCULATED VALUES

1. Annual Fuel Oil Combusted (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{mmBtu/yr}} = (\text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

2. Gallons Fuel Oil Combusted during Ozone Season (Aux. Boiler, Diesel Gen.):

$$\text{Fuel Oil Burned}_{\text{gal/ozone season}} = \text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Seasonal Operating \%}_{\text{Summer}}$$

$$\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

3. Percent of Maximum Potential Emissions (Aux. Boiler, Diesel Gen.):

$$\text{PMEP} = (\text{Emissions}_{\text{actual}} / \text{Emissions}_{\text{potential}}) \times 100 = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} / [\text{Design Capacity}_{\text{mmBtu/hr}} \times 8,760_{\text{hrs/yr}}]) \times 100$$

4. Percent of Maximum Potential Emissions (Outdoor Sandblast Facility):

$$\text{PMEP} = (\text{Actual Annual Blast Grit Usage}_{\text{TPY}} / 150_{\text{TPY Maximum Potential Blast Grit Usage}}) \times 100$$

5. Annual Emissions (Aux. Boiler, Diesel Gen., Sandblast Facility):

$$\text{Annual Emission}_{\text{m/yr}} = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 2000_{\text{lbs/tn}}$$

$$\text{Annual Emission}_{\text{m/yr}} = \text{Annual Tons Usage}_{\text{blast grit}} \times \text{Emission Factors}_{\text{ton/ton}}$$

6. Ozone Season Emissions (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 92_{\text{days/ozone season}}$$

7. Ozone Season Emissions (Outdoor Sandblast Facility):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Annual Emissions (TSP, PM10, PM2.5)}_{\text{m/yr}} \times 2000_{\text{lbs/tn}} \times \text{Seasonal Operating \%}_{\text{Summer}}) / 92_{\text{days/ozone season}}$$

8. Ozone Season Process Rate (Aux. Boiler, Diesel Gen):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Fuel Oil Burned}_{\text{gal/O3 season}} / 92_{\text{days/ozone season}}) / 1000_{\text{gal}}$$

9. Ozone Season Process Rate (Tanks):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Annual Process Rate}_{\text{Mgal/year}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

2008 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

10. **Ozone Season Process Rate (Outdoor Sandblast Facility):**

Ozone Season Process Rate $\text{tons/day} = (\text{TPY}_{\text{actual usage}} \times \text{Ozone Season Operating \%}) / 92 \text{ days/ozone season}$

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPF0ST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.99

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status

Quantity

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Meteorological Data used in Emissions Calculatlons: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	75.18	66.01	84.31	70.15	0.0105	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	1.45	1.26	40.70	0.00	43.41

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.99

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Typical

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status**Quantity**

Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	0.44	0.70	10.89	0.00	12.04

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft): 32.00
Diameter (ft): 7.84
Volume (gallons): 12,000.00
Turnovers: 3.00
Net Throughput(gal/yr): 36,000.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	All	69.81	64.30	75.32	67.93	4.2398	3.8011	4.7184	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Gasoline (RVP 7)	247.12	1,252.51	1,499.63

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	76.90	71.00	82.80	67.93	4.8634	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	76.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	70.87	393.59	464.45

**2008
Emission Inventory**

MAXIMUM ALLOWABLE EMISSION RATES TABLE

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 7410

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
1	Start-Up Boiler (185 MMBtu/hr)	NO _x	55.00	241.00
		SO ₂	44.40	194.48
		PM	18.30	80.30
		CO	15.24	66.75
		VOC	1.01	4.42

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources use area name or fugitive source name.
- (3) PM - particulate matter, suspended in the atmosphere, including PM₁₀
 PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
 NO_x - total oxides of nitrogen
 SO₂ - sulfur dioxide
 CO - carbon monoxide
 VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated December 23, 2004

Attachment 4

STPNOC 2009 Emissions Inventory Report (Partial)

Dated March 23, 2010 (NOC-TX-10021083)



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

March 23, 2010
NOC-TX-10021083
STI: 32636613
PFN: W01; W12.02

CERTIFIED MAIL (7003 2260 0001 6287 0312)

Emissions Inventory Data, MC 166
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

**Re: 2009 Emissions Inventory
STP Nuclear Operating Company
South Texas Project Electric Generating Station
TNRCC Account ID Number MH-0028-D
Wadsworth, Matagorda County
CN601658669
RN102395654**

Pursuant to 30 T.A.C. §101.10 requirements, the STP Nuclear Operating Company is providing the enclosed calendar year 2009 Air Emissions Inventory update and supporting documentation for the South Texas Project Electric Generating Station. Changes in reported station emissions for 2009 from the previous year reflect different equipment operating rates and the addition of a small emergency diesel-driven fire pump engine to the inventory as well as an adjustment to one VOC emission factor. Other minor corrections, including corrections to Source Classification Codes where applicable, are indicated on the emissions inventory questionnaire (EIQ).

If you have any questions or require additional information, please contact Ms. Peggy Travis at (361) 972-8573 or via e-mail at pltravis@stpegs.com.

Sincerely,

R. A. Gangluff
Chemistry/Environmental/Health Physics
Manager

SLD/PLT/plt

Enclosure

cc: Mr. Manuel Bautista, Houston Region Air Section Manager, TCEQ Region 12 – w/ enclosures

bcc: S. L. Dannhardt (electronic)
R. N. Hotstream (electronic)
D. F. Klockentager (electronic)
D. V. Zink (electronic)
C. R. Corporon (electronic)
A. Duke, III (electronic)
D. W. Wiegand (electronic)
Correspondence, N2002

**2009
Emission Inventory**

EMISSIONS CALCULATIONS

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

2009 EMISSION CALCULATION SHEET

	Auxiliary Boiler	Standby Diesel Generators						TSC Generators		BOP Generators		LDG Generator	EOF Generator	NSC Generator	Combined Small Fac. DGs	Fire Pump FP1	Fuels Oil	Tanks Gas	Outdoor Sandblast Facility	TOTAL
	11	11	12	13	21	22	23	1	2	1	2									
Annual																				
Fuel Oil Burned (gal/yr)	3,318	32,790	29,439	38,784	23,699	23,370	22,770	4,253	3,609	690	682	2,329	5,125	2,979	5,087	9,307	--	--	Annual Term Usage	
Heat Content (mmBtu/bbl)	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754	--	--		
Fuel Oil Burned (mmBtu/yr)	486	4,482	4,033	5,313	3,274	3,202	3,119	584	481	96	90	306	702	394	897	964	--	--	35	--
Ozone Season (Jun 1 - Aug 31)																				
Fuel Oil Burned (gal/ozone season)	677	14,198	14,700	12,942	6,228	5,194	5,169	579	915	147	236	0	619	160	341	890	--	--		
Fuel Oil Burned (mmBtu/ozone season)	79	1,645	2,014	1,773	853	710	708	79	125	20	35	0	86	21	47	122	--	--		
Seasonal Operating %																				
Winter (Jan/Feb/Dec)	21%	16%	18%	28%	22%	23%	22%	28%	24%	20%	33%	12%	38%	59%	64%	21%	37%	33%	38%	30%
Spring (Mar/Apr/May)	30%	16%	16%	13%	22%	23%	23%	34%	21%	22%	0%	6%	39%	38%	37%	48%	19%	17%	11%	18%
Summer (Jun/Jul/Aug)	17%	43%	50%	33%	28%	22%	29%	14%	28%	21%	44%	0%	12%	5%	7%	14%	23%	39%	27%	25%
Fall (Sep/Oct/Nov)	32%	25%	14%	25%	30%	27%	22%	28%	28%	37%	23%	79%	13%	4%	2%	17%	27%	17%	24%	24%
Design Capacity (mmBtu/yr)	186	55	55	55	55	55	55	12	12	7	7	7	7	2.5	1.2	0.7	--	--		
% of Max Potential Emissions	0.03%	0.03%	0.04%	1.10%	0.69%	0.69%	0.69%	0.69%	0.48%	0.19%	0.19%	0.00%	1.18%	1.60%	8.83%	14.09%	--	--	23.47%	--
Ozone Season Process Rate	0.008	0.164	0.160	0.141	0.089	0.069	0.069	0.008	0.010	0.002	0.003	0.000	0.007	0.002	0.004	0.010	0.438	0.184	0.109	--
Emission Factors (lb/MMBtu):																				Emission Factors (ton/tonk)
TSP	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.3100	--	--	0.00286	--
PM10	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.3100	--	--	0.00334	--
PM2.5	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.3100	--	--	0.00334	--
VOC	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	--	--	--	--
NOx	6.1900	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	4.4100	--	--	--	--
SO2	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	--	--	--	--
CO	0.0698	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	--	--	--	--
Annual Emissions (lb/yr):																				
TSP	0.0107	0.1588	0.1405	0.1832	0.1141	0.1116	0.1087	0.0204	0.0187	0.0033	0.0028	0.0108	0.0245	0.0137	0.0343	0.1838	--	--	0.1807	1.1789
PM10	0.0107	0.1588	0.1405	0.1832	0.1141	0.1116	0.1087	0.0204	0.0187	0.0033	0.0028	0.0108	0.0245	0.0137	0.0343	0.1838	--	--	0.0120	1.0898
PM2.5	0.0107	0.1588	0.1405	0.1832	0.1141	0.1116	0.1087	0.0204	0.0187	0.0033	0.0028	0.0108	0.0245	0.0137	0.0343	0.1838	--	--	0.0120	1.0898
VOC	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0216	0.2238	--	2.0718
NOx	0.0295	7.1979	6.8294	8.5016	5.2294	5.1227	4.9812	0.9344	0.7890	0.1513	0.1576	0.0000	1.1236	0.9311	1.1191	1.8063	--	--	--	44.7691
SO2	0.0095	0.0348	0.0313	0.0412	0.0234	0.0248	0.0242	0.0045	0.0037	0.0007	0.0009	0.0024	0.0054	0.0100	0.0176	0.0067	--	--	--	0.2389
CO	0.0159	1.9062	1.7129	2.2092	1.3915	1.3607	1.3268	0.2482	0.2045	0.0402	0.0330	0.1298	0.2985	0.1678	0.2962	0.4104	--	--	--	11.6038
Ozone Season Emissions (lb/yr):																				
TSP	0.0404	1.4734	1.5257	1.3433	0.6484	0.5391	0.5362	0.0601	0.0850	0.0153	0.0298	0.0000	0.0843	0.0156	0.0354	0.4109	--	--	0.0908	7.4174
PM10	0.0404	1.4734	1.5257	1.3433	0.6484	0.5391	0.5362	0.0601	0.0850	0.0153	0.0298	0.0000	0.0843	0.0156	0.0354	0.4109	--	--	0.0702	6.8967
PM2.5	0.0404	1.4734	1.5257	1.3433	0.6484	0.5391	0.5362	0.0601	0.0850	0.0153	0.0298	0.0000	0.0843	0.0156	0.0354	0.4109	--	--	0.0702	6.8967
VOC	0.0003	1.8912	1.7612	1.8418	0.7419	0.6178	0.6154	0.0690	0.1090	0.0176	0.0306	0.0000	0.0787	0.0179	0.0406	0.4771	0.1259	0.4251	--	13.3457
NOx	0.1117	67.9479	70.0477	61.6714	28.6778	24.7028	24.6171	2.7591	4.3822	0.7006	1.2189	0.0000	2.9487	0.7149	1.6249	5.9447	--	--	--	298.6503
SO2	0.0133	0.3277	0.3393	0.2887	0.1439	0.1197	0.1192	0.0134	0.0211	0.0034	0.0069	0.0000	0.0143	0.0113	0.0259	0.0206	--	--	--	1.4772
CO	0.0580	17.9597	18.5087	16.9915	7.8932	6.6617	6.6289	0.7329	1.1582	0.1981	0.3263	0.0000	0.7635	0.1999	0.4316	1.2591	--	--	--	78.9649

Sources of Emission Factors:

Auxiliary Boiler:

TSP, NOx, CO: METCO emission tests (July/August 1998).
 PM10: Assumes total particulate matter is <= 2.5.
 PM2.5: Assumes total particulate matter is <= 2.5.
 VOC: AP-42, Section 1.3, Table 1.3-3 (1996).
 SO2: Calculated using sulfur content (attached).

Generators (Standby, TSC, BOP, LDG, EOF, NSC, Bldg):
 TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (1096).
 VOC, NOx, CO: AP-42, Section 3.4, Table 3.4-1 (1096).
 SO2: Calculated using sulfur content (attached).

Fire Pumps:

TSP, PM10, PM2.5,
 NOx, CO, VOC: AP-42, Section 3.3, Table 3.3-1 (1096).
 (Assumed TOC = TOC_{clean} + TOC_{contam}).
 SO2: Calculated using sulfur content (attached).

Outdoor Sandblasting Facility:

TSP, PM10,
 PM2.5: TCEQ Technical Guidance Package
 for Dry Abrasive Blast Cleaning
 (DRAFT RG-169; 3/01).
 (converted to ton/ton).
 (Assumed PM2.5 = PM10)

Tanks: Emissions were calculated using Tanks 4.06d.

2009 EMISSION INVENTORY CALCULATIONS

TCEQ Account No. MH-0028-D

CN601658669

RN102365654

South Texas Project Electric Generating Station

PART A: EMISSION FACTOR AND FUEL OIL HEATING CONSTANT CALCULATIONS

1. Fuel Oil No. 2 (Diesel) Heat Content (mmBtu/bbl):

$$137,000 \text{ Btu/gallon of Diesel}^a \times 42 \text{ gallons/bbl} \times 1 \text{ mmBtu}/10^6 \text{ Btu} = 5.754 \text{ mmBtu/bbl}$$

2. SO₂ Emission Factor (Boiler, Fire Pump, Diesel Generators *except* NSC and GRPBLDG):

$$7.1 \text{ lb/gallon of diesel}^b + 137,000 \text{ Btu/gallon}^a \times 10^6 = 51.8 \text{ lbs/mmBtu}$$

$$51.8 \text{ lbs/mmBtu} \times 0.015/100 \text{ (actual \% sulfur weight)}^c \times 64 \text{ lbs SO}_2/32 \text{ lbs S}^d = 0.0155 \text{ lb SO}_2/\text{mmBtu}$$

3. SO₂ Emission Factor (NSC and GRPBLDG Diesel Generators):

$$1.01 \times 0.05^e = 0.0505 \text{ lb/mmBtu}^f$$

4. Boiler VOC Emission Factor:

$$0.2 \text{ lb}/10^3 \text{ gal Distillate Oil}^g \times 42 \text{ gallons/bbl} \times 1 \text{ bbl}/5.754 \text{ mmBtu} = 0.0055 \text{ lb/mmBtu}$$

5. Boiler CO Emission Factor:

$$12.7 \text{ lbs/hr}^h \times 1 \text{ hr}/185 \text{ mmBtu}^i = 0.0686 \text{ lb/mmBtu}$$

6. Diesel Generator VOC Emission Factor:

$$0.09 \text{ lb/mmBtu}^j \times 0.91^k = 0.08 \text{ lb/mmBtu}^k$$

^a AP-42, Fifth Edition, Volume I; Appendix A, "Typical Parameters of Various Fuels," 9/85 (Reformatted 1/95); p. A-5.

^b AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_v , W_{vc} , P_{vA} , W_L) of Selected Petroleum Liquids, 11/06; P. 7.1-63.

^c Actual measured value (analysis sheet included in package).

^d TCEQ Air Permits Division: New Source Review (NSR) Emission Calculations (Reciprocating Engines) as viewed March 2009 at http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_engine.pdf.

^e Fuel oil purchase specification for these sources $\leq 0.05\%$ sulfur prior to July 2, 2009 and $\leq 0.015\%$ (ULSD-only) as of July 2, 2009 and following.

^f Adjusted emission factor for SO_x as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^g AP-42, Fifth Edition, Volume I; Section 1.3; Table 1.3-3: Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, 9/98; p. 1.3-14.

^h Mullins Environmental Testing Co. Inc.; *Source Emissions Survey of Houston Lighting & Power Company South Texas Project Auxiliary Boilers Number 11 and Number 12 Stack, Wadsworth, TX*; July and August 1986; p. 10.

ⁱ Design capacity (mmBtu/hour)

^j Emission Factor for Diesel Fuel TOC as found in AP-42, Fifth Edition, Volume I; Section 3.4;

Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^k Fn. f of AP-42 Table 3.4-1 assumes that TOC is 91% nonmethane by weight.

2009 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

PART B: EMISSION INVENTORY CALCULATED VALUES

1. Annual Fuel Oil Combusted (Aux. Boiler, Diesel Gen., FP):

$$\text{Fuel Oil Burned}_{\text{mmBtu/yr}} = (\text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

2. Gallons Fuel Oil Combusted during Ozone Season (Aux. Boiler, Diesel Gen., FP):

$$\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

3. Ozone Seasonal Operating Percent

$$\text{Seasonal Operating \% Summer} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} / \text{Fuel Oil Burned}_{\text{gal/yr}}) \times 100$$

4. Percent of Maximum Potential Emissions (Aux. Boiler, Diesel Gen., FP):

$$\text{PMEP} = (\text{Emissions}_{\text{actual}} / \text{Emissions}_{\text{potential}}) \times 100 = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} / [\text{Design Capacity}_{\text{mmBtu/hr}} \times 8,760_{\text{hrs/yr}}]) \times 100$$

5. Percent of Maximum Potential Emissions (Outdoor Sandblast Facility):

$$\text{PMEP} = (\text{Actual Annual Blast Grit Usage}_{\text{TPY}} / 150_{\text{TPY Maximum Potential Blast Grit Usage}}) \times 100$$

6. Annual Emissions (Aux. Boiler, Diesel Gen., FP, Sandblast Facility):

$$\text{Annual Emission}_{\text{lb/yr}} = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 2000_{\text{lbs/tn}}$$

$$\text{Annual Emission}_{\text{lb/yr}} = \text{Annual Tons Usage}_{\text{blast grit}} \times \text{Emission Factors}_{\text{ton/ton}}$$

7. Ozone Season Emissions (Aux. Boiler, Diesel Gen., FP):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 92_{\text{days/ozone season}}$$

8. Ozone Season Emissions (Outdoor Sandblast Facility):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Annual Emissions (TSP, PM10, PM2.5)}_{\text{lb/yr}} \times 2000_{\text{lbs/tn}} \times \text{Seasonal Operating \% Summer}) / 92_{\text{days/ozone season}}$$

9. Ozone Season Process Rate (Aux. Boiler, Diesel Gen., FP):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Fuel Oil Burned}_{\text{gal/O3 season}} / 92_{\text{days/ozone season}}) / 1000_{\text{gal}}$$

10. Ozone Season Process Rate (Tanks):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Annual Process Rate}_{\text{Mgal/year}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

2009 EMISSION INVENTORY CALCULATIONS

TCEQ Account No. MH-0028-D

CN601658669

RN102365654

South Texas Project Electric Generating Station

11. Ozone Season Process Rate (Outdoor Sandblast Facility):

Ozone Season Process Rate $\frac{\text{tons/day}}{\text{day}} = (\text{TPY}_{\text{actual usage}} \times \text{Ozone Season Operating \%}) / 92 \frac{\text{days/ozone season}}$

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.73

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Detail

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status

	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jan	65.04	58.02	72.06	70.15	0.0078	N/A	N/A	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009
Distillate fuel oil no. 2	Feb	67.65	59.46	75.83	70.15	0.0084	N/A	N/A	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009
Distillate fuel oil no. 2	Mar	71.68	62.78	80.57	70.15	0.0095	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Apr	76.10	66.43	85.77	70.15	0.0108	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	May	79.68	69.30	90.06	70.15	0.0119	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Sep	80.27	70.73	89.80	70.15	0.0121	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Oct	75.58	66.24	84.93	70.15	0.0107	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Nov	70.28	62.49	78.06	70.15	0.0091	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Dec	66.18	58.14	73.22	70.15	0.0080	N/A	N/A	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AFOST - External Floating Roof Tank
Wadsworth, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	0.0901	0.0990	0.1134	0.1289	0.1382	0.1492	0.1502	0.1439	0.1337	0.1191	0.1045	0.0923
Seal Factor A (lb-mole/R-yr):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Seal Factor B (lb-mole/R-yr (mph) ⁿ):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Average Wind Speed (mph):	8.3000	8.8000	9.3000	9.2000	8.3000	7.6000	7.0000	6.3000	6.7000	7.0000	8.0000	7.9000
Seal-related Wind Speed Exponent:	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0078	0.0084	0.0095	0.0108	0.0119	0.0131	0.0135	0.0132	0.0121	0.0107	0.0091	0.0080
Tank Diameter (ft):	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	0.0086	0.0939	0.0729	0.0105	0.0420	0.0741	0.0808	0.0630	0.1155	0.0809	0.0593	0.2507
Net Throughput (gal/mo.):	1,591,000	17,273,000	13,410,000	1,932,000	7,728,000	13,637,000	14,830,000	11,591,000	21,251,000	14,887,000	10,909,000	48,138,000
Shell Coeffice Factor (lb/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000	7.1000
Tank Diameter (ft):	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000	44.0000
Roof Fitting Losses (lb):	2.8851	3.1493	3.8329	4.3052	4.1196	4.0344	3.7113	3.1709	3.1488	2.9426	2.9920	2.6054
Value of Vapor Pressure Function:	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	1,878.1553	2,031.8270	2,188.9852	2,157.2803	1,878.1553	1,669.1113	1,495.8552	1,301.0244	1,411.3682	1,495.8552	1,787.8770	1,757.8113
Average Wind Speed (mph):	8.3000	8.8000	9.3000	9.2000	8.3000	7.6000	7.0000	6.3000	6.7000	7.0000	8.0000	7.9000
Total Losses (lb):	2.7838	3.3422	4.0191	4.4448	4.2998	4.2577	3.9421	3.3778	3.3978	3.1425	3.1559	2.9485

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	KFb (lb-mole/yr mph ⁿ)	m	Losses (lb)
Access Hatch (24-in. Diam.) Bolted Cover, Gasketed	2	1.60	0.00	0.00	0.0756
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	1.1521
Vacuum Breaker (10-in. Diam.) Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	0.2858
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	1.40	38.7554
Gauge-Hatch/Sample Well (8-in. Diam.) Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	0.0135
Roof Drain (3-in. Diameter) Open	1	1.50	0.21	1.70	0.1243
Roof Leg (3-in. Diameter) Adjustable, Double-Deck Roofs	7	0.82	0.53	0.14	0.2467
Access Hatch (24-in. Diam.) Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.0378

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	1.46	0.95	40.70	0.00	43.11

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: External Floating Roof Tank
Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
Volume (gallons): 240,000.00
Turnovers: 0.73

Paint Characteristics

Internal Shell Condition: Light Rust
Shell Color/Shade: Gray/Light
Shell Condition: Good

Roof Characteristics

Type: Double Deck
Fitting Category: Detail

Tank Construction and Rim-Seal System

Construction: Welded
Primary Seal: Liquid-mounted
Secondary Seal: Rim-mounted

Deck Fitting/Status

	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) -			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000				Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000				Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000				Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AFOST - External Floating Roof Tank
Wadsworth, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						0.1492	0.1502	0.1439				
Seal Factor A (lb-mole/ft-yr):						0.3000	0.3000	0.3000				
Seal Factor B (lb-mole/ft-yr (mph) ^{1.5}):						0.6000	0.6000	0.6000				
Average Wind Speed (mph):						7.6000	7.0000	6.3000				
Seal-related Wind Speed Exponent:						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0002	0.0002	0.0002				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0131	0.0135	0.0132				
Tank Diameter (ft):						44.0000	44.0000	44.0000				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						0.0741	0.0806	0.0630				
Net Throughput (gal/mo.):						13,637.0000	14,630.0000	11,591.0000				
Shell Clingage Factor (tbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						7.1000	7.1000	7.1000				
Tank Diameter (ft):						44.0000	44.0000	44.0000				
Roof Fitting Losses (lb):						4.0344	3.7113	3.1709				
Value of Vapor Pressure Function:						0.0002	0.0002	0.0002				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fac.(lb-mole/yr):						1,669.1113	1,495.8552	1,301.0244				
Average Wind Speed (mph):						7.6000	7.0000	6.3000				
Total Losses (lb):						4.2577	3.9421	3.3778				

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Fitting Loss Factors KFb(lb-mole/(yr mph ^{1.5}))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2	1.60	0.00	0.00	0.0237
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	0.3315
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	0.0852
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	1.40	10.4262
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	0.0042
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	0.0341
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7	0.82	0.53	0.14	0.0767
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.0118

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	0.44	0.22	10.92	0.00	11.58

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	STPTG1
City:	Wadsworth
State:	Texas
Company:	STP Nuclear Operating Company
Type of Tank:	Horizontal Tank
Description:	Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	0.00
Net Throughput(gal/yr):	54,020.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jan	61.33	58.49	68.17	67.93	3.5800	3.2427	3.9452	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Feb	63.24	57.86	68.81	67.93	3.7206	3.3354	4.1410	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Mar	66.49	61.09	71.90	67.93	3.9710	3.5829	4.4180	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Apr	70.21	64.66	75.75	67.93	4.2729	3.8285	4.7580	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	May	73.22	67.46	78.98	67.93	4.5309	4.0477	5.0596	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	78.90	71.00	82.80	67.93	4.8634	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	78.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Sep	74.50	68.97	80.03	67.93	4.6449	4.1706	5.1618	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Oct	70.45	64.55	76.36	67.93	4.2934	3.8200	4.8131	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Nov	66.19	60.93	71.45	67.93	3.9470	3.5510	4.3780	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Dec	62.62	57.83	67.61	67.93	3.6749	3.3188	4.0601	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

**STPTG1 - Horizontal Tank
Wadsworth, Texas**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	78.3889	80.2007	96.3603	104.8645	120.8058	125.6077	135.5191	132.4584	115.8364	115.7936	90.1924	81.2486
Vapor Space Volume (cu ft):	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484
Vapor Density (lb/cu ft):	0.0435	0.0451	0.0478	0.0511	0.0539	0.0565	0.0574	0.0572	0.0551	0.0513	0.0476	0.0446
Vapor Space Expansion Factor:	0.1003	0.1145	0.1206	0.1310	0.1427	0.1500	0.1555	0.1523	0.1399	0.1400	0.1169	0.1054
Vented Vapor Saturation Factor:	0.5735	0.5640	0.5479	0.5297	0.5151	0.5019	0.4974	0.4987	0.5089	0.5285	0.5494	0.5671
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484	983.9484
Tank Diameter (ft):	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400
Effective Diameter (ft):	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771	17.8771
Vapor Space Outage (ft):	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200
Tank Shell Length (ft):	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000	32.0000
Vapor Density												
Vapor Density (lb/cu ft):	0.0435	0.0451	0.0478	0.0511	0.0539	0.0565	0.0574	0.0572	0.0551	0.0513	0.0476	0.0446
Vapor Molecular Weight (lb/lb-mole):	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.5800	3.7206	3.9710	4.2729	4.5309	4.7770	4.8634	4.8376	4.6449	4.2934	3.9470	3.6749
Daily Avg. Liquid Surface Temp. (deg. R):	520.9988	522.9082	526.1638	529.6782	532.8881	535.6321	538.5688	536.2909	534.1741	530.1228	525.8595	522.2925
Daily Average Ambient Temp. (deg. F):	50.3500	53.9500	60.5500	68.2500	74.5000	80.3500	82.3500	82.2500	78.1500	69.6000	61.0000	53.4500
Ideal Gas Constant R (psia-cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025	527.6025
Tank Paint Solar Absorbance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	843.3037	1,084.1116	1,347.4457	1,590.4745	1,784.0092	1,810.5999	1,887.1220	1,778.6156	1,545.7394	1,330.3131	973.3844	790.9541
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.1003	0.1145	0.1206	0.1310	0.1427	0.1500	0.1555	0.1523	0.1399	0.1400	0.1169	0.1054
Daily Vapor Temperature Range (deg. R):	19.3501	21.5044	21.6058	22.1867	23.0359	23.1345	23.5987	23.2262	22.1177	23.6123	21.0493	19.9649
Daily Vapor Pressure Range (psia):	0.7024	0.8055	0.8531	0.9295	1.0119	1.0604	1.0975	1.0755	0.9911	0.9932	0.8270	0.7403
Breather Vent Press. Setting Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.5800	3.7206	3.9710	4.2729	4.5309	4.7770	4.8634	4.8376	4.6449	4.2934	3.9470	3.6749
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.2427	3.3354	3.5629	3.8285	4.0477	4.2704	4.3395	4.3239	4.1706	3.8200	3.5510	3.3196
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	3.9452	4.1410	4.4160	4.7580	5.0596	5.3308	5.4370	5.3994	5.1618	4.8131	4.3780	4.0601
Daily Avg. Liquid Surface Temp. (deg R):	520.9988	522.9082	526.1638	529.6782	532.8881	535.6321	538.5688	536.2909	534.1741	530.1228	525.8595	522.2925
Daily Min. Liquid Surface Temp. (deg R):	516.1612	517.5301	520.7824	524.3315	527.1292	529.8485	530.6689	530.4843	528.6447	524.2197	520.5971	517.3012
Daily Max. Liquid Surface Temp. (deg R):	525.8363	528.2823	531.5653	535.4249	538.6471	541.4157	542.4683	542.0974	539.7038	538.0259	531.1218	527.2837
Daily Ambient Temp. Range (deg. R):	21.3000	22.7000	21.1000	20.3000	20.2000	19.5000	20.3000	20.5000	20.5000	24.0000	22.8000	22.5000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.5735	0.5640	0.5479	0.5297	0.5151	0.5019	0.4974	0.4987	0.5089	0.5285	0.5494	0.5671
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.5800	3.7206	3.9710	4.2729	4.5309	4.7770	4.8634	4.8376	4.6449	4.2934	3.9470	3.6749
Vapor Space Outage (ft):	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200	3.9200
Working Losses (lb):	26.0927	27.1171	28.9420	31.1426	33.0232	34.8165	35.4461	35.2585	33.8542	31.2921	28.7874	26.7840
Vapor Molecular Weight (lb/lb-mole):	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000	68.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.5800	3.7206	3.9710	4.2729	4.5309	4.7770	4.8634	4.8376	4.6449	4.2934	3.9470	3.6749
Net Throughput (gal/mo.):	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667	4,501.6667
Annual Turnovers:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Diameter (ft):	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400	7.8400
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Total Losses (lb):	102.4815	107.3178	125.3023	135.8071	153.8289	160.4242	170.9853	167.7168	148.6905	147.0858	118.9598	108.0326
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TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	372.54	1,275.08	1,647.61

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft): 32.00
Diameter (ft): 7.84
Volume (gallons): 12,000.00
Turnovers: 0.00
Net Throughput(gal/yr): 54,020.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	76.90	71.00	82.80	67.93	4.8634	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	76.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

STPTG1 - Horizontal Tank
Wadsworth, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						125.6077	135.5191	132.4584				
Vapor Space Volume (cu ft):						983.9484	983.9484	983.9484				
Vapor Density (lb/cu ft):						0.0585	0.0574	0.0572				
Vapor Space Expansion Factor:						0.1500	0.1555	0.1523				
Vented Vapor Saturation Factor:						0.5019	0.4974	0.4987				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						983.9484	983.9484	983.9484				
Tank Diameter (ft):						7.8400	7.8400	7.8400				
Effective Diameter (ft):						17.8771	17.8771	17.8771				
Vapor Space Outage (ft):						3.9200	3.9200	3.9200				
Tank Shell Length (ft):						32.0000	32.0000	32.0000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0585	0.0574	0.0572				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Vapor Pressure at Daily Average Liquid												
Surface Temperature (psia):						4.7770	4.8634	4.8378				
Daily Avg. Liquid Surface Temp. (deg. R):						535.6321	536.5686	536.2909				
Daily Average Ambient Temp. (deg. F):						80.3500	82.5500	82.2500				
Ideal Gas Constant R												
(psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						527.6025	527.6025	527.6025				
Tank Paint Solar Absorbance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insulation												
Factor (Btu/sq ft day):						1,910.5999	1,887.1220	1,778.6156				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.1500	0.1555	0.1523				
Daily Vapor Temperature Range (deg. R):						23.1345	23.5987	23.2262				
Daily Vapor Pressure Range (psia):						1.0604	1.0975	1.0755				
Breather Vent Press. Setting Range (psia):						0.0000	0.0000	0.0000				
Vapor Pressure at Daily Average Liquid												
Surface Temperature (psia):						4.7770	4.8634	4.8378				
Vapor Pressure at Daily Minimum Liquid												
Surface Temperature (psia):						4.2704	4.3395	4.3239				
Vapor Pressure at Daily Maximum Liquid												
Surface Temperature (psia):						5.3308	5.4370	5.3994				
Daily Avg. Liquid Surface Temp. (deg R):						535.6321	536.5686	536.2909				
Daily Min. Liquid Surface Temp. (deg R):						529.8485	530.6689	530.4843				
Daily Max. Liquid Surface Temp. (deg R):						541.4157	542.4683	542.0974				
Daily Ambient Temp. Range (deg. R):						19.5000	20.3000	20.5000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						0.5019	0.4974	0.4987				
Vapor Pressure at Daily Average Liquid												
Surface Temperature (psia):						4.7770	4.8634	4.8378				
Vapor Space Outage (ft):						3.9200	3.9200	3.9200				
Working Losses (lb):						34.8165	35.4481	35.2585				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Vapor Pressure at Daily Average Liquid												
Surface Temperature (psia):						4.7770	4.8634	4.8378				
Net Throughput (gal/mo.):						4,501.6667	4,501.6667	4,501.6667				
Annual Turnovers:						0.0000	0.0000	0.0000				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						7.8400	7.8400	7.8400				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

Total Losses (lb):

180.4242

170.9653

187.7188

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	105.52	393.59	499.11

**2009
Emission Inventory**

MAXIMUM ALLOWABLE EMISSION RATES TABLE

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 7410

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
1	Start-Up Boiler (185 MMBtu/hr)	NO _x	55.00	241.00
		SO ₂	44.40	194.48
		PM	18.30	80.30
		CO	15.24	66.75
		VOC	1.01	4.42

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
 (2) Specific point source names. For fugitive sources use area name or fugitive source name.
 (3) PM - particulate matter, suspended in the atmosphere, including PM₁₀
 PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
 NO_x - total oxides of nitrogen
 SO₂ - sulfur dioxide
 CO - carbon monoxide
 VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated December 23, 2004

Attachment 5

STPNOC 2010 Emissions Inventory Report (Partial)

Dated March 30, 2011 (NOC-TX-11022689)



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

March 30, 2011
NOC-TX-11022689
STI: 32845998
PFN: W01; W12.02

CERTIFIED MAIL (7003 2260 0001 6287 0404)

Emissions Inventory Data, MC 166
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

**Re: 2010 Emissions Inventory
STP Nuclear Operating Company
South Texas Project Electric Generating Station
TNRCC Account ID Number MH-0028-D
Wadsworth, Matagorda County
CN601658669
RN102395654**

Pursuant to 30 T.A.C. §101.10 requirements, the STP Nuclear Operating Company is providing the enclosed calendar year 2010 Air Emissions Inventory update and supporting documentation for the South Texas Project Electric Generating Station. Changes in reported station emissions for 2010 from the previous year reflect different equipment operating rates and the addition of two small emergency diesel-driven fire pump engines to the inventory as well as adjustments to one VOC emission factor and SO₂ emission factors. The SO₂ emission factor changes are based on the use of actual sulfur content for calculation of the emission factors. The VOC emission factor change is based on a revision to the AP-42 reference source used for one emission source (AB11) only. Other minor corrections, including corrections to Plant Contact Information where applicable, are indicated on the emissions inventory questionnaire (EIQ).

If you have any questions or require additional information, please contact Ms. Peggy Travis at (361) 972-8573 or via e-mail at pltravis@stpegs.com.

Sincerely,

S. L. Dannhardt
Environmental Manager

PLT/plt

Enclosure

cc: Mr. Manuel Bautista, Houston Region Air Section Manager, TCEQ Region 12 – w/ enclosures

bcc: S. L. Dannhardt (electronic)
R. N. Hotstream (electronic)
D. F. Klockentager (electronic)
D. V. Zink (electronic)
C. R. Corporon (electronic)
R. A. Frazee (electronic)
A. Duke, III (electronic)
D. W. Wiegand (electronic)
Correspondence, N2002

**2010
Emission Inventory**

EMISSIONS CALCULATIONS

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

2010 EMISSION INVENTORY CALCULATION SHEET

	Auxiliary Boiler	Standby Diesel Generators						TBC Generators		BOP Generators		LDG Generator	EOF Generator	NSC Generator	Combined Small Fac. DGs	Diesel-Driven FPs			Fuel Oil	Gas	Outdoor Sandblasting Facility	TOTAL	
	11	11	12	13	21	22	23	1	2	1	2				1	2	3						
Annual																							
Fuel Oil Burned (gal/yr)	1,272	23,316	26,466	31,362	36,900	31,880	34,500	3,927	4,048	712	684	1,652	3,878	1,841	2,477	3,453	3,722	1,793	--	--	Annual Total Usage		
Heat Content (mmBtu/bbl)	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	5,754	--	--	
Fuel Oil Burned (mmBtu/yr)	174	3,194	3,626	4,297	5,055	4,340	4,727	524	555	88	91	228	531	252	338	473	510	248	--	--	19.4	--	
Ozone Season (Jun 1 - Aug 31)																							
Fuel Oil Burned (gal/ozone season)	1	6,972	5,244	5,208	10,188	5,412	5,378	1,388	1,312	150	137	618	288	226	214	1,280	965	358	--	--	--	--	
Fuel Oil Burned (mmBtu/ozone season)	0.2	955	718	713	1,398	741	737	188	180	21	18	84	39	31	28	175	132	48	--	--	--	--	
Seasonal Operating %																							
Winter (Jan/Feb/Oct)	87%	23%	28%	21%	35%	23%	42%	28%	26%	39%	40%	31%	58%	24%	25%	23%	25%	32%	28%	11%	--	8%	
Spring (Mar/Apr/May)	13%	24%	21%	17%	23%	44%	16%	8%	26%	25%	19%	20%	4%	15%	9%	21%	35%	22%	24%	45%	--	45%	
Summer (Jun/Jul/Aug)	0%	30%	20%	17%	28%	17%	16%	36%	32%	21%	21%	37%	7%	12%	9%	37%	28%	29%	28%	22%	--	28%	
Fall (Sep/Oct/Nov)	0%	23%	31%	45%	14%	18%	26%	28%	18%	15%	20%	12%	30%	48%	58%	18%	14%	29%	20%	22%	--	18%	
Design Capacity (mmBtu/yr)	185	55	55	55	55	55	55	12	12	7	7	7	7	2.5	1.2	0.7	0.7	0.7	--	--	--	--	
% of Max Potential Emissions	0.01%	0.66%	0.75%	0.89%	1.05%	0.90%	0.98%	0.50%	0.53%	0.16%	0.15%	0.37%	0.87%	1.15%	3.23%	7.71%	8.37%	4.01%	--	--	12.83%	--	
Ozone Season Process Rate	0.000	0.078	0.057	0.057	0.111	0.058	0.058	0.015	0.014	0.002	0.001	0.007	0.003	0.002	0.002	0.014	0.010	0.004	0.575	0.087	--	0.058	
Emission Factors (lb/MMBtu)																							
TSP	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
PM10	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
PM2.5	0.0470	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
VOC	0.0015	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080
NO _x	0.1300	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000	3.2000
SO _x	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
CO	0.0686	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Annual Emissions (lb/yr)																							
TSP	0.0041	0.1113	0.1284	0.1487	0.1762	0.1513	0.1647	0.0183	0.0193	0.0034	0.0032	0.0070	0.0185	0.0088	0.0118	0.0733	0.0780	0.0381	--	--	0.0555	1.2208	
PM10	0.0041	0.1113	0.1284	0.1487	0.1762	0.1513	0.1647	0.0183	0.0193	0.0034	0.0032	0.0070	0.0185	0.0088	0.0118	0.0733	0.0780	0.0381	--	--	0.0555	1.1719	
PM2.5	0.0041	0.1113	0.1284	0.1487	0.1762	0.1513	0.1647	0.0183	0.0193	0.0034	0.0032	0.0070	0.0185	0.0088	0.0118	0.0733	0.0780	0.0381	--	--	0.0555	1.1719	
VOC	0.0001	0.1278	0.1450	0.1719	0.2022	0.1736	0.1891	0.0210	0.0222	0.0038	0.0036	0.0091	0.0213	0.0101	0.0136	0.0852	0.0918	0.0442	0.0216	0.7653	--	0.0086	
NO _x	0.0113	5.1109	5.8073	6.8748	8.0885	6.8643	7.5624	0.8330	0.8873	0.1562	0.1455	0.3821	0.8501	0.4035	0.5400	1.0431	1.1244	0.5416	--	--	--	2.1224	
SO _x	0.0002	0.0035	0.0040	0.0047	0.0058	0.0048	0.0052	0.0006	0.0006	0.0001	0.0001	0.0002	0.0006	0.0019	0.0026	0.0005	0.0008	0.0003	--	--	--	0.0380	
CO	0.0060	1.3576	1.5610	1.8261	2.1485	1.8448	2.0088	0.2228	0.2357	0.0415	0.0386	0.0862	0.2258	0.1072	0.1442	0.2247	0.2422	0.1187	--	--	--	12.4281	
Ozone Season Emissions (lb/day)																							
TSP	0.0001	0.7236	0.5443	0.5406	1.0574	0.5617	0.5580	0.1421	0.1362	0.0158	0.0142	0.0638	0.0289	0.0235	0.0222	0.5908	0.4455	0.1853	--	--	0.3377	5.8728	
PM10	0.0001	0.7236	0.5443	0.5406	1.0574	0.5617	0.5580	0.1421	0.1362	0.0158	0.0142	0.0638	0.0289	0.0235	0.0222	0.5908	0.4455	0.1853	--	--	0.3377	5.6751	
PM2.5	0.0001	0.7236	0.5443	0.5406	1.0574	0.5617	0.5580	0.1421	0.1362	0.0158	0.0142	0.0638	0.0289	0.0235	0.0222	0.5908	0.4455	0.1853	--	--	0.3377	5.6751	
VOC	0.0000	0.8308	0.8247	0.8204	1.2137	0.6447	0.6404	0.1831	0.1563	0.0179	0.0183	0.0734	0.0345	0.0289	0.0235	0.6882	0.5173	0.1918	0.1266	5.0478	--	11.6383	
NO _x	0.0002	33.2231	24.9888	24.8173	48.5480	25.7894	25.8178	6.5236	6.2520	0.7148	0.6528	2.8554	1.3724	1.0774	1.0285	8.6058	6.3372	2.3510	--	--	--	226.8274	
SO _x	0.0000	0.0228	0.0172	0.0171	0.0334	0.0177	0.0178	0.0045	0.0043	0.0005	0.0004	0.0020	0.0008	0.0051	0.0048	0.0042	0.0042	0.0012	--	--	--	8.1570	
CO	0.0001	8.8249	8.8377	8.8921	12.8856	6.8503	6.8047	1.7328	1.6807	0.1888	0.1734	0.7797	0.3645	0.2862	0.2711	1.9108	1.3852	0.5065	--	--	--	57.7480	

Sources of Emission Factors:

Auxiliary Boiler:

TSP, NO_x, CO: METCO emission tests (July/August 1988).
 PM10: Assumes total particulate matter is <= 2.5.
 PM2.5: Assumes total particulate matter is <= 2.5.
 VOC: AP-42, Section 1.3, Table 1.3-3 (5/10).
 SO_x: Calculated using sulfur content (attached).

Generators (Standby, TBC, BOP, LDG, EOF, NSC, Rigs):

TSP, PM10, PM2.5: AP-42, Section 3.4, Table 3.4-2 (10/98).
 VOC, NO_x, CO: AP-42, Section 3.4, Table 3.4-1 (10/98).
 SO_x: Calculated using sulfur content (attached).

Fire Pumps:

TSP, PM10, PM2.5,
 NO_x, CO, VOC: AP-42, Section 3.3, Table 3.3-1 (10/98).
 (Assumed TOC = TOC_{Control} + TOC_{Critical}).
 SO_x: Calculated using sulfur content (attached).

Outdoor Sandblasting Facility:

TSP, PM10,
 PM2.5: TCEQ Technical Guidance Package
 for Dry Abrasive Blast Cleaning
 (DRAFT RG-180, 3/01).
 (converted to tons/day).
 (Assumed PM2.5 = PM10)

Tanks: Emissions were calculated using Tanks 4.08d.

Combined Small Fac. DGs = GRPDG

2010 EMISSION INVENTORY CALCULATIONS

TCEQ Account No. MH-0028-D

CN601658669

RN102365654

South Texas Project Electric Generating Station

PART A: EMISSION FACTOR AND FUEL OIL HEATING CONSTANT CALCULATIONS

1. **Fuel Oil No. 2 (Diesel) Heat Content (mmBtu/bbl):**

$$137,000 \text{ Btu/gallon of Diesel}^a \times 42 \text{ gallons/bbl} \times 1 \text{ mmBtu}/10^6 \text{ Btu} = 5.754 \text{ mmBtu/bbl}$$

2. **SO₂ Emission Factor (Boiler, Fire Pump, Diesel Generators *except* NSC and GRPBLDG):**

$$7.1 \text{ lb/gallon of diesel}^b + 137,000 \text{ Btu/gallon}^a \times 10^6 = 51.8 \text{ lbs/mmBtu}$$

$$51.8 \text{ lbs/mmBtu} \times 0.0021/100 \text{ (actual \% sulfur weight)}^c \times 64 \text{ lbs SO}_2/32 \text{ lbs S}^d = 0.0022 \text{ lb SO}_2/\text{mmBtu}$$

3. **SO₂ Emission Factor (NSC and GRPBLDG Diesel Generators):**

$$1.01^e \times 0.015^f = 0.0152 \text{ lb/mmBtu}$$

4. **Boiler VOC Emission Factor:**

$$0.2 \text{ lb}/10^3 \text{ gal Distillate Oil}^g \times 42 \text{ gallons/bbl} \times 1 \text{ bbl}/5.754 \text{ mmBtu} = 0.0015 \text{ lb/mmBtu}$$

5. **Boiler CO Emission Factor:**

$$12.7 \text{ lbs/hr}^h \times 1 \text{ hr}/185 \text{ mmBtu}^i = 0.0686 \text{ lb/mmBtu}$$

6. **Diesel Generator VOC Emission Factor:**

$$0.09 \text{ lb/mmBtu}^j \times 0.91^k = 0.08 \text{ lb/mmBtu}^k$$

^a AP-42, Fifth Edition, Volume I; Appendix A, "Typical Parameters of Various Fuels," 9/85 (Reformatted 1/95); p. A-5.

^b AP-42, Fifth Edition, Volume I; Section 7.1; Table 7.1-2: Properties (M_v , W_{vC} , P_{vA} , W_L) of Selected Petroleum Liquids, 11/06; P. 7.1-63.

^c Actual measured value (analysis sheet included in package).

^d TCEQ Air Permits Division: New Source Review (NSR) Emission Calculations (Reciprocating Engines) as viewed March 2011 at http://www.tceq.state.tx.us/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_engine.pdf.

^e Adjusted emission factor for SO_x as found in AP-42, Fifth Edition, Volume I; Section 3.4; Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^f Fuel oil purchase specification for these sources $\leq 0.015\%$ sulfur (ULSD-only) as of July 2, 2009 and following.

^g AP-42, Fifth Edition, Volume I; Section 1.3; Table 1.3-3: Emission Factors for Total Organic Compounds (TOC), Methane, and Nonmethane TOC (NMTOC) from Uncontrolled Fuel Oil Combustion, 5/10; p. 1.3-14.

^h Mullins Environmental Testing Co. Inc.; *Source Emissions Survey of Houston Lighting & Power Company South Texas Project Auxiliary Boilers Number 11 and Number 12 Stack, Wadsworth, TX*; July and August 1986; p. 10.

ⁱ Design capacity (mmBtu/hour)

^j Emission factor for Diesel Fuel TOC as found in AP-42, Fifth Edition, Volume I; Section 3.4;

Table 3.4-1: Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines, 10/96; p. 3.4-5.

^k Fn. f of AP-42 Table 3.4-1 assumes that TOC is 91% nonmethane by weight.

2010 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

PART B: EMISSION INVENTORY CALCULATED VALUES

1. Annual Fuel Oil Combusted (Aux. Boiler, Diesel Gen., FP):

$$\text{Fuel Oil Burned}_{\text{mmBtu/yr}} = (\text{Fuel Oil Burned}_{\text{gal/yr}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

2. Gallons Fuel Oil Combusted during Ozone Season (Aux. Boiler, Diesel Gen., FP):

$$\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} \times \text{Heat Content}_{\text{mmBtu/bbl}}) / 42_{\text{gal/bbl}}$$

3. Ozone Seasonal Operating Percent

$$\text{Seasonal Operating \%}_{\text{Summer}} = (\text{Fuel Oil Burned}_{\text{gal/ozone season}} / \text{Fuel Oil Burned}_{\text{gal/yr}}) \times 100$$

4. Percent of Maximum Potential Emissions (Aux. Boiler, Diesel Gen., FP):

$$\text{PMEP} = (\text{Emissions}_{\text{actual}} / \text{Emissions}_{\text{potential}}) \times 100 = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} / [\text{Design Capacity}_{\text{mmBtu/hr}} \times 8,760_{\text{hrs/yr}}]) \times 100$$

5. Percent of Maximum Potential Emissions (Outdoor Sandblast Facility):

$$\text{PMEP} = (\text{Actual Annual Blast Grit Usage}_{\text{TPY}} / 150_{\text{TPY Maximum Potential Blast Grit Usage}}) \times 100$$

6. Annual Emissions (Aux. Boiler, Diesel Gen., FP, Sandblast Facility):

$$\text{Annual Emission}_{\text{lb/yr}} = (\text{Fuel Oil Burned}_{\text{mmBtu/yr}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 2000_{\text{lbs/tn}}$$

$$\text{Annual Emission}_{\text{lb/yr}} = \text{Annual Tons Usage}_{\text{blast grit}} \times \text{Emission Factors}_{\text{ton/ton}}$$

7. Ozone Season Emissions (Aux. Boiler, Diesel Gen., FP):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Fuel Oil Burned}_{\text{mmBtu/ozone season}} \times \text{Emission Factors}_{\text{lb/mmBtu}}) / 92_{\text{days/ozone season}}$$

8. Ozone Season Emissions (Outdoor Sandblast Facility):

$$\text{Ozone Season Emission}_{\text{lb/day}} = (\text{Annual Emissions (TSP, PM10, PM2.5)}_{\text{lb/yr}} \times 2000_{\text{lbs/tn}} \times \text{Seasonal Operating \%}_{\text{Summer}}) / 92_{\text{days/ozone season}}$$

9. Ozone Season Process Rate (Aux. Boiler, Diesel Gen., FP):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Fuel Oil Burned}_{\text{gal/O3 season}} / 92_{\text{days/ozone season}}) / 1000_{\text{gal}}$$

10. Ozone Season Process Rate (Tanks):

$$\text{Ozone Season Process Rate}_{\text{M gal/day}} = (\text{Annual Process Rate}_{\text{Mgal/year}} \times \text{Ozone Season Operating \%}) / 92_{\text{days/ozone season}}$$

2010 EMISSION INVENTORY CALCULATIONS
TCEQ Account No. MH-0028-D
CN601658669
RN102365654
South Texas Project Electric Generating Station

11. **Ozone Season Process Rate (Outdoor Sandblast Facility):**

Ozone Season Process Rate $\text{tons/day} = (\text{TPY}_{\text{actual usage}} \times \text{Ozone Season Operating \%}) / 92 \text{ days/ozone season}$

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.79

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Detail

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status

	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	75.16	66.01	84.31	70.15	0.0105	N/A	N/A	130.0000			168.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AFOST - External Floating Roof Tank
Wadsworth, Texas

Annual Emission Calculations

Rim Seal Losses (lb):	1.4513
Seal Factor A (lb-mole/ft-yr):	0.3000
Seal Factor B (lb-mole/ft-yr (mph) ⁿ):	0.6000
Average Wind Speed (mph):	7.8667
Seal-related Wind Speed Exponent:	0.3000
Value of Vapor Pressure Function:	0.0002
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0105
Tank Diameter (ft):	44.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	1.0260
Annual Net Throughput (gal/yr.):	188,800.0000
Shell Clingage Factor (tbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	44.0000
Roof Fitting Losses (lb):	40.7710
Value of Vapor Pressure Function:	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	1,747.8891
Average Wind Speed (mph):	7.8667
Total Losses (lb):	43.2483

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Fitting Loss Factors		m	Losses(lb)
			KFb(lb-mole/yr (mph) ⁿ)			
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2	1.60	0.00		0.00	0.0746
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40		1.10	1.1492
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20		0.94	0.2838
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00		1.40	38.8449
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02		0.97	0.0134
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21		1.70	0.1240
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7	0.82	0.53		0.14	0.2438
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00		0.00	0.0373

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fiting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	1.45	1.03	40.77	0.00	43.25

TANKS 4.0.9a

Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: AFOST
 City: Wadsworth
 State: Texas
 Company: STP Nuclear Operating Company
 Type of Tank: External Floating Roof Tank
 Description: Auxiliary Fuel Oil Storage Tank EPN: STPFOST1 FIN: T1

Tank Dimensions

Diameter (ft): 44.00
 Volume (gallons): 240,000.00
 Turnovers: 0.79

Paint Characteristics

Internal Shell Condition: Light Rust
 Shell Color/Shade: Gray/Light
 Shell Condition: Good

Roof Characteristics

Type: Double Deck
 Fitting Category: Detail

Tank Construction and Rim-Seal System

Construction: Welded
 Primary Seal: Liquid-mounted
 Secondary Seal: Rim-mounted

Deck Fitting/Status**Quantity**

Access Hatch (24-in. Diam./Bolted Cover, Gasketed)	2
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	1
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7
Access Hatch (24-in. Diam./Bolted Cover, Gasketed)	1

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AFOST - External Floating Roof Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	82.79	72.06	93.52	70.15	0.0131	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Jul	83.66	72.87	94.45	70.15	0.0135	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Aug	83.06	72.65	93.48	70.15	0.0132	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9a
Emissions Report - Detail Format
Detail Calculations (AP-42)

AFOST - External Floating Roof Tank
Wadsworth, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						0.1492	0.1502	0.1439				
Seal Factor A (lb-mole/ft-yr):						0.3000	0.3000	0.3000				
Seal Factor B (lb-mole/ft-yr (mph) ⁿ):						0.6000	0.6000	0.6000				
Average Wind Speed (mph):						7.6000	7.0000	6.3000				
Seal-related Wind Speed Exponent:						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0002	0.0002	0.0002				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0131	0.0135	0.0132				
Tank Diameter (ft):						44.0000	44.0000	44.0000				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						0.1630	0.0815	0.0413				
Net Throughput (gal/mo.):						30,000.0000	15,000.0000	7,600.0000				
Shell Clingage Factor (bbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						7.1000	7.1000	7.1000				
Tank Diameter (ft):						44.0000	44.0000	44.0000				
Roof Fitting Losses (lb):						4.0344	3.7113	3.1709				
Value of Vapor Pressure Function:						0.0002	0.0002	0.0002				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact. (lb-mole/yr):						1,669.1113	1,495.8552	1,301.0244				
Average Wind Speed (mph):						7.6000	7.0000	6.3000				
Total Losses (lb):						4.3466	3.9430	3.3561				

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/(yr mph ⁿ))	m	Losses (lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2	1.60	0.00	0.00	0.0237
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	0.3315
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	0.0852
Unslotted Guide-Pole Well/Ungasketed Sliding Cover	1	31.00	150.00	1.40	10.4262
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	0.0042
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	0.0341
Roof Leg (3-in. Diameter)/Adjustable, Double-Deck Roofs	7	0.82	0.53	0.14	0.0767
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.0118

TANKS 4.0.9b
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

AFOST - External Floating Roof Tank
Wadsworth, Texas

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Distillate fuel oil no. 2	0.44	0.29	10.92	0.00	11.65

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	3.37
Net Throughput(gal/yr):	40,498.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	All	69.81	64.30	75.32	67.93	4.2398	3.8011	4.7184	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

STPTG1 - Horizontal Tank
Wadsworth, Texas

Annual Emission Calculations

Standing Losses (lb):	1,252.5124
Vapor Space Volume (cu ft):	983.9484
Vapor Density (lb/cu ft):	0.0507
Vapor Space Expansion Factor:	0.1293
Vented Vapor Saturation Factor:	0.5317
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	983.9484
Tank Diameter (ft):	7.8400
Effective Diameter (ft):	17.8771
Vapor Space Outage (ft):	3.9200
Tank Shell Length (ft):	32.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0507
Vapor Molecular Weight (lb/lb-mole):	68.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.2398
Daily Avg. Liquid Surface Temp. (deg. R):	529.4813
Daily Average Ambient Temp. (deg. F):	67.9125
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	527.6025
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,405.5061
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1293
Daily Vapor Temperature Range (deg. R):	22.0322
Daily Vapor Pressure Range (psia):	0.9172
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.2398
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.8011
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.7184
Daily Avg. Liquid Surface Temp. (deg R):	529.4813
Daily Min. Liquid Surface Temp. (deg R):	523.9732
Daily Max. Liquid Surface Temp. (deg R):	534.9893
Daily Ambient Temp. Range (deg. R):	21.3083
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5317
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	4.2398
Vapor Space Outage (ft):	3.9200
Working Losses (lb):	
Vapor Molecular Weight (lb/lb-mole):	277.9942
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	68.0000
Annual Net Throughput (gal/yr.):	4,2398
Annual Turnovers:	40,498.0000
Turnover Factor:	3.3748
Tank Diameter (ft):	1.0000
Working Loss Product Factor:	7.8400
	1.0000

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 7)	277.99	1,252.51	1,530.51

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: STPTG1
City: Wadsworth
State: Texas
Company: STP Nuclear Operating Company
Type of Tank: Horizontal Tank
Description: Fuel Island Gasoline Storage Tank EPN: STPTG1 FIN: TG1 FOP O801 Designation: T114

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.84
Volume (gallons):	12,000.00
Turnovers:	3.37
Net Throughput(gal/yr):	40,498.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Houston, Texas (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

STPTG1 - Horizontal Tank
Wadsworth, Texas

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 7)	Jun	75.96	70.18	81.75	67.93	4.7770	4.2704	5.3308	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Jul	76.90	71.00	82.80	67.93	4.8634	4.3395	5.4370	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3
Gasoline (RVP 7)	Aug	76.62	70.81	82.43	67.93	4.8376	4.3239	5.3994	68.0000			92.00	Option 4: RVP=7, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

STPTG1 - Horizontal Tank
Wadsworth, Texas

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						125.6077	135.5191	132.4584				
Vapor Space Volume (cu ft):						983.9484	983.9484	983.9484				
Vapor Density (lb/cu ft):						0.0565	0.0574	0.0572				
Vapor Space Expansion Factor:						0.1500	0.1555	0.1523				
Vented Vapor Saturation Factor:						0.5019	0.4974	0.4987				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						983.9484	983.9484	983.9484				
Tank Diameter (ft):						7.8400	7.8400	7.8400				
Effective Diameter (ft):						17.8771	17.8771	17.8771				
Vapor Space Outage (ft):						3.9200	3.9200	3.9200				
Tank Shell Length (ft):						32.0000	32.0000	32.0000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0565	0.0574	0.0572				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.7770	4.8634	4.8376				
Daily Avg. Liquid Surface Temp. (deg. R):						535.6321	536.5686	536.2909				
Daily Average Ambient Temp. (deg. F):						80.3500	82.5500	82.2500				
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						527.6025	527.6025	527.6025				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insulation Factor (Btu/sqft day):						1.910.5999	1,887.1220	1,778.6156				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.1500	0.1555	0.1523				
Daily Vapor Temperature Range (deg. R):						23.1345	23.5987	23.2262				
Daily Vapor Pressure Range (psia):						1.0604	1.0975	1.0755				
Breather Vent Press. Setting Range (psia):						0.0000	0.0000	0.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.7770	4.8634	4.8376				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						4.2704	4.3395	4.3239				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						5.3308	5.4370	5.3994				
Daily Avg. Liquid Surface Temp. (deg R):						535.6321	536.5686	536.2909				
Daily Min. Liquid Surface Temp. (deg R):						529.8485	530.6689	530.4843				
Daily Max. Liquid Surface Temp. (deg R):						541.4157	542.4683	542.0974				
Daily Ambient Temp. Range (deg. R):						19.5000	20.3000	20.5000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						0.5019	0.4974	0.4987				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.7770	4.8634	4.8376				
Vapor Space Outage (ft):						3.9200	3.9200	3.9200				
Working Losses (lb):						0.0000	70.8267	0.0000				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.7770	4.8634	4.8376				
Net Throughput (gal/mo.):						0.0000	8,995.0000	0.0000				
Annual Turnovers:						3.3748	3.3748	3.3748				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						7.8400	7.8400	7.8400				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

STPTG1 - Horizontal Tank
Wadsworth, Texas

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Gasoline (RVP 7)	70.83	393.59	464.41

**2010
Emission Inventory**

MAXIMUM ALLOWABLE EMISSION RATES TABLE

**SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
ACCOUNT NO. MH-0028-D**

STP Nuclear Operating Company

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 7410

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates *	
			lb/hr	TPY**
1	Start-Up Boiler (185 MMBtu/hr)	NO _x	55.00	241.00
		SO ₂	44.40	194.48
		PM	18.30	80.30
		CO	15.24	66.75
		VOC	1.01	4.42

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
 (2) Specific point source names. For fugitive sources use area name or fugitive source name.
 (3) PM - particulate matter, suspended in the atmosphere, including PM₁₀
 PM₁₀ - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
 NO_x - total oxides of nitrogen
 SO₂ - sulfur dioxide
 CO - carbon monoxide
 VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated December 23, 2004