part 13

1609209 4

GENERAL INFORMATION

Person Completing Form: Anand Gangadharan	Date: June 2016	Registration Number: TBD
Company and Division Name: C4GT, LLC		FIN: 81-1468392
Mailing Address: 3001 Roxbury Rd, Charles City, VA 23030		
Exact Source Location – Include Name of City (County) and Full Street Address or Directions: 3001 Roxbury Rd, Charles City, VA 23030 The project is located in Charles City County, Virginia, along State Route 106, approximately 2,000 feet north and west of the intersection of State Route 685.		
Telephone Number: TBD	No. of Employees: TBD	Property Area at Site: ~ 88 acres
Person to Contact on Air Pollution Matters – Name and Title: Anand Gangadharan President/CEO	Phone Number: 248-735-6684 Fax: Email: agangadh@novienergy.com	
Latitude and Longitude Coordinates **OR** UTM Coordinates of Facility: Latitude: 37.447893, Longitude: -77.166797		

Reason(s) for Submission (Check all that apply):

☐ State Operating Permit — This permit is applied for pursuant to provisions of the Virginia Administrative Code, 9 VAC 5 Chapter 80, Article 5 (SOP)

☒ New Source
☐ Modification of a Source
☐ Relocation of a Source

This permit is applied for pursuant to the following provisions of the Virginia Administrative Code:
- ☐ 9 VAC 5 Chapter 80, Article 6 (Minor Sources)
- ☒ 9 VAC 5 Chapter 80, Article 8 (PSD Major Sources)
- ☐ 9 VAC 5 Chapter 80, Article 9 (Non-Attainment Major Sources)

☐ Amendment to a Permit Dated: _____ Permit Type: ☐ SOP (Art. 5) ☐ NSR (Art. 6, 8, 9)

Amendment Type:
- ☐ Administrative Amendment
- ☐ Minor Amendment
- ☐ Significant Amendment

This amendment is requested pursuant to the provisions of:

☐ 9 VAC 5-80-970 (Art. 5 Adm.)	☐ 9 VAC 5-80-1935 (Art. 8 Adm.)
☐ 9 VAC 5-80-980 (Art. 5 Minor)	☐ 9 VAC 5-80-1945 (Art. 8 Minor)
☐ 9 VAC 5-80-990 (Art. 5 Sig.)	☐ 9 VAC 5-80-1955 (Art. 8 Sig.)
☐ 9 VAC 5-80-1270 (Art. 6 Adm.)	☐ 9 VAC 5-80-2210 (Art. 9 Adm.)
☐ 9 VAC 5-80-1280 (Art. 6 Minor)	☐ 9 VAC 5-80-2220 (Art. 9 Minor)
☐ 9 VAC 5-80-1290 (Art. 6 Sig.)	☐ 9 VAC 5-80-2230 (Art. 9 Sig.)

☐ Other (specify): _____

Explanation of Permit Request (attach documents if needed):

C4GT is proposing to construct a new facility for electric power generation.

1989269694

GENERAL INFORMATION (CONTINUED)

For Portable Plants:

Is this facility designed to be portable? ☐ Yes ☒ No

- If yes, is this facility already permitted as a portable plant? ☐ Yes ☐ No Permit Date: _____

If not permitted, is this an application to be permitted as a portable plant? ☐ Yes ☐ No

If permitted as a portable facility, is this a notification of relocation? ☐ Yes ☐ No

- Describe the new location or address (include a site map): _____

- Will the portable facility be co-located with another source? ☐ Yes ☐ No Reg. No. _____
- Will the portable facility be modified or reconstructed as a result of the relocation? ☐ Yes ☐ No
- Will there be any new emissions other than those associated with the relocation? ☐ Yes ☐ No
- Is the facility suitable for the area to which it will be located? (attach documentation) ☐ Yes ☐ No

Describe the products manufactured and/or services performed at this facility:

C4GT is an electric generating facility.

List the Standard Industrial Classification (SIC) Code(s) for the facility:

4	9	1	1												

List the North American Industry Classification System (NAICS) Code(s) for the facility:

2	2	1	1	1	2												

List all the facilities in Virginia under common ownership or control by the owner of this facility:

Milestones: This section is to be completed if the permit application includes a new emissions unit or modification to existing operations.

Milestones*:	Starting Date:	Estimated Completion Date:
New Equipment Installation	Q4 2017	Q4 2019
Modification of Existing Process or Equipment	N/A	N/A
Start-up Dates	Q1 2020	Q2 2020

*For new or modified installations to be constructed in phased schedule, give construction/installation starting and completion date for each phase.

16092009A

FUEL BURNING EQUIPMENT: (Boilers, Turbines, Kilns, and Other External Combustion Units)

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Equipment Manufacturer, Type, and Model Number	Date of Manuf.	Date of Const.	Max. Rated Input Heat Capacity For Each Fuel (Million Btu/hr)	Type of Fuel	Type of Equip. (use Code A)	Usage (use Code B)	Requested Throughput* (hrs/yr OR fuel/yr)	Federal Regulations that Apply
CT-1	SGT6-8000H combustion turbine generator with duct burner	TBD	TBD	3,116 CT, 991 DB	Natural Gas	15	6	8,760 hrs/yr	NSPS Subpart KKKK
CT-2	SGT6-8000H combustion turbine generator with duct burner	TBD	TBD	3,116 CT, 991 DB	Natural Gas	15	6	8,760 hrs/yr	NSPS Subpart KKKK
B-1	Auxiliary Boiler	TBD	TBD	105	Natural Gas	12	1	8,760 hrs/yr	NSPS Subpart Db
DPH -1	Dew Point Heater	TBD	TBD	16	Natural Gas	12	4	8,760 hrs/yr	NSPS Subpart Dc

[X] Estimated Emission Calculations Attached (include references of emission factors) and/or Stack Test Results if Available

Code A – Equipment		Code B - Usage
BOILER TYPE: 1. Pulverized Coal - Wet Bottom 2. Pulverized Coal - Dry Bottom 3. Pulverized Coal - Cyclone Furnace 4. Circulating Fluidized Bed 5. Spreader Stoke 6. Chain or Travelling Grate Stoker 7. Underfeed Stoker 8. Hand Fired Coal 9. Oil, Tangentially Fired 10. Oil, Horizontally Fired (except rotary cup)	11. Gas, Tangentially Fired 12. Gas, Horizontally Fired 13. Wood with Flyash Reinjection 14. Wood without Flyash Reinjection 15. Other (specify) Natural Gas OTHER COMBUSTION UNITS: 16. Oven / Kiln 17. Rotary Kiln 18. Process Furnace 19. Other (specify)	1. Steam Production 2. Drying / Curing 3. Space Heating 4. Process Heat 5. Food Processing 6. Electrical Generation 7. Mechanical Work 8. Other (specify) _____

***Pick only one option for a requested throughput.**

NOTE: Dryers, kilns, and furnaces also have to fill out Page 13.

16962809 4

STATIONARY INTERNAL COMBUSTION ENGINES:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Equipment Manufacturer, Type, and Model Number	Date of Manuf.	Date of Const.	Output Brake Horsepower (bhp)	Output Electrical Power (kW)	Type of Fuel	Usage* (use Code C)	Requested Throughput** (hrs/yr OR fuel/yr)	Federal Regulations that Apply
EG-1	Emergency Generator	TBD	TBD	3,633	2,500	Diesel	1	500 hrs/yr	NSPS Subpart IIII; NESHAP Subpart ZZZZ
FWP -1	Fire Water Pump	TBD	TBD	315	-	Diesel	1	500 hrs/yr	NSPS Subpart IIII; NESHAP Subpart ZZZZ

[X] Estimated Emission Calculations Attached (include references of emission factors and manufacturer specifications per engine) and/or Stack Test Results if
Available

Code C – Usage

1. Emergency Generator
2. Participates in Emergency Load Response Program
3. Non-Emergency Generator
4. Participates in Demand Response Program(s)
5. Other (specify) _____

***Can pick more than one option**
(i.e. 1 and 2 OR 3 and 4)

****Pick only one option for a requested throughput.**

19862964

LIQUID AND/OR SOLID WASTE INCINERATORS: (NOT AN AIR EMISSIONS CONTROL DEVICE)

Company Name:	Date:	Registration Number:

Unit Ref. No.	Equipment Manufacturer, Type, and Model Number	Date of Manuf.	Date of Const.	Incin. Max. Rated Capacity (lbs/hr)	Burner Rated Capacity (Btu/hr)		Minimum Chamber Temp. (°F)		Requested Throughput to be Incinerated		Incin. Type (use Code D)	Waste Type (use Code E)	Min. Secondary Chamber Retention Time (sec)	Burn Down Cycle Time (hrs)	Federal Regulations that Apply
					Pri.	Sec.	Pri.	Sec.	Lbs/hr	Tons/yr					

☐ Estimated Emission Calculations Attached (include references of emission factors) and/or Stack Test Results if Available

Code D – Incinerator Type	Code E – Waste Type
1. Rotary Kiln 2. Mass Burn/Refuse Derived Fuel 3. Crematory 4. Single Chamber 5. Multiple Chamber 6. Other (specify) _____	1. Paper Waste 2. Hospital Waste 3. Medical Waste 4. Municipal Waste 5. Animal Waste 6. Crematory Waste (Human Remains) 7. Industrial Waste 8. Other (specify) _____

16962909 4

PROCESSING, MANUFACTURING, SURFACE COATING AND DEGREASING OPERATIONS:

Company Name: C4GT (Siemens Option)	**Date:** June 2016	**Registration Number:** TBD

Unit Ref. No.	Process or Operation Name	Equipment Manufacturer, Type, and Model Number	Date of Manuf.	Date of Const.	Max. Rated Capacity (____/hr)*	Requested Throughput*			Federal Regulations that Apply
						(____/hr)	(____/day)	(____/yr)	
CB-1	Circuit Breakers	To Be Determined	TBD	TBD	8,760 hr/yr (0.5% leak rate)	-	-	-	40 CFR Par 98 Subpart DD will apply to the 4 large circuit breakers
CWT -1	Cooling Tower	To Be Determined	TBD	TBD	348,500 gal/min	-	-	-	

[X] Estimated Emission Calculations Attached (include references of emission factors) and/or Stack Test Results if Available

*** Specify units for each operation in tons, pounds, gallons, etc., as applicable. For coating operations, the maximum rated capacity is the spray gun capacity.**

16962064

INKS, COATINGS, STAINS, AND ADHESIVES:

Company Name:	Date:	Registration Number:

Unit Ref. No.	Coating Material (specify)	Coating Use (use Code F)	Lbs VOC in Coating as Applied			VOC Control Method (use Code G)	Solids Transfer Efficiency (%)	Coating Density as Applied (lbs/gal)	Maximum Coating Usage as Applied	
			Per gal coating	Per gal coating less water & exempt solvent	Per gal solids				(Gal/hr)	(Gal/yr)

Hazardous Air Pollutants (HAPs)	Lbs HAP/gal coating as applied	Hazardous Air Pollutants (HAPs)	Lbs HAP/gal coating as applied
CAS #: HAP Name:		CAS #: HAP Name:	
CAS #: HAP Name:		CAS #: HAP Name:	
CAS #: HAP Name:		CAS #: HAP Name:	

☐ Estimated Emission Calculations Attached (include references of emission factors and MSDS or CPDS for each coating)

Code F – Coating Use			Code G – VOC Control Method
1. Large Appliance Coatings 2. Magnet Wire Coatings 3. Auto and Light Duty Truck Coatings a. Prime Coat b. Guidecoat c. Topcoat d. Final Repair e. Anti-chip f. Anti-chip extreme performance g. Anti-chip visible surface 4. Aerospace Industries Coating 5. Magnetic Tape Coating 6. Can Coatings a. Base/Overvarnish	b. Internal body/external ends c. 3-piece Can, side seam d. End seals 7. Metal Coil Coating 8. Non-Printing Paper/Fabric Coating 9. Publication Printing Inks and Coatings 10. Packaging Printing Inks and Coatings 11. Vinyl Coatings 12. Metal Furniture Coatings 13. Plastic Parts and Products Coatings 14. Miscellaneous Metal Parts Coatings a. Clear coatings b. Air-dried Coatings c. Extreme Performance Coatings	d. Other coatings 15. Flatwood Paneling Coatings a. Printed Hardwood/Particleboard b. Natural finish Hardwood/Plywood c. Class II Hardboard 16. Paper and other Webs 17. Shipbuilding and Ship Repair Coating 18. Wood Furniture Coating 19. Flexographic Ink 20. Lithographic Ink 21. Rotogravure Ink 22. Adhesives – describe:_____ _____ 23. Other:	1. Low-VOC Coatings a. High-Solids Coatings b. Low-Solvent Coatings c. Waterborne Coatings d. Powder Coatings e. UV Light/Electron Beam Cured Coatings f. Electrodeposited Waterborne Coatings 2. Increased Solids Transfer Efficiency 3. Carbon Adsorption 4. Incineration 5. Regenerative Thermal Oxidizer (RTO) 6. Enclosures - Partial _____ % or Capture Efficiency _____ % 7. Other:

NOTE: Fill out one page for each ink, coating, stain, and adhesive.

16692084

VOLATILE ORGANIC COMPOUND (VOC)/PETROLEUM LIQUID STORAGE TANKS:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Tank Type (use Code H)	Source of Tank Contents (use Code I)	Date of Manuf.	Date of Const.	Material Stored - Name and CAS # (include Reid Vapor Pressure for Gasoline)	Max. True Vapor Pressure (psia)	Density* (lbs/gal)	Max. Average Storage Temp. (°F)	Tank Diameter (feet)	Tank Capacity (gal)	Requested Throughput (gal/yr)	Federal Regulations that Apply
T-1	1b	3	TBD	TBD	ULSD 68476-34-6	0.0078	6.91 @ 60°F	65.10	5.33	3,000	87,000	
T-2	1b	3	TBD	TBD	ULSD 68476-34-6	0.0078	6.91 @ 60°F	65.10	4	400	8,800	

[X] Estimated Emission Calculations Attached (include TANKS Program printouts)

Code H – Tank Type		Code I – Source of Tank Contents
1. Fixed Roof a. Vertical Tank b. Horizontal Tank 2. Floating Roof a. Internal (welded deck) b. Internal (bolted deck) – Specify Panel or Sheet c. External (welded deck) d. External (riveted deck)	3. Variable Vapor Space 4. Pressure Tank (over 15 psig) 5. Underground Splash Loading 6. Underground Submerged Loading 7. Underground Submerged Loading, Balanced 8. Other:_____	1. Pipeline 2. Rail Car 3. Tank Truck 4. Ship or Barge 5. Process

*** Specify the ASTM temperature standard at which the density was measured.**

16962084

VOLATILE ORGANIC COMPOUND (VOC)/PETROLEUM LIQUID STORAGE TANKS (CONTINUED):

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Tank Color		Fixed Roof Only					Floating Roof Only				
	Shell	Roof	Internal Tank Height or Length (feet)	Max. Hourly Filling (gallons)	External Fixed Roof			Seal Type (use Code J)	Max. Hourly Withdrawal (gallons)	Internal Floating Roof		
					Type of Roof (cone or dome)	Cone height (ft) and slope (ft/ft)	Dome height (ft) and radius (ft)			Self Supporting?	If no, No. of Columns	If no, Column Diameter (ft)
T-1	White	N/A	18	3,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
T-2	White	N/A	5	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Code J – Seal Type (Pontoon External Only)	(Double Deck External Only)	(Internal Only)
1. Mechanical Shoe a. Primary only b. Shoe mounted secondary c. Rim mounted secondary 2. Liquid Mounted a. Primary only b. Weather shield secondary c. Rim mounted secondary 3. Vapor Mounted a. Primary only b. Weather shield secondary c. Rim mounted secondary	4. Mechanical Shoe a. Primary only b. Shoe mounted secondary c. Rim mounted secondary 5. Liquid Mounted a. Primary only b. Weather shield secondary c. Rim mounted secondary 6. Vapor Mounted a. Primary only b. Weather shield secondary c. Rim mounted secondary	7. Mechanical Shoe a. Primary only b. Shoe mounted secondary c. Rim mounted secondary 8. Liquid Mounted a. Primary only b. Rim mounted secondary 9. Vapor Mounted a. Primary only b. Rim mounted secondary

19862069

LOADING RACKS AND OIL-WATER SEPARATORS:

Company Name:	Date:	Registration Number:

Unit Ref. No.	Name of Product Loaded or Recovered	Max. Hourly Throughput (gallons)	Requested Annual Throughput (gallons)	Loading Racks Only		Oil-Water Separators Only	Federal Regulations that Apply
				Type of Loading (use Code K)	Hatch Vapor Closure on Loading Arms (use Code L)	Type of Enclosure (use Code M)	

☐ Estimated Emission Calculations Attached

Code K – Type of Loading	Code L – Hatch Vapor Closure	Code M – Type of Enclosure
1. Overhead Loading - splash fill, normal service 2. Overhead Loading - submerged fill, normal service 3. Bottom Loading - normal service 4. Overhead Loading - splash fill, balanced service 5. Overhead Loading - submerged fill, balanced service 6. Bottom Loading - Balanced service	1. None, open to air 2. Emco - Wheaton 3. OPW 4. Chiksan - LTV 5. Other:_____	1. Open 2. Partially Open 3. Floating Roof 4. Sealed Cover

16062064

FUMIGATION OPERATIONS:

Company Name:	Date:	Registration Number:

Unit Ref. No.	Object or Product to be Fumigated	Containment System	Fumigant	Max. Daily Fumigant Usage* (lbs/day or g/day)	Max. Annual Fumigant Usage* (lbs/yr or g/yr)	Estimated Number of Fumigation Events Per Year	Aeration Method	Distance from Fumigation Operation to Property or Fence Line (feet)

☐ Estimated Emission Calculations Attached

☐ Fumigation Operation is less than 300 feet to an area occupied by people

*** Specify units for each operation in pounds (methyl bromide) or grams (phosphine) per day or year.**

16092094

AIR POLLUTION CONTROL AND MONITORING EQUIPMENT:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Vent/ Stack No.	Device Ref. No.	Pollutant/Parameter	Air Pollution Control Equipment			Monitoring Instrumentation
				Manufacturer and Model No.	Type (use Code N)	Percent Efficiency (%)	Specify Type, Measured Pollutant, and Recorder Used
CT-1	1	SCR-1	NO_x	TBD	16	See Appendix B	CEMS for NO_x
CT-1	1	$OXCat_{-1}$	CO, VOC	TBD	20	See Appendix B	CEMS for CO
CT-2	2	SCR-2	NO_x	TBD	16	See Appendix B	CEMS for NO_x
CT-2	2	$OXCat_{-2}$	CO, VOC	TBD	20	See Appendix B	CEMS for CO

☐ Manufacturer Specifications Included

Code N – Type of Air Pollution Control Equipment

1. Settling Chamber
2. Cyclone
3. Multicyclone
4. Cyclone scrubber
5. Orifice scrubber
6. Mechanical scrubber
7. Venturi scrubber
   a. Fixed throat
   b. Variable throat
8. Mist eliminator
9. Filter
   a. Baghouse
   b. Other:_____
10. Electrostatic Precipitator
    a. Hot side
    b. Cold side
    c. High voltage
    d. Low voltage
    e. Single stage
    f. Two stage
    g. Other:_____
11. Catalytic Afterburner
12. Direct Flame Afterburner
13. Diesel Oxidation Catalyst (DOC)
14. Thermal Oxidizer
15. Regenerative Thermal Oxidizer (RTO)
16. Selective Catalytic Reduction (SCR)
17. Selective Non-Catalytic Reduction (SNCR)
    17. Absorber
        a. Packed tower
        b. Spray tower
        c. Tray tower
        d. Venturi
        e. Other:_____
    18. Adsorber
        a. Activated carbon
        b. Molecular sieve
        c. Activated alumina
        d. Silica gel
        e. Other:_____
    19. Condenser (specify)
    20. Other: Oxidation Catalyst

16092009

AIR POLLUTION CONTROL EQUIPMENT - SUPPLEMENTAL INFORMATION:

Company Name:	Date:	Registration Number:

Device Ref. No.	Type (use Code N)	Liquid Flow Rate (gpm) (4, 5, 6, 7, 17 ,19)	Liquid Medium (4, 5, 6, 7, 17, 19)	Cleaning Method (9, 10, 17, 18)	Number of Fields (10)	Number of Sections (9, 10)	Air to Cloth Ratio (fpm) (9)	Filter Material (9)	Inlet Temp. (°F)	Regeneration Method & Cycle Time (sec) (18)	Chamber Temp. (°F) (11, 12, 14, 15)	Retention Time (sec) (11, 12, 14, 15)	Pressure Drop (inch H_2O) (3, 4, 5, 6, 7, 9, 17)

NOTE: Numbers listed in parenthesis in the columns above represent the Control Equipment in Code N below.

Code N – Type of Air Pollution Control Equipment

1. Settling Chamber
2. Cyclone
3. Multicyclone
4. Cyclone scrubber
5. Orifice scrubber
6. Mechanical scrubber
7. Venturi scrubber
   a. Fixed throat
   b. Variable throat
8. Mist eliminator
9. Filter
   a. Baghouse
   b. Other:_____
10. Electrostatic Precipitator
    a. Hot side
    b. Cold side
    c. High voltage
    d. Low voltage
    e. Single stage
    f. Two stage
    g. Other:_____
11. Catalytic Afterburner
12. Direct Flame Afterburner
13. Diesel Oxidation Catalyst (DOC)
14. Thermal Oxidizer
15. Regenerative Thermal Oxidizer (RTO)
16. Selective Catalytic Reduction (SCR)
17. Selective Non-Catalytic Reduction (SNCR)
    a. Packed tower
    b. Spray tower
    c. Tray tower
    d. Venturi
    e. Other:_____
18. Adsorber
    a. Activated carbon
    b. Molecular sieve
    c. Activated alumina
    d. Silica gel
    e. Other:_____
19. Condenser (specify)
20. Other:_____

16962964

STACK PARAMETERS AND FUEL DATA:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Vent/ Stack No.	Vent/Stack or Exhaust Data						Fuel(s) Data				
		Vent/Stack Config. (use Code O)	Vent/Stack Height (feet)	Exit Diameter (feet)	Exit Gas Velocity (ft/sec)	Exit Gas Flow Rate (acfm)	Exit Gas Temp. (°F)	Type of Fuel	Heating Value* (Btu/____)	Max. Rated Burned/hr (specify units)	Max. Sulfur %	Max. Ash %
CT-1	1	5	140	22	61.34	1,398,927	160	Natural Gas	1,020 Btu/scf	3,809 MMBtu/hr[a]	0.4 grains / 100 scf	-
CT-2	2	5	140	22	61.34	1,398,927	160	Natural Gas	1,020 Btu/scf	3,809 MMBtu/hr[a]	0.4 grains / 100 scf	-
B-1	3	5	50	3.75	29.38	19,469	300	Natural Gas	1,020 Btu/scf	105 MMBtu/hr	0.4 grains / 100 scf	-
DPH-1	4	5	21	1.0	133.20	6,277	410	Natural Gas	1,020 Btu/scf	16 MMBtu/hr	0.4 grains / 100 scf	-
EG-1	5	5	12	1.0	148.57	7,001.7	915	ULSD	135,000 Btu/gal	104.6 gal/hr	0.0015%	-
FWP-1	6	5	10.25	0.5	118.94	1,400	961	ULSD	135,000 Btu/gal	17.5 gal/hr	0.0015%	-
CWT-1	7-24	5	52.55	32.81	25.63	1,300,394	68	-	-	-	-	-

[a] The maximum rated heat input for the turbines while firing natural gas includes duct burner firing

Code O – Vent/Stack Configuration

1. Stack discharging downward, or nearly download
2. Equivalent stack representing a combination of multiple actual stacks
3. Gooseneck stack
4. Stack discharging in a horizontal direction
5. Stack with an unobstructed opening discharge in a vertical direction
6. Vertical stack with a weather cap or similar obstruction in exhaust system

*** Specify units for each heating value in Btus per unit of fuel.**

19962084

PROPOSED PERMIT LIMITS FOR CRITERIA POLLUTANTS:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Proposed Permit Limits for Criteria Pollutants[c,d]															
	PM [a]		PM-10 [a,b]		PM 2.5 [a,b]		SO_2		NO_X		CO		VOC [a]		Pb	
	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
CT-1	24.14	105.73	24.14	105.73	24.14	105.73	4.40	19.25	29.19	141.38	17.85	141.56	17.54	64.69	1.89E-03	0.01
CT-2	24.14	105.73	24.14	105.73	24.14	105.73	4.40	19.25	29.19	141.38	17.85	141.56	17.54	64.69	1.89E-03	0.01
B-1	7.35E-01	3.22E+00	7.35E-01	3.22E+00	7.35E-01	3.22E+00	1.24E-01	5.41E-01	1.16E+00	5.06E+00	3.89E+00	1.70E+01	5.25E-01	2.30E+00	5.15E-05	2.25E-04
DPH-1	1.12E-01	4.91E-01	1.12E-01	4.91E-01	1.12E-01	4.91E-01	1.88E-02	8.24E-02	1.76E-01	7.71E-01	5.92E-01	2.59E+00	8.00E-02	3.50E-01	7.84E-06	3.43E-05
EG-1	1.20	0.30	1.20	0.30	1.20	0.30	9.72E-05	2.43E-05	26.91	6.73	20.82	5.21	11.53	2.88	2.29E-04	5.72E-05
FWP-1	0.10	0.03	0.10	0.03	0.10	0.03	6.46E-01	1.61E-01	1.46	0.36	1.81	0.45	0.63	0.16	1.98E-05	4.95E-06
CWT-1	5.45	23.88	0.033	0.143	1.20E-03	5.25E-03										
T-1													2.60E-04	1.14E-03		
T-2													2.97E-05	1.30E-04		
TOTAL:	55.88	239.38	50.46	215.64	50.43	215.50	9.59	39.28	88.09	295.68	62.81	308.37	47.85	175.07	0.004	0.020

[X] Estimated Emission Calculations Attached (totals and per Unit Ref. No.)

[a] PM, PM-10, PM 2.5, and VOC should also be split up by component and reported under the Proposed Permit Limits for Toxic Pollutants/HAPs.
[b] PM-10 and PM 2.5 includes filterable and condensable.
[c] lb/hr proposed permit limits reflect normal operations only.
[d] tons/yr proposed permit limits reflect the worst-case annual emissions which either include startup/shut down operations (with downtime) or continuous normal operation of the turbines 8,760 hours per year at full load with duct firing.

PROPOSED PERMIT LIMITS FOR TOXIC POLLUTANTS/HAPS:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Proposed Permit Limits for Toxic/HAP Pollutants*															
	HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:		HAP Name: CAS #:	
	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
See Appendix B, Table B-10																
TOTAL:																

[X] Estimated Emission Calculations Attached (totals and per Unit Ref. No.)

*** Specify the name of the toxic pollutant/HAP for each Unit Ref. No. along with the respective CAS Number. Toxic Pollutant means a pollutant on the designated list in the Form 7 Instructions document. Particulate matter and volatile organic compounds are not toxic pollutants as generic classes of substances, but individual substances within these classes may be toxic pollutants because their toxic properties or because a TLV (tm) has been established.**

16092094

PROPOSED PERMIT LIMITS FOR OTHER REGULATED POLLUTANTS:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Proposed Permit Limits for Other Regulated Pollutants*															
	Pollutant Name: Sulfuric Acid Mist		Pollutant Name:		Pollutant Name:		Pollutant Name:		Pollutant Name:		Pollutant Name:		Pollutant Name:		Pollutant Name:	
	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
CT-1	2.70	11.84														
CT-2	2.70	11.84														
B-1	9.46E-03	4.14E-02														
DPH-1	1.44E-03	6.31E-03														
EG-1	7.44E-06	1.86E-06														
FWP-1	1.09E-04	2.72E-05														
TOTAL:	5.41	23.73														

[X] Estimated Emission Calculations Attached (totals and per Unit Ref. No.)

* **Other Regulated Pollutant** include Fluorides, Sulfuric Acid Mist, Hydrogen Sulfide (H_2S), Total Reduced Sulfur (including H_2S), Reduced Sulfur Compounds (including H_2S), Municipal Waste Combustor Organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans), Municipal Waste Combustor Metals (measured as particulate matter), Municipal Waste Combustor Acid Gases (measured as the sum of SO_2 and HCl), and Municipal Solid Waste Landfill Emissions (measured as nonmethane organic compounds).

19920894

PROPOSED PERMIT LIMITS FOR GREENHOUSE GASES (GHGs) ON MASS BASIS: FOR PSD MAJOR SOURCES ONLY

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Proposed Permit Limits for GHG Pollutants on Mass Basis													
	CO_2 (Carbon Dioxide)		N_2O (Nitrous Oxide)		CH_4 (Methane)		HFCs (Hydrofluoro-carbons)		PFCs (Perfluoro-carbons)		SF_6 (Sulfur Hexafluoride)		Total GHGs	
	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
CT-1	480,147	2,103,042	0.91	3.97	9.06	39.67							480,157	2,103,086
CT-2	480,147	2,103,042	0.91	3.97	9.06	39.67							480,157	2,103,086
B-1	12,275	53,766	0.023	0.10	0.23	1.01							12,275	53,767
DPH-1	1,871	8,193	0.0034	0.015	0.035	0.155							1,871	8,193
EG-1	237	1,037	0.0023	0.01	0.0091	0.04							237	1,037
FWP-1	21	90	0.00	0.00	0.00	0.00							21	90
CB-1											0.004	0.019	0.004	0.019
FUG-1	0.023	0.1			0.55	2.4							0.57	2.5
TOTAL:	974,698	4,269,170	1.85	8.07	18.94	82.95					0.004	0.019	974,719	4,269,261

[X] Estimated Emission Calculations Attached (totals and per Unit Ref. No.)

19962064

PROPOSED PERMIT LIMITS FOR GREENHOUSE GASES (GHGs) ON CO_2 EQUIVALENT EMISSIONS (CO_2e) BASIS: FOR PSD MAJOR SOURCES ONLY

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Proposed Permit Limits for GHG Pollutants on CO_2 Equivalent Basis													
	CO_2 (Carbon Dioxide)		N_2O (Nitrous Oxide)		CH_4 (Methane)		HFCs (Hydrofluoro-carbons)		PFCs (Perfluoro-carbons)		SF_6 (Sulfur Hexafluoride)		Total GHGs	
	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
CT-1	480,147	2,103,042	269.90	1,182	226.48	992							480,643	2,105,216
CT-2	480,147	2,103,042	269.90	1,182	226.48	992							480,643	2,105,216
B-1	12,275	53,766	6.85	30	5.71	25							12,288	53,822
DPH-1	1,871	8,193	1.05	4.6	0.89	3.9							1,873	8,201
EG-1	237	1,037	0.68	3	0.23	1							238	1,040
FWP-1	21	90	0	0	0	0							21	90
CB-1											99.68	437	99.68	437
FUG-1	0.023	0.1			13.95	61.1							13.97	61.2
TOTAL:	974,698	4,269,170	548.38	2,401.6	473.74	2,075					99.68	437	975,820	4,274,083

[X] Estimated Emission Calculations Attached (totals and per Unit Ref. No.)

16692094

BASELINE ACTUAL EMISSIONS (BAE) FOR CRITERIA POLLUTANTS: **FOR PSD OR MAJOR NONATTAINMENT SOURCES ONLY**

Company Name:	Date:	Registration Number:

Unit Ref. No.	Average Actual Annual Emissions to the Atmosphere of Criteria Pollutants for the Period: _____, 20___ to _____, 20___							
	PM (Particulate Matter)	PM-10* (10 µM or smaller particulate matter)	PM 2.5* (2.5 µM or smaller particulate matter)	SO_2 (Sulfur Dioxide)	NO_X (Nitrogen Oxides)	CO (Carbon Monoxide)	VOC (Volatile Organic Compounds)	Pb (Lead)
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
TOTAL:								

☐ Background Documentation Attached (totals and per Unit Ref. No.)

*** PM-10 and PM 2.5 includes filterable and condensable.**

16692894

BASELINE ACTUAL EMISSIONS (BAE) FOR GREENHOUSE GASES (GHGs) POLLUTANT EMISSIONS ON MASS BASIS: FOR PSD MAJOR SOURCES ONLY

Company Name:	Date:	Registration Number:

Unit Ref. No.	Average Actual Annual Emissions to the Atmosphere of GHGs for the Period: _____, 20___ to _____, 20___					
	CO_2 (Carbon Dioxide)	N_2O (Nitrous Oxide)	CH_4 (Methane)	HFCs (Hydrofluorocarbons)	PFCs (Perfluorocarbons)	SF_6 (Sulfur Hexafluoride)
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
TOTAL:						

☐ Background Documentation Attached (totals and per Unit Ref. No.)

16092084

BASELINE ACTUAL EMISSIONS (BAE) FOR GREENHOUSE GASES (GHGs) POLLUTANT EMISSIONS ON CO_2 EQUIVALENT EMISSIONS (CO_2e) BASIS: FOR PSD MAJOR SOURCES ONLY

Company Name:	Date:	Registration Number:

Unit Ref. No.	Average Actual Annual Emissions to the Atmosphere of GHGs for the Period: _____, 20___ to _____, 20___					
	CO_2 (Carbon Dioxide)	N_2O (Nitrous Oxide)	CH_4 (Methane)	HFCs (Hydrofluorocarbons)	PFCs (Perfluorocarbons)	SF_6 (Sulfur Hexafluoride)
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
TOTAL:						

☐ Background Documentation Attached (totals and per Unit Ref. No.)

16962964

OPERATING PERIODS:

Company Name: C4GT (Siemens Option)	Date: June 2016	Registration Number: TBD

Unit Ref. No.	Percent Annual Use/Throughput by Season				Normal Process/Equipment Operating Schedule			Maximum Process/Equipment Operating Schedule		
	December February	March May	June August	September November	Hours per Day	Days per Week	Weeks per Year	Hours per Day	Days per Week	Weeks per Year
CT-1	25	25	25	25				24	7	52
CT-2	25	25	25	25				24	7	52
B-1	25	25	25	25				24	7	52
DPH -1	25	25	25	25				24	7	52
EG-1	25	25	25	25				24	7	52
FWP -1	25	25	25	25				24	7	52
CB-1	25	25	25	25				24	7	52
CWT -1	25	25	25	25				24	7	52

Maximum Facility Operating Schedule		
Hours per Day 24	Days per Week 7	Weeks per Year 52

160920084

APPENDIX B

VENDOR INFORMATION AND EMISSIONS CALCULATIONS

19820864

Table B-1 Annual Emissions Based on 8,760 hours of Steady-State Operation - Siemens SGT6-8000H

				Emission Rates															
Source			Operations	NO_x		CO		VOC		PM10		PM2.5		SO_2		H_2SO_4		Lead*	
			(hrs/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
CC - Natural Gas																			
CT1	With Duct Firing	8760	8,760	29.19	127.85	17.85	78.18	17.54	76.80	24.14	105.73	24.14	105.73	4.40	19.25	2.70	11.84	1.89E-03	0.01
	without Duct Firing		0	23.42	0.00	14.28	0.00	4.10	0.00	13.63	0.00	13.63	0.00	3.56	0.00	2.19	0.00	1.53E-03	0.00
CT2	With Duct Firing	8760	8,760	29.19	127.85	17.85	78.18	17.54	76.80	24.14	105.73	24.14	105.73	4.40	19.25	2.70	11.84	1.89E-03	0.01
	without Duct Firing		0	23.42	0.00	14.28	0.00	4.10	0.00	13.63	0.00	13.63	0.00	3.56	0.00	2.19	0.00	1.53E-03	0.00
Subtotal - Normal Operations					255.70		156.37		153.61		211.46		211.46		38.50		23.67		0.02
Auxiliary Boiler			8,760	1.16	5.06	3.89	17.02	0.53	2.30	0.74	3.22	0.74	3.22	1.24E-01	5.41E-01	9.46E-03	4.14E-02	5.15E-05	2.25E-04
Dew Point Heater			8,760	0.18	0.77	0.59	2.59	0.08	0.35	0.11	0.49	0.11	0.49	1.88E-02	8.24E-02	1.44E-03	6.31E-03	7.84E-06	3.43E-05
Emergency Generator			500	26.91	6.73	20.82	5.21	11.53	2.88	1.20	0.30	1.20	0.30	9.72E-05	2.43E-05	7.44E-06	1.86E-06	2.29E-04	5.72E-05
Firewater pump			500	1.46	0.36	1.81	0.45	0.63	0.16	0.10	0.03	0.10	0.03	6.46E-01	1.61E-01	1.09E-04	2.72E-05	1.98E-05	4.96E-06
Cooling Tower			8,760							0.03	0.14	0.00	0.01						
Oil Storage Tanks (2 Tanks)			8,760					2.89E-04	1.27E-03										
Subtotal - Auxiliary Sources					12.92		25.27		5.69		4.18		4.04		0.78		0.05		3.22E-04
Facility Total					268.63		181.63		159.30		215.64		215.50		39.29		23.72		0.02
PSD Major Source Threshold					100		100		100		100		100		100				0.60
Major Source					Yes		Yes		Yes		Yes		Yes		No				No
PSD Significant Emission Rate					40		100		40		15		10		40		7.00		0.60
Subject to PSD					Yes		Yes		Yes		Yes		Yes		No		Yes		No

* Lead emmission rates are based on the worst case firing rate and the AP-42 emission factor of 0.0005 lb/MMcf for Natural Gas

** ECT Calculated

1609200094

16092094

Table B-3 Startup and Shutdown Emissions - Siemens SGT6-8000H

SCC6-8000H with Drum+ HRSG on Natural Gas @ 59°F
Total Estimated Startup & Shutdown Emissions and Fuel Use

Proposed C4GT Startup/Shutdown

Mode	Time (min)	Total Pounds Per Event					
		NOx	CO	VOC	PM	CO_2	Fuel Use
"Cold" Startup (GT Ignition to Emissions Compliance @ 70% GT Load)	55	94.5	433.6	36.1	6.2	138217.4	48060.8
"Warm" Startup (GT Ignition to Emissions Compliance @ 100% GT Load)	55	116.2	396.8	34.0	7.5	174970.2	60866.1
"Hot" Startup (GT Ignition to Emissions Compliance @ 100% GT Load)	50	97.9	335.8	33.6	6.3	140641.6	48916.4
Shutdown (50% GT Load to Fuel Cut Off)	38	50.8	184.0	55.3	3.0	46764.8	16221.9

Notes:
1) added 20 minutes to each startup and shutdown duration provided by Siemens. The Siemens numbers represent an ideal scenario and do not account for typical real world events like cycle chemistry holds and SCR ammonia tuning to reach steady state stack emissions.
2) added 15% margin to the SU/SD lb/event emissions provided by Siemens

Siemens Provided Data

Mode	Time (min)	Total Pounds Per Event					
		NOx	CO	VOC	PM	CO_2	Fuel Use
"Cold" Startup (GT Ignition to Emissions Compliance @ 70% GT Load)	35	82.2	377	31.4	5.4	120,189	41,792
"Warm" Startup (GT Ignition to Emissions Compliance @ 100% GT Load)	35	101	345	29.6	6.5	152,148	52,927
"Hot" Startup (GT Ignition to Emissions Compliance @ 100% GT Load)	30	85.1	292	29.2	5.5	122,297	42,536
Shutdown (50% GT Load to Fuel Cut Off)	18	44.2	160	48.1	2.6	40,665	14,106

16982094

Table B-4 Annual Emissions with Startups and Shutdowns - Siemens SGT6-8000H

				Emission Rates															
Source			Operations	NO_x		CO		VOC		PM10		PM2.5		SO_2		H_2SO_4		Lead*	
			(hrs/yr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
CC - Natural Gas																			
CT1	With Duct Firing	8760	8,389	29.19	122.44	17.85	74.87	17.54	73.55	24.14	101.26	24.14	101.26	4.40	18.44	2.70	11.34	1.89E-03	0.01
	without Duct Firing		0	23.42	0.00	14.28	0.00	4.10	0.00	13.63	0.00	13.63	0.00	3.56	0.00	2.19	0.00	1.53E-03	0.00
CT2	With Duct Firing	8760	8,389	29.19	122.44	17.85	74.87	17.54	73.55	24.14	101.26	24.14	101.26	4.40	18.44	2.70	11.34	1.89E-03	0.01
	without Duct Firing		0	23.42	0.00	14.28	0.00	4.10	0.00	13.63	0.00	13.63	0.00	3.56	0.00	2.19	0.00	1.53E-03	0.00
Subtotal - Normal Operations					244.88		149.75		147.10		202.51		202.51		36.87		22.67		0.02
	events/yr	hrs/event	hrs/yr	(lb/event)	(tpy)	(lb/event)	(tpy)	(lb/event)	(tpy)	(lb/event)	(tpy)	(lb/event)	(tpy)	(lb/event)**	(tpy)	(lb/event)**	(tpy)	(lb/event)	(tpy)
CT1																			
Cold	10	0.92	9	94.53	0.47	433.55	2.17	36.11	0.18	6.21	0.03	6.21	0.03	1.28	0.01	0.78	0.00		0.00
Warm	40	0.92	37	116.15	2.32	396.75	7.94	34.04	0.68	7.48	0.15	7.48	0.15	1.62	0.03	0.99	0.02		0.00
Hot	200	0.83	167	97.87	9.79	335.80	33.58	33.58	3.36	6.33	0.63	6.33	0.63	1.30	0.13	0.80	0.08		0.00
Shutdown - NG	250	0.63	158	50.83	6.35	184.00	23.00	55.32	6.91	2.99	0.37	2.99	0.37	0.43	0.05	0.26	0.03		0.00
CT1																			
Cold	10	0.92	9	94.53	0.47	433.55	2.17	36.11	0.18	6.21	0.03	6.21	0.03	1.28	0.01	0.78	0.00		0.00
Warm	40	0.92	37	116.15	2.32	396.75	7.94	34.04	0.68	7.48	0.15	7.48	0.15	1.62	0.03	0.99	0.02		0.00
Hot	200	0.83	167	97.87	9.79	335.80	33.58	33.58	3.36	6.33	0.63	6.33	0.63	1.30	0.13	0.80	0.08		0.00
Shutdown - NG	250	0.63	158	50.83	6.35	184.00	23.00	55.32	6.91	2.99	0.37	2.99	0.37	0.43	0.05	0.26	0.03		0.00
Subtotal - Startups/Shutdowns					37.87		133.37		22.27		2.37		2.37		0.45		0.27		0.00
Auxiliary Boiler			8,760	1.16	5.06	3.89	17.02	0.53	2.30	0.74	3.22	0.74	3.22	1.24E-01	5.41E-01	9.46E-03	4.14E-02	5.15E-05	2.25E-04
Dew Point Heater			8,760	0.18	0.77	0.59	2.59	0.08	0.35	0.11	0.49	0.11	0.49	1.88E-02	8.24E-02	1.44E-03	6.31E-03	7.84E-06	3.43E-05
Emergency Generator			500	26.91	6.73	20.82	5.21	11.53	2.88	1.20	0.30	1.20	0.30	9.72E-05	2.43E-05	7.44E-06	1.86E-06	2.29E-04	5.72E-05
Firewater pump			500	1.46	0.36	1.81	0.45	0.63	0.16	0.10	0.03	0.10	0.03	6.46E-01	1.61E-01	1.09E-04	2.72E-05	1.98E-05	4.96E-06
Cooling Tower			8,760							0.03	0.14	0.00	0.01						
Oil Storage Tank (2 Tanks)			8,760					2.89E-04	1.27E-03										
Subtotal - Auxiliary Sources					12.92		25.27		5.69		4.18		4.04		0.78		0.05		3.22E-04
Facility Total					295.67		308.38		175.06		209.06		208.93		38.10		22.99		0.02
PSD Major Source Threshold					100		100		100		100		100		100				0.60
Major Source					Yes		Yes		Yes		Yes		Yes		No				No
PSD Significant Emission Rate					40		100		40		15		10		40		7.00		0.60
Subject to PSD					Yes		Yes		Yes		Yes		Yes		No		Yes		No

* Lead emmission rates are based on the worst case firing rate and the AP-42 emission factor of 0.0005 lb/MMcf for Natural Gas

** ECT Calculated

Table B-5 Auxiliary Boiler Emissions - Siemens SGT6-8000H

POTENTIAL EMISSION INVENTORY WORKSHEET

EMISSION SOURCE TYPE

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Auxilairy Boiler
Emission Control Method(s)/ID No.(s):	None
Emission Point Description:	105 MMBTU/hr heat input

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (lb/MMBtu) x Heat Input (MMBtu/hr)

Emission (ton/yr) = Emission Factor (lb/hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

INPUT DATA AND EMISSIONS CALCULATIONS

Permitted Hours:	8,760	hrs/yr
Testing Hours:		hrs/yr
Heat Input:	105.00	MMBtu/hr
Heating value	1,020.00	Btu/scf

Pollutant	Emission Factor lb/mmBtu	Potential Emission Rates Per Unit (lb/hr)	Per Unit (tpy)				
NO_x	1.10E-02	1.16E+00	5.06E+00				
CO	3.70E-02	3.89E+00	1.70E+01				
VOC	5.00E-03	5.25E-01	2.30E+00				
SO_2	1.18E-03	1.24E-01	5.41E-01				
PM	7.00E-03	7.35E-01	3.22E+00				
PM_{10}	7.00E-03	7.35E-01	3.22E+00				
$PM_{2.5}$	7.00E-03	7.35E-01	3.22E+00				
H2SO4	9.01E-05	9.46E-03	4.14E-02				
Lead	4.90E-07	5.15E-05	2.25E-04				

SOURCES OF INPUT DATA

Parameter	Data Source
NOx, CO, VOC, PM/PM10/PM2.5	Vendor/B&V, 2016
SO2	AP42: Section 1.4 Table 1.4-2; SO2 emission factor based 0.4 gr/100 scf
H2SO4	Based on 5% conversion of SO2 to SO3 and 100% conversion of SO3 to H2SO4
Lead	AP-42 Section 1.4

NOTES AND OBSERVATIONS

Table B-6 Dew Point Heater Emissions - Siemens SGT6-8000H

POTENTIAL EMISSION INVENTORY WORKSHEET

EMISSION SOURCE TYPE

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Dew Point Heater
Emission Control Method(s)/ID No.(s):	None
Emission Point Description:	16 MMBTU/hr heat input

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (lb/MMBtu) x Heat Input (MMBtu/hr)

Emission (ton/yr) = Emission Factor (lb/hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

INPUT DATA AND EMISSIONS CALCULATIONS

Permitted Hours:	8,760	hrs/yr
Testing Hours:		hrs/yr
Heat Input:	16.00	MMBtu/hr
Heating value	1,020	Btu/scf

Pollutant	Emission Factor lb/mmBtu	Potential Emission Rates Per Unit (lb/hr)	Per Unit (tpy)				
NO_x	1.10E-02	1.76E-01	7.71E-01				
CO	3.70E-02	5.92E-01	2.59E+00				
VOC	5.00E-03	8.00E-02	3.50E-01				
SO_2	1.18E-03	1.88E-02	8.24E-02				
PM	7.00E-03	1.12E-01	4.91E-01				
PM_{10}	7.00E-03	1.12E-01	4.91E-01				
$PM_{2.5}$	7.00E-03	1.12E-01	4.91E-01				
H2SO4	9.01E-05	1.44E-03	6.31E-03				
Lead	4.90E-07	7.84E-06	3.43E-05				

SOURCES OF INPUT DATA

Parameter	Data Source
NOx, CO, VOC, PM/PM10/PM2.5	Vendor Data, 2016
SO2	AP42: Section 1.4 Table 1.4-2; SO2 emission factor adjusted from 0.2 to 0.4 gr/100 scf
H2SO4	Based on 5% conversion of SO2 to SO3 and 100% conversion of SO3 to H2SO4
Lead	AP-42 Section 1.4

NOTES AND OBSERVATIONS

16992094

Table B-7 Diesel Emergency Generator Emissions - Siemens SGT6-8000H

POTENTIAL EMISSION INVENTORY WORKSHEET

EMISSION SOURCE TYPE

INTERNAL COMBUSTION ENGINES > 600 HP

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Emergency Generator	
Emission Control Method(s)/ID No.(s):	None	
Emission Point Description:	3633 -HP Diesel Engine	2500 kW

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (g/hp-hr) x Engine power rating (BHP)

Emission (ton/yr) = Emission Factor (lb/hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

INPUT DATA AND EMISSIONS CALCULATIONS

Permitted Hours:	500	hrs/yr	Fuel Flow:	173.5 gal/hr
Testing Hours:	100	hrs/yr		
No. of Engines:	1		Diesel Sulfur Content:	0.0015 weight %
Heat Input:	25.43	MMBtu/hr (HHV)	Diesel Heat Content:	7,000 Btu/hp-hr

Pollutant	Emission Factor		Potential Emission Rates		Pollutant	Emission Factor	Potential Emission Rates	
	g/kW-hr	g/-hp-hr	Per Unit (lb/hr)	Per Unit (tpy)		(lb/MMBtu)	Per Unit (lb/hr)	Per Unit (tpy)
NO_x		3.36	26.91	6.73	1.3-Butadiene	0.00E+00	0.00E+00	0.00E+00
CO		2.60	20.82	5.21	Acetaldehyde	2.52E-05	6.41E-04	1.60E-04
VOC		1.44	11.53	2.88	Acrolein	7.88E-06	2.00E-04	5.01E-05
SO_2		0.00001	9.72E-05	2.43E-05	Benzene	7.76E-04	1.97E-02	4.93E-03
PM		0.15	1.20	0.30	Formaldehyde	7.89E-05	2.01E-03	5.02E-04
PM_{10}		0.15	1.20	0.30	Naphthalene	1.30E-04	3.31E-03	8.27E-04
$PM_{2.5}$		0.15	1.20	0.30	PAH	2.12E-04	5.39E-03	1.35E-03
H_2SO_4		9.29E-07	7.44E-06	1.86E-06	Propylene	2.79E-03	7.10E-02	1.77E-02
Lead		9.00E-06	2.29E-04	5.72E-05	Toluene	2.81E-04	7.15E-03	1.79E-03
Highest HAP			7.10E-02	1.77E-02	Xylenes	1.93E-04	4.91E-03	1.23E-03
Total HAPs			1.15E-01	2.86E-02				

SOURCES OF INPUT DATA

Parameter	Data Source
NOx, CO, VOC, PM/PM10/PM2.5	40 CFR 60, Subpart IIII. NOx and VOC is a combined rate of 4.8 g/hp-hr. Assumed 70% NOx and 30% VOC
SO2	AP42: Section 3.4 Table 3.4-1
H2SO4	Based on 5% conversion of SO2 to SO3 and 100% conversion of SO3 to H2SO4
Lead	AP-42 Table 1.3-10. Unit is lb/MMBtu
HAPS	AP42: Section 3.4 Table 3.4-3
Diesel Heat Content	AP-42 Section 3.3, footnote a to table 3.3-1

NOTES AND OBSERVATIONS

19692094

Table B-8 Diesel Emergency Fire-Water Pump Emissions - Siemens SGT6-8000H

POTENTIAL EMISSION INVENTORY WORKSHEET

EMISSION SOURCE TYPE

INTERNAL COMBUSTION ENGINES < 600 HP

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fire Water Pump
Emission Control Method(s)/ID No.(s):	None
Emission Point Description:	315 -HP Diesel Engine

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (g/hp-hr) x Engine power rating (BHP)

Emission (ton/yr) = Emission Factor (lb/hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

INPUT DATA AND EMISSIONS CALCULATIONS

Permitted Hours:	500	hrs/yr		Fuel Flow:	gal/hr
Testing Hours:	100	hrs/yr			
No. of Engines:	1			Diesel Sulfur Content:	0.0015 weight %
Heat Input:	2.21	MMBtu/hr (HHV)		Diesel Heat Content:	7,000 Btu/hp-hr

Pollutant	Emission Factor		Potential Emission Rates		Pollutant	Emission Factor	Potential Emission Rates	
	g/hp-hr	lb/-hp-hr	Per Unit (lb/hr)	Per Unit (tpy)		(lb/MMBtu)	Per Unit (lb/hr)	Per Unit (tpy)
NO_x	2.10		1.46	0.365	1.3-Butadiene	3.91E-05	8.62E-05	2.16E-05
CO	2.60		1.81	0.451	Acetaldehyde	7.67E-04	1.69E-03	4.23E-04
VOC	0.90		0.63	0.156	Acrolein	9.25E-05	2.04E-04	5.10E-05
SO_2		0.00205	6.46E-01	1.61E-01	Benzene	9.33E-04	2.06E-03	5.14E-04
PM	0.15		0.10	0.026	Formaldehyde	1.18E-03	2.60E-03	6.50E-04
PM_{10}	0.15		0.10	0.026	Naphthalene	8.48E-05	1.87E-04	4.67E-05
$PM_{2.5}$	0.15		0.10	0.026	PAH	1.68E-04	3.70E-04	9.26E-05
H_2SO_4		1.57E-04	1.09E-04	2.72E-05	Propylene	2.58E-03	5.69E-03	1.42E-03
Lead	9.00E-06		1.98E-05	4.96E-06	Toluene	4.09E-04	9.02E-04	2.25E-04
Highest HAP			5.69E-03	1.42E-03	Xylenes	2.85E-04	6.28E-04	1.57E-04
Total HAPs			1.44E-02	3.61E-03				

SOURCES OF INPUT DATA

Parameter	Data Source
NOx, CO, VOC, PM/PM10/PM2.5	40 CFR 60, Subpart IIII. NOx and VOC is a combined rate of 3.0 g/hp-hr. Assumed 70% NOx and 30% VOC
SO2	AP42: Section 3.3 Table 3.3-1
H2SO4	Based on 5% conversion of SO2 to SO3 and 100% conversion of SO3 to H2SO4
Lead	AP-42 Table 1.3-10
HAPS	AP42: Section 3.3 Table 3.3-2
Diesel Heat Content	AP-42 Section 3.3, footnote a to table 3.3-1

NOTES AND OBSERVATIONS

16982094

Table B-9 Cooling Tower Emissions - Siemens SGT6-8000H

Emissions Data Summary

C4GT
Cooling Tower

Water Circulation Rate (a), 18 cells (a)	(GPM)	348,500
Total Liquid Drift (b)	(%)	0.0005
Expected TDS/TSS of Circulated Water (c)	(ppmw)	6,250
Emission Rate - Total Cooling Tower		
Total Suspended Particulate (d)	(Lbs/Hr)	5.45
	(Tons/Yr)	23.88
PM-10 (e)	(Lbs/Hr)	0.033
	(Tons/Yr)	0.143
PM-2.5 (f)	(Lbs/Hr)	1.20E-03
	(Tons/Yr)	5.25E-03
Emission Rate - Per Vent (g)		
Total Suspended Particulate	(Lbs/Hr)	3.03E-01
	(Tons/Yr)	1.33E+00
PM-10	(Lbs/Hr)	1.82E-03
	(Tons/Yr)	7.96E-03
PM-2.5	(Lbs/Hr)	6.66E-05
	(Tons/Yr)	2.92E-04

Notes:
(a) Design Water Circulation Rate, Gallons/Minute (gpm)
(b) Design Total Liquid Drift, Percent (%)
(c) Assumed a TDS concentration of 1250 ppm with 5 cycles of concentration
(d) Based on USEPA AP-42 Section 13.4 Wet Cooling Towers, Table 13.4-1. Modified to Cooling Tower Design
(e) PM-10 based on 0.6% of TSP. Assumed that PM-10 generated by water droplets with a diameter of less than 100 microns which account for 0.6% of emitted from typical cooling tower.
(f) PM-2.5 based on 0.022% of TSP. Assumed that PM-2.5 generated by water droplets with a diameter of less than 25 microns which account for 0.022% of emitted from typical cooling tower.
(g) Cooling tower has eighteen cells. Each emits 1/18 of total tower emissions.

Equations:
Lbs/Hr = (Water Circulation Rate,GPM)*60*(Drift,%) / 100 * (8.3453 Lbs/Gal) * (TDS, Lbs PM/1,000,000 Lbs Water)
Tons/Yr = (Lbs/Hr) * (8,760 Hrs/Yr) / (2,000 Lbs/Ton)

Conversion Factors:
1 ton = 2000 lbs

16092069

Table B-9 Cooling Tower Emissions - Siemens SGT6-8000H

CALCULATIONS AND COMPUTATIONS

C4GT
Cooling Tower

Calculated Particulate Size for Typical Cooling Tower
Drop Size Distribution

Typical Cooling Tower Droplet Size		Particle Size
Mean	Distribution	
(D_d, Microns)	(% Mass Smaller Than)	(D_p, Microns)
15	0.000	2.193013304
25	0.022	3.655022173
35	0.026	5.117031042
45	0.036	6.579039911
55	0.059	8.04104878
65	0.1	9.503057649
80	0.6	11.69607095
100	2.5	14.62008869
120	7.7	17.54410643
140	14.6	20.46812417
165	25.3	24.12314634
195	33.9	28.50917295
225	48.0	32.89519955
255	59.0	37.28122616
285	68.1	41.66725277
325	77.8	47.51528825
375	89.9	54.82533259
425	93.1	62.13537694
475	96.2	69.44542128
550	99.4	80.4104878
650	100.0	95.03057649

$D_p = D_d * [(p_d/p_p) * (Solids) / 1{,}000{,}000)]$ ^1/3

where:

pd =	1.04	gm/cm^3
pp =	2.08	gm/cm^3
Solids =	6,250	ppm
C=	1	

Table B-10 Hazardous Air Pollutant Emissions - Siemens SGT6-8000H

Pollutant	Turbine		Duct Burner		Dew Point Heater		Aux Boiler		Emergency Generator		FWP		Facility Total	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1,3-Butadiene	2.68E-03	1.17E-02									8.62E-05	2.16E-05	2.77E-03	1.18E-02
2-Methylnaphthalene			4.66E-05	2.04E-04	3.76E-07	1.65E-06	2.47E-06	1.08E-05					4.95E-05	2.17E-04
3-Methylchlorantbrene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
7,12-Dimethylbenz(a)anthracene			3.11E-05	1.36E-04	2.51E-07	1.10E-06	1.65E-06	7.21E-06					3.30E-05	1.44E-04
Acenaphthene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Acenaphthylene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Acetaldehyde	2.49E-01	1.09E+00							6.41E-04	1.60E-04	1.69E-03	4.23E-04	2.52E-01	1.09E+00
Acrolein	3.99E-02	1.75E-01							2.00E-04	5.01E-05	2.04E-04	5.10E-05	4.03E-02	1.75E-01
Anthracene			4.66E-06	2.04E-05	3.76E-08	1.65E-07	2.47E-07	1.08E-06					4.95E-06	2.17E-05
Benz(a)anthracene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Benzene	7.48E-02	3.28E-01	4.08E-03	1.79E-02	3.29E-05	1.44E-04	2.16E-04	9.47E-04	1.97E-02	4.93E-03	2.06E-03	5.14E-04	1.01E-01	3.52E-01
Benzo(a)pyrene			2.33E-06	1.02E-05	1.88E-08	8.24E-08	1.24E-07	5.41E-07					2.47E-06	1.08E-05
Benzo(b)fluoranthene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Benzo(g,h,i)perylene			2.33E-06	1.02E-05	1.88E-08	8.24E-08	1.24E-07	5.41E-07					2.47E-06	1.08E-05
Benzo(k)fluoranthene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Chrysene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Dibenzo(a,h)anthracene			2.33E-06	1.02E-05	1.88E-08	8.24E-08	1.24E-07	5.41E-07					2.47E-06	1.08E-05
Dichlorobenzene			2.33E-03	1.02E-02	1.88E-05	8.24E-05	1.24E-04	5.41E-04					2.47E-03	1.08E-02
Ethylbenzene	1.99E-01	8.74E-01											1.99E-01	8.74E-01
Fluoranthene			5.83E-06	2.55E-05	4.71E-08	2.06E-07	3.09E-07	1.35E-06					6.18E-06	2.71E-05
Fluorene			5.44E-06	2.38E-05	4.39E-08	1.92E-07	2.88E-07	1.26E-06					5.77E-06	2.53E-05
Formaldehyde	1.51E+00	6.60E+00	1.46E-01	6.38E-01	1.18E-03	5.15E-03	7.72E-03	3.38E-02	2.01E-03	5.02E-04	2.60E-03	6.50E-04	1.67E+00	7.28E+00
Hexane			2.53E-03	1.11E-02	7.22E-05	3.16E-04	1.34E-04	5.86E-04					2.73E-03	1.20E-02
Indeno(1,2,3-cd)pyrene			3.50E-06	1.53E-05	2.82E-08	1.24E-07	1.85E-07	8.12E-07					3.71E-06	1.62E-05
Naphthalene	8.10E-03	3.55E-02	1.18E-03	5.19E-03	9.57E-06	4.19E-05	6.28E-05	2.75E-04	3.31E-03	8.27E-04	1.87E-04	4.67E-05	1.29E-02	4.19E-02
PAH	1.37E-02	6.01E-02							5.39E-03	1.35E-03	3.70E-04	9.26E-05	1.95E-02	6.15E-02
Phenanathrene			3.30E-05	1.45E-04	2.67E-07	1.17E-06	1.75E-06	7.67E-06					3.50E-05	1.53E-04
Propylene Oxide	1.81E-01	7.92E-01							7.10E-02	1.77E-02	5.69E-03	1.42E-03	2.57E-01	8.11E-01
Pyrene			9.71E-06	4.25E-05	7.84E-08	3.44E-07	5.15E-07	2.25E-06					1.03E-05	4.51E-05
Toluene	8.10E-01	3.55E+00	6.60E-03	2.89E-02	5.33E-05	2.34E-04	3.50E-04	1.53E-03	7.15E-03	1.79E-03	9.02E-04	2.25E-04	8.25E-01	3.58E+00
Xylenes	3.99E-01	1.75E+00							4.91E-03	1.23E-03	6.28E-04	1.57E-04	4.04E-01	1.75E+00
Arsenic			3.88E-04	1.70E-03	3.14E-06	1.37E-05	2.06E-05	9.02E-05					4.12E-04	1.81E-03
Beryllium			2.33E-05	1.02E-04	1.88E-07	8.24E-07	1.24E-06	5.41E-06					2.47E-05	1.08E-04
Cadmium			2.14E-03	9.36E-03	1.73E-05	7.56E-05	1.13E-04	4.96E-04					2.27E-03	9.93E-03
Chromium			2.72E-03	1.19E-02	2.20E-05	9.62E-05	1.44E-04	6.31E-04					2.89E-03	1.26E-02
Cobalt			1.63E-04	7.15E-04	1.32E-06	5.77E-06	8.65E-06	3.79E-05					1.73E-04	7.58E-04
Lead	3.06E-03	1.34E-02	9.71E-04	4.25E-03	7.84E-06	3.44E-05	5.15E-05	2.25E-04	2.29E-04	5.72E-05	1.98E-05	4.96E-06	4.33E-03	1.80E-02
Manganese			7.38E-04	3.23E-03	5.96E-06	2.61E-05	3.91E-05	1.71E-04					7.83E-04	3.43E-03
Mercury			5.05E-04	2.21E-03	4.08E-06	1.79E-05	2.68E-05	1.17E-04					5.36E-04	2.35E-03
Nickel			4.08E-03	1.79E-02	3.29E-05	1.44E-04	2.16E-04	9.47E-04					4.33E-03	1.90E-02
Selenium			4.66E-05	2.04E-04	3.76E-07	1.65E-06	2.47E-06	1.08E-05					4.95E-05	2.17E-04
Maximum HAP	1.51E+00	6.60E+00	1.46E-01	6.38E-01	1.18E-03	5.15E-03	7.72E-03	3.38E-02	7.10E-02	1.77E-02	5.69E-03	1.42E-03		7.28
Facility Total	3.49E+00	1.53E+01	1.74E-01	7.64E-01	1.46E-03	6.39E-03	9.24E-03	4.05E-02	1.15E-01	2.86E-02	1.44E-02	3.61E-03		16.12

16062009 64

16092009 4

Table B-11 Turbine Hazardous Air Pollutant Emissions - Siemens SGT6-8000H

Summary of HAP Emission Rates -Combustion Turbine

NG-Firing: Maximum CT HAP Emissions

Parameter	Units	
Maximum Heat Input (HHV):	MMBtu/hr	3,116
Maximum Annual Hours:	hrs/yr	8,760

Pollutant	CT Emission Factor[1] (lb/MMBtu)	CT1 Total (lb/hr)	CT2 Total (lb/hr)	CT Total TPY
1,3-Butadiene	4.3E-07	1.34E-03	1.34E-03	1.17E-02
Acetaldehyde	4.0E-05	1.25E-01	1.25E-01	1.09E+00
Acrolein	6.4E-06	1.99E-02	1.99E-02	1.75E-01
Benzene	1.2E-05	3.74E-02	3.74E-02	3.28E-01
Ethylbenzene	3.2E-05	9.97E-02	9.97E-02	8.74E-01
Formaldehyde[2]	2.4E-04	7.53E-01	7.53E-01	6.60E+00
Naphthalene	1.3E-06	4.05E-03	4.05E-03	3.55E-02
Polycyclic Aromatic Hydrocarbons (PAHs)	2.2E-06	6.86E-03	6.86E-03	6.01E-02
Propylene Oxide	2.9E-05	9.04E-02	9.04E-02	7.92E-01
Toluene	1.3E-04	4.05E-01	4.05E-01	3.55E+00
Xylene	6.4E-05	1.99E-01	1.99E-01	1.75E+00
Lead	4.9E-07	1.53E-03	1.53E-03	1.34E-02
Max. individual HAP				6.60
Total HAPs				15.28

Notes:
CT = Combustion Turbine

[1] - EPA AP-42, Table 3.1-3, April 2000.

[2] CT vendor emissions factor- based on meeting 100 ppbvd @ 15% O2 (ratioed up from 91 ppbvd)

Table B-12 Duct Burner Hazardous Air Pollutant Emissions - Siemens SGT6-8000H

	Heat Input:	991	MMBtu/hr				
	Permitted Hours:	8,760	hrs/yr				

CAS No.	Pollutant	Emission Factor[a] (lb/10^6 scf)	Emission Factor (lb/MMBtu)	Emission Factor Rating	DB1 Emission Rate (lb/hr)	DB1 Emission Rate (lb/hr)	Emission Rate (tpy)
91-57-6	2-Methylnaphthalene	2.40E-05	2.35E-08	D	2.33E-05	2.33E-05	2.04E-04
56-49-5	3-Methylchloranthrene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
	7,12-Dimethylbenz(a)anthracene	1.60E-05	1.57E-08	E	1.55E-05	1.55E-05	1.36E-04
83-32-9	Acenaphthene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
203-96-8	Acenaphthylene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
120-12-7	Anthracene	2.40E-06	2.35E-09	E	2.33E-06	2.33E-06	2.04E-05
56-55-3	Benz(a)anthracene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
71-43-2	Benzene	2.10E-03	2.06E-06	B	2.04E-03	2.04E-03	1.79E-02
50-32-8	Benzo(a)pyrene	1.20E-06	1.18E-09	E	1.17E-06	1.17E-06	1.02E-05
205-99-2	Benzo(b)fluoranthene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
191-24-2	Benzo(g,h,i)perylene	1.20E-06	1.18E-09	E	1.17E-06	1.17E-06	1.02E-05
207-08-9	Benzo(k)fluoranthene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
218-01-9	Chrysene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	1.18E-09	E	1.17E-06	1.17E-06	1.02E-05
25321-22-6	Dichlorobenzene	1.20E-03	1.18E-06	E	1.17E-03	1.17E-03	1.02E-02
206-44-0	Fluoranthene	3.00E-06	2.94E-09	E	2.91E-06	2.91E-06	2.55E-05
86-73-7	Fluorene	2.80E-06	2.75E-09	E	2.72E-06	2.72E-06	2.38E-05
50-00-0	Formaldehyde	7.50E-02	7.35E-05	B	7.28E-02	7.28E-02	6.38E-01
110-54-3	Hexane[b]	1.30E-03	1.27E-06	E	1.26E-03	1.26E-03	1.11E-02
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	1.76E-09	E	1.75E-06	1.75E-06	1.53E-05
91-20-3	Naphthalene	6.10E-04	5.98E-07	E	5.92E-04	5.92E-04	5.19E-03
85-01-8	Phenanathrene	1.70E-05	1.67E-08	D	1.65E-05	1.65E-05	1.45E-04
129-00-0	Pyrene	5.00E-06	4.90E-09	E	4.86E-06	4.86E-06	4.25E-05
108-88-3	Toluene	3.40E-03	3.33E-06	C	3.30E-03	3.30E-03	2.89E-02
7440-38-2	Arsenic	2.00E-04	1.96E-07	E	1.94E-04	1.94E-04	1.70E-03
7440-41-7	Beryllium	1.20E-05	1.18E-08	E	1.17E-05	1.17E-05	1.02E-04
7440-43-9	Cadmium	1.10E-03	1.08E-06	D	1.07E-03	1.07E-03	9.36E-03
7440-47-3	Chromium	1.40E-03	1.37E-06	D	1.36E-03	1.36E-03	1.19E-02
7440-48-4	Cobalt	8.40E-05	8.24E-08	D	8.16E-05	8.16E-05	7.15E-04
7439-92-1	Lead	5.00E-04	4.90E-07		4.86E-04	4.86E-04	4.25E-03
7439-96-5	Manganese	3.80E-04	3.73E-07	D	3.69E-04	3.69E-04	3.23E-03
7439-97-6	Mercury	2.60E-04	2.55E-07	D	2.53E-04	2.53E-04	2.21E-03
7440-02-0	Nickel	2.10E-03	2.06E-06	C	2.04E-03	2.04E-03	1.79E-02
7782-49-2	Selenium	2.40E-05	2.35E-08	E	2.33E-05	2.33E-05	2.04E-04
Maximum HAP							0.64
Total							0.76

a) EPA AP-42, Tables 1.4-3 and 1.4-4, July 1998

b) Emission factor for hexane fo matural gas fired external combustion equipment presented in AP-42 Section 1.4 are are not sonsistent with other organic HAPs present in Table 1.4-3. Therefore, hexane Efs for natural gas fired external combustion equipment are baded on B 2588 combustion emission factors, Ventura County APCD

Table B-13 Dew Point Heater Hazardous Air Pollutant Emissions - Siemens SGT6-8000H

	Heat Input:	16.00	MMBtu/hr			
	Permitted Hours:	8,760	hrs/yr			

CAS No.	Pollutant	Emission Factor[a] (lb/10^6 scf)	Emission Factor (lb/MMBtu)	Emission Factor Rating	Emission Rate (lb/hr)	Emission Rate (tpy)
91-57-6	2-Methylnaphthalene	2.40E-05	2.35E-08	D	3.76E-07	1.65E-06
56-49-5	3-Methylchloranthrene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
	7,12-Dimethylbenz(a)anthracene	1.60E-05	1.57E-08	E	2.51E-07	1.10E-06
83-32-9	Acenaphthene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
203-96-8	Acenaphthylene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
120-12-7	Anthracene	2.40E-06	2.35E-09	E	3.76E-08	1.65E-07
56-55-3	Benz(a)anthracene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
71-43-2	Benzene	2.10E-03	2.06E-06	B	3.29E-05	1.44E-04
50-32-8	Benzo(a)pyrene	1.20E-06	1.18E-09	E	1.88E-08	8.24E-08
205-99-2	Benzo(b)fluoranthene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
191-24-2	Benzo(g,h,i)perylene	1.20E-06	1.18E-09	E	1.88E-08	8.24E-08
207-08-9	Benzo(k)fluoranthene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
218-01-9	Chrysene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	1.18E-09	E	1.88E-08	8.24E-08
25321-22-6	Dichlorobenzene	1.20E-03	1.18E-06	E	1.88E-05	8.24E-05
206-44-0	Fluoranthene	3.00E-06	2.94E-09	E	4.71E-08	2.06E-07
86-73-7	Fluorene	2.80E-06	2.75E-09	E	4.39E-08	1.92E-07
50-00-0	Formaldehyde	7.50E-02	7.35E-05	B	1.18E-03	5.15E-03
110-54-3	Hexane[b]	4.60E-03	4.51E-06	E	7.22E-05	3.16E-04
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	1.76E-09	E	2.82E-08	1.24E-07
91-20-3	Naphthalene	6.10E-04	5.98E-07	E	9.57E-06	4.19E-05
85-01-8	Phenanathrene	1.70E-05	1.67E-08	D	2.67E-07	1.17E-06
129-00-0	Pyrene	5.00E-06	4.90E-09	E	7.84E-08	3.44E-07
108-88-3	Toluene	3.40E-03	3.33E-06	C	5.33E-05	2.34E-04
7440-38-2	Arsenic	2.00E-04	1.96E-07	E	3.14E-06	1.37E-05
7440-41-7	Beryllium	1.20E-05	1.18E-08	E	1.88E-07	8.24E-07
7440-43-9	Cadmium	1.10E-03	1.08E-06	D	1.73E-05	7.56E-05
7440-47-3	Chromium	1.40E-03	1.37E-06	D	2.20E-05	9.62E-05
7440-48-4	Cobalt	8.40E-05	8.24E-08	D	1.32E-06	5.77E-06
7439-92-1	Lead	5.00E-04	4.90E-07		7.84E-06	3.44E-05
7439-96-5	Manganese	3.80E-04	3.73E-07	D	5.96E-06	2.61E-05
7439-97-6	Mercury	2.60E-04	2.55E-07	D	4.08E-06	1.79E-05
7440-02-0	Nickel	2.10E-03	2.06E-06	C	3.29E-05	1.44E-04
7782-49-2	Selenium	2.40E-05	2.35E-08	E	3.76E-07	1.65E-06
Maximum HAP						0.01
Total						0.01

a) EPA AP-42, Tables 1.4-3 and 1.4-4, July 1998

b) Emission factor for hexane fo natural gas fired external combustion equipment presented in AP-42 Section 1.4 are are not sonsistent with other organic HAPs present in Table 1.4-3. Therefore, hexane Efs for natural gas fired external combustion equipment are baded on B 2588 combustion emission factors. Ventura County APCD

1909209 4