APS

A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear
Generating Station

David M. Smith
Plant Manager
Nuclear Production

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Mail Station 7602
P.O. Box 52034
Phoenix, AZ 85072-2034

ID#: 291-03251-DMS/DEB/HCL
April 27, 2005

Maricopa County
Air Quality Department
Emissions Inventory Unit
1001 N. Central Ave. Suite 100
Phoenix, AZ 85004

Dear Sir or Madam:

Subject: Palo Verde Nuclear Generating Station 2004 Air Emissions Inventory

Palo Verde Nuclear Generating Station (PVNGS) is herewith submitting the 2004 Air Emissions Inventory in accordance with instructions received from your office.

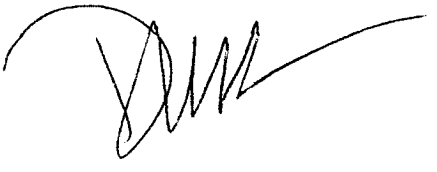
This year four new processes were added to the inventory. They include Security Substation L Emergency Generator, Process ID 31; Security Hubs 2, 3, 4 Emergency Generators, Process ID 32; Miscellaneous Diesel Burning Combustion Equipment, Process ID 33; and Miscellaneous LPG Burning Combustion Equipment, Process ID 34. Refer to the Emissions Inventory for more detailed information on these processes.

PVNGS used electronic versions of the forms for this Emissions Inventory Report. Deletions in the text are noted in red with a strikethrough. Additions to the text are shown in blue Italics.

If you have any questions regarding this submittal, please contact Mr. Harvey C. Lesan at (623) 393-6490.

Based on information and belief formed after reasonable inquiry, the statements and information in this submittal are true, accurate, and complete.

Sincerely,



DMS/DEB/HCL/hsc

Attachments

PALO VERDE NUCLEAR GENERATING STATION

2004 AIR EMISSIONS INVENTORY

Prepared for

MARICOPA COUNTY
ENVIRONMENTAL SERVICES DEPARTMENT

Prepared by

ARIZONA PUBLIC SERVICE COMPANY
PALO VERDE NUCLEAR GENERATING STATION
ENVIRONMENTAL SECTION

GENERAL INFORMATION AND BUSINESS FORM

The following information is provided in this section:

1. Business Form
2. Process Identification Number Cross Reference Table

MARICOPA COUNTY
AIR QUALITY
DEPARTMENT

Emissions Inventory Unit
(602) 506-6790
(602) 506-6985 (FAX)
(602) 506-6704 (TDD)

2004 Annual Emissions Inventory

Due Date: 05/02/2004
Permit Number: 8600896, 030132

Business Form

1. Owner Name: **ARIZONA PUBLIC SERVICE CO**

2. Business Name: **PAL0 VERDE NUCLEAR GENERATING STATION**

3. Business Street Address (Physical Location): **5801 S. WINTERSBURG RD**

4. City: **TONOPAH** **5.** Zip Code: **85354-7529**

6. Number Of Employees **2097** **7.** Property Size: **4080.00 acres**

8. SIC Code: Primary: **4911** Secondary:

9. NAICS Code Primary: **221113** Secondary: **221121**

10. Preparer of the Inventory (primary contact for technical questions concerning this report):

Name: **HARVEY C. LESAN**

Title: **ENVIRONMENTAL CONSULTANT**

Employer: **ARIZONA PUBLIC SERVICE**

Telephone: **(623) 393-6490** Fax: **(623) 393-5442**

E-mail address of preparer: ***hlesan@apsc.com***

11. Who should receive the Annual Emissions Inventory Form next year?:

Name: **HARVEY C. LESAN**

Title: **ENVIRONMENTAL CONSULTANT**

Employer: **ARIZONA PUBLIC SERVICE**

Address: **PO BOX 52034 MS 7626**

City: **PHOENIX** State: **AZ** Zip Code: **85072-2034**

Telephone: **(623) 393-6490** Fax: **(623) 393-5442**

Return the original copy of all completed forms to:
Maricopa County Air Quality Dept.
Emissions Inventory Unit
1001 N. Central Ave., Suite 100
Phoenix, AZ 85004

For more information, contact the Maricopa County Emissions Inventory Unit at (602) 506-6790.
Detailed instructions, sample forms and reference materials are available at: **www.maricopa.gov/envsvc/air/ei.asp**

IDENTIFICATION NUMBER CROSS-REFERENCE TABLE				
PROCESS ID NO.	**PROCESS (P) Or EVAP (E)**	**DESCRIPTION**	**STACK NO.**	**CONTROL DEVICE NO. (If applicable)**
PROCESS SOURCES				
1	P	Lime Unloading Filter Separator	1	1
2	P	Lime Storage Silos	2 Lime, 102 Recalcined lime	2 Lime, 102 recalcined lime
3	P	Lime Supply Silos	3	3
4	P	Soda Ash Unloading Filter Separator	4	4
5	P	Soda Ash Storage Silos	5	5
6	P	Soda Ash Supply Silo	6	6
7	P	Miscellaneous Portable Diesel Engines	7	
8	P	Miscellaneous Portable Gasoline Engines	8	
9	P	EDGS (Unit 1, 2, and 3) Emergency Diesel Generators	9	
10	P	Technical Support Center Diesel	10	
11	P	Security Diesel	11	
12	P	Fire Protection Pump Diesels	12	
13	P	Administration Building A Diesel	13	
14	P	Administration Building B Diesel	14	
16	P	Auxiliary Boiler	16	
17	P	Units 1, 2, and 3 Cooling Towers	17	
18, 19	P	Recalcination Furnace (RELEASE POINT REMOVED FROM PERMIT IN 2003)	18	18 quencher, venturi scrubber, 19 impingement tray separator, 118 cyclone separator, 119 high lime content
20	P	Gas Turbines	20	
21	P	Chemical Storage Building Diesel	21	
22	P	Portable Cooling Tower	22	
23	P	Salt Silos	23	23 baghouse
24	P	Rental Compressors-ILRT		
25	P	WRF Rental Air Compressor (RELEASE POINT REMOVED FROM PERMIT IN 2002)		
26	P	Abrasive Media Hopper	26	26
27	P	S/G Chemical Cleaning – ADV Stacks (2 per unit) Units 1, 2, or 3	27	
28	P	S/G Cleaning - Evaporator Discharge (RELEASE POINT REMOVED FROM PERMIT IN 2003)	28	
29	P	S/G Cleaning – Evaporator Condenser	29	
30	P	S/G Cleaning – Evaporator Condenser Cooling Tower	30	
31	***p***	***Security Substation L Emergency Generator (179 Hp)***		

IDENTIFICATION NUMBER CROSS-REFERENCE TABLE				
PROCESS ID NO.	**PROCESS (P) Or EVAP (E)**	**DESCRIPTION**	**STACK NO.**	**CONTROL DEVICE NO. (If applicable)**
32	***p***	***Security Hubs 2, 3, 4 Emergency Diesel Generators (Total Of 3 Engines At 35 Hp Each)***		
33	***p***	***Misc. Diesel Fuel Burning Combustion Equipment (< 10 MMBtu / Hr)***		
34	***p***	***Misc. LPG Burning Combustion Equipment***		
EVAPORATIVE SOURCES				
Horizontal Fixed Roof Storage Tanks (Gasoline) AND Gasoline Fueling Operations				
51	E	AS1 Working Losses		
52	E	AS1 Standing Losses		
53	E	AS1 Fueling		
54	E	AS2 Working Losses		
55	E	AS2 Standing Losses		
56	E	AS2 Loading	56	56
57	E	AS2 Fueling		
Other Evaporative Process				
60	E	Adhesives		
61	E	Cleaners, Degreasers		
62	E	Lubricants		
63	E	Miscellaneous Chemical Use		
	E	Maintenance Coatings		
64		Coatings		
65		Solvent, Thinner , Diluent		
66		Surface Preparation Products		
67	E	Asphalt Paving Operations		
90	E	Ammonia Releases form Circulating Water Systems		

EMISSIONS SUMMARY

This section contains the Data Certification Form. Summary sheets for the General and Evaporative Processes have been provided for reference.

Data Certification Form 2004

Permit Number(s) **8600896, 030132**

For EACH pollution listed, total up all emissions recorded on your General Process and Evaporative Process Forms. Enter these numbers in column 1, "Totals from Process Forms". Report emissions from accidental releases in column 2.
Add the figures in each row across, and enter the result in column 3, "Total Emissions."

Summary of 2004 Annual Emissions:	(1) Totals from Process Forms	(2) + Accidental Releases	(3) = TOTAL EMISSIONS
CO	*34,634 lbs*	*0 lbs*	*34,634 lbs*
NHx	*14,938 lbs*	*0 lbs*	*14,938 lbs*
Lead	*0 lbs*	*0 lbs*	*0 lbs*
HAP&NON	---	---	---
VOC	*59,248 lbs*	*0 lbs*	*59,248 lbs*
NO_x	*116,417 lbs*	*0 lbs*	*116,417 lbs*
SO_x	*1,491lbs*	*0 lbs*	*1,491 lbs*
PM_{10}	*69,246 lbs*	*0 lbs*	*69,246 lbs*

TO COMPLETE YOUR EMISSIONS INVENTORY REPORT:

- Complete the Confidentiality Statement below.
- Sign and date this form below where indicated.
- Send the **original** copy of your completed forms to: Maricopa County Air Quality Dept., Emissions Inventory Unit, 1001 N. Central Ave., Suite 100, Phoenix, AZ 85004. Keep a copy of all forms for your records.

CONFIDENTIALITY STATEMENT:

This annual emissions report contains requests to keep some data confidential. ☐ YES ☒ NO
If you check "YES", you must submit documentation and meet certain requirements before your data can be deemed confidential. See enclosed instructions for further details.

CERTIFICATION STATEMENT:

I declare under penalty of perjury that the data (e.g. materials, quantities, emissions factors, controls, and annual emissions) presented herein represents the best available information and is true, accurate and complete to the best of my knowledge.

Signature of owner/business officer	Date of Signature	Telephone Number
	4/27/05	(623) 393-6116

Type or print full name of owner/business officer	Type or print full title
David M. Smith	Plant Manager

PALO VERDE NUCLEAR GENERATING STATION

PERMIT N0.: 8600896, 030132

SUMMARY OF 2004 ANNUAL EMISSIONS

	EMISSIONS (pounds)				
	PROCESS FORMS			ACCIDENTAL RELEASES	TOTAL
	General Process	Evaporative Process	Total Process Forms		
CO	34,634		34,634		34,634
NHx	0	14,938	14,938		14,938
Lead	0		0		0
HAP & NON			0		0
VOC	26,201	33,047	59,248		59,248
NOx	116,417		116,417		116,417
SOx	1,491		1,491		1,491
PM-10	69,246		69,246		69,246
		TOTAL			246,402
		EMISSIONS IN TONS			123

PALO VERDE NUCLEAR GENERATING STATION **PERMIT N0.: 8600896, 030132**
2004 EMISSIONS SUMMARY

GENERAL PROCESS SOURCE EMISSIONS (pounds)

SOURCE ID/ DESCRIPTION	CO	NOX	PM10	SOX	VOC	NH3
1. LIME UNLOAD			0			
2. LIME STORAGE			538			
3. LIME SUPPLY			543			
4. SODA ASH UNLOAD			0			
5. SODA ASH STORAGE			284			
6. SODA ASH SUPPLY			284			
7. MISC DIESEL ENGINES	3,458	16,065	1,130	113	1,311	
8. MISC GAS ENGINES	4,795	124	8	7	232	
9. UNIT EMERG DIESELS	25,721	97,120	1,741	1,259	2,483	
10. TSC DIESEL	287	1,084	19	74	28	
11. SEC DIESEL	33	152	11	2	12	
12. FIRE PUMP DIESELS	54	249	18	2	20	
13. ADMIN A DIESEL	125	473	8	5	12	
14. ADMIN B DIESEL	51	239	17	2	20	
16. AUX BOILER	0	0	0	0	0	
17. COOLING TOWERS			63,592		22,065	
18. RECAL FURNACE						
20. GTG	69	718	151	26	0	
21. CHEM DIESEL	38	176	12	1	14	
22. PORT COOLING TOWER			275		4	
23. SALT SILOS			605			
24. ILRT LEAK RATE	0	0	0	0	0	
25. WRF COMPRESSOR	0	0	0	0	0	
26. ABRASIVES HOPPER			10			
27. S/G CLEAN - ADV (UNITS 1, 2, 3)	0				0	0
28. S/G CLEAN - EVAP						0
29. S/G CLEAN - EVAP COND					0	0
30. S/G CLEAN - COOL TWR			0		0	0
31. SEC SUBSTATION L EDG	2	8	0	0	0	
32. SEC HUBS 2,3,4 EDGS	1	8	0	0	0	
33. MISC COMB EQ - DIESEL	0	1	0	0	0	
34. MISC COMB EQ - LPG	0	0	0	0	0	

PROCESS SOURCE EMISSIONS SUM (pounds)	**34,634**	**116,417**	**69,246**	**1,491**	**26,201**	**0**

PROCESS SOURCE EMISSIONS SUM (tons)	**17.3**	**58.2**	**34.6**	**0.7**	**13.1**	**0.0**

PALO VERDE NUCLEAR GENERATING STATION **PERMIT N0.: 8600896, V95017**
2004 EMISSIONS SUMMARY

EVAPORATIVE PROCESS SOURCE EMISSIONS (pounds)

SOURCE ID/ DESCRIPTION	VOC	NHX
Gasoline Refueling Operations - Tank AS1		
51. AS1 GAS WORKING LOSS	594	
52. AS1 GAS STANDING LOSS	2,622	
53. AS1 GAS FUELING	709	
Gasoline Refueling Operations - Tank AS2		
54. AS2 GAS WORKING LOSS	594	
55. AS2 GAS STANDING LOSS	3,935	
56. AS2 GAS LOADING	0	
57. AS2 GAS FUELING	0	
Maintenance Processes		
60. ADHESIVES	7,975	
61. CLEANERS, DEGREASERS	2,145	
62. LUBRICANTS	641	
63. MISC CHEM USE	3,735	
64. MAINT COATINGS	4,502	
65. MAINT COAT SOLVENTS	1,441	
66. MAINT COAT SURFACE PREP	585	
67. ASPHALT PAVING OPERATIONS	3,569	
Operational processes		
90. AMMONIA RELEASES		14,938
EVAPORATIVE SOURCE EMISSIONS SUM (pounds)	**33,047**	**14,938**

NOT TO BE REPORTED SEPARATELY
Subgroups (reported in above totals)
Spray Booth 327
Vehicle Coating

STACK INFORMATION

The stack form contains stack information for each stationary stack that is connected to a control device or any stack that discharged more than 5 tons of combined pollutant emissions during the reporting year. Although no steam generator cleaning was conducted during the year, the stack information was left on the form for historical information.

The latitude and longitude coordinates of the stacks were included this year. There are several process release points that are identical and were historically assigned a common stack identification number. The separate coordinates of each stack were included unless they were physically located close together where separate coordinates would not provide additional location information. These differences are described below for each release point with multiple stacks:

Lime Storage Silos – Identical stacks associated with each of nine storage silo baghouses (six for pebble lime and three for recalcined lime) were assigned a common stack identification number. The coordinates represent the common location of the group of stacks.

Lime Supply Silos - Identical stacks associated with each of three supply silo baghouses were assigned a common stack identification number. The coordinates represent the common location of the group of stacks.

Soda Ash Storage Silos – Identical stacks associated with each of six storage silo baghouses were assigned a common stack identification number. The coordinates represent the common location of the group of stacks.

Soda Ash Supply Silos - Identical stacks associated with each of two supply silo baghouses were assigned a common stack identification number. The coordinates represent the common location of the group of stacks.

Unit Emergency Diesel Generators – Identical stacks associated with each of six identical generators were assigned a common stack identification number. Each operating Unit at PVNGS (Units 1, 2, and 3) contains a pair of generators. The coordinates represent the common location of each group of two individual stacks located in Units 1, 2, and 3.

Unit Cooling Towers – There are three identical individual cooling towers per unit for a total of nine cooling towers. The cooling towers were assigned a common stack identification number. The coordinates represent the common location of each group of three towers located in Units 1, 2, and 3.

Steam Generator Cleaning Evaporator Condenser Discharge – The equipment is only brought onsite during chemical cleaning. No cleaning was done during 2004 so no coordinates are available.

Steam Generator Cleaning Evaporator Cooling Tower - The equipment is only brought onsite during chemical cleaning. No cleaning was done during 2004 so no coordinates are available.

Stack Form 2004

Permit Number: **8600896. 030132**

1	2	3	4	5a OR 5b		6a OR 6b and 6c			7
Stack ID	Stack Type Code*	Stack Height**	Exit Gas Temperature	Velocity feet/sec	Flow Rate acfm	Diameter inside inch(1)	Length / Width inside inch		Stack Name/Description (Optional)
1	D	12 ft	120°F	98.8	2070.0	8			LIME UNLOADING FILTER SEPARATOR *Lat: N 33.395 Long: W 112.857*
2	D	60 ft	120°F	27.6	2030.0	15	9	20	EACH OF 6 LIME STORAGE SILO BAGHOUSES *Lat: N 33.395 Long: W 112.857*
3	D	42 ft	120°F	19.8	1460.0	15	9	20	EACH OF 6 LIME SUPPLY SILO BAGHOUSES *Lat: N 33.395 Long: W 112.857*
4	D	12 ft	120°F	98.8	2070.0	8			SODA ASH UNLOADING FILTER SEPARATOR *Lat: N 33.395 Long: W 112.857*
5	D	60 ft	120°F	27.0	1990.0	15	9	20	EACH OF 6 SODA ASH STORAGE SILO BAGHOUSES *Lat: N 33.395 Long: W 112.857*
6	D	43 ft	120°F	12.2	900.0	15	9	20	EACH OF 2 SODA ASH SUPPLY SILO BAGHOUSES *Lat: N 33.395 Long: W 112.857*
9	V	90 ft	1000°F	179.0	60000.0	32			EMERGENCY GENERATORS (EACH OF 6) *Unit 1 – Lat: N 33.388 Long: W 112.861* *Unit 2 – Lat: N 33.385 Long: W 112.864* *Unit 3 – Lat: N 33.383 Long: W 112.864*
17	V	64 ft	110°F	31.6	1342000.0	360			EACH OF 144 FANS (3 UNIT COOLING TOWERS) *Unit 1 – Lat: N 33.391 Long: W 112.863* *Unit 2 – Lat: N 33.388 Long: W 112.867* *Unit 3 – Lat: N 33.383 Long: W 112.869*
23(2)	D	36 ft	120°F	8.3	1992.0	27	6	94	EACH OF 2 SALT SILOS *Lat: N 33.396 Long: W 112.858*
26	H	22 ft	120°F	9.3	1100.0	19	12	24	ABRASIVE BLAST MEDIA STORAGE HOPPER *Lat: N 33.391 Long: W 112.860*
27	V	89 ft	290°F	104.8	100000.0	54			EACH OF 6 ATMOS. DUMP VALVE DISCHARGE STACKS FOR UNITS 1-3 *Unit 1 – Lat: N 33.388 Long: W 112.861* *Unit 2 – Lat: N 33.385 Long: W 112.864* *Unit 3 – Lat: N 33.383 Long: W 112.864*
29	H	20 ft	110 °F	21.2	2000.0	17 (4)			STM. GENERATOR CLEANING EVAP. CONDENSER DISCHARGE *No coordinates – equipment not onsite*
30	V	9 ft	110 °F	48.0	23000.0	38	24	48	STM. GENERATOR CLEANING EVAP. CONDENSER *COOLING TOWER* *No Coordinates – equipment not onsite*
56	H	4ft	120°F			4			GASOLINE VAPOR BALANCE SYSTEM *Lat: N 33.388 Long: W 112.857*
102(3)	D	60 ft	120°F	8.1	600	15	9	20	EACH OF 3 RECALCINED LIME STORAGE SILO BAGHOUSES (TRANSFER MODE) *Lat: N 33.395 Long: W 112.857*

Stack Form 2004

Permit Number: **8600896. 030132**

1	2	3	4	5a OR 5b		6a OR 6b and 6c		7
Stack ID	Stack Type Code*	Stack Height**	Exit Gas Temperature	Velocity feet/sec	Flow Rate acfm	Diameter inside inch[(1)]	Length / Width inside inch	Stack Name/Description (Optional)
[1] Effective diameters are reported for rectangular stack dimensions. Exit Velocities were calculated using the effective diameters.								
[2] The discharge is a circumferential slot around the bag housing. This slot is 6" high. See next page for sketch of filter and discharge.								
[3]There are 9 lime storage silos, Process ID 2. Six of those silos typically receive direct lime deliveries. The velocities and flow rates for those silos is shown under Stack 2. The other three lime storage silos are typically used for recalcined lime storage. Stack 102 flow rates and velocities represent the system operation using the recalcined lime transfer blower. Since the recalcined lime storage silos are permitted to receive direct lime deliveries, refer to the velocities and flow rates listed under Process ID 2 for direct transfer deliveries of lime to the recalcined lime storage silos.								
[4]The stack is a twelve inch diameter stack that ends at a "T" consisting of 12 inch horizontal pipe with two discharge points. The diameter reported is the effective diameter of both 12 inch diameter discharge points.								

* Stack Type Codes: V = Vertical unobstructed H = Horizontal unobstructed D= Downward unobstructed G = Goosneck
W = Obstructed vertical (e.g. weather cap)

** Stack height is calculated relative to the surrounding terrain. For example: the stack height of a 10 foot stack sitting on a 20 foot building is 30 feet.

CONTROL DEVICE INFORMATION

Process ID 2 represents 9 lime storage silos at PVNGS. The design and control equipment for all 9 silos is the same. There are two separate Stack and Control Device codes for the Lime Storage Silos.

- Stack 2/Control Device 2 represents the 6 silos that receive new lime deliveries.
- Stack 102/Control Device 102 represents the other three silos that receive recalcined lime.

The description for Control ID Number 26 was modified to include the type of control device.

The control equipment used for the recalcination furnace (Control ID Numbers 18, 19, 118 and 119) has been abandoned in place and is no longer used. However, information has been kept on the control device table for historical reference only.

Control Device Form 2004

Permit Number: **8600896, 030132**

1	2	3	4	5	6
Control ID	**Installation/ Reconstruction * Date**	**Size or Rate Capacity****	**Control Type Code**	**Control Device Name/Description**	**Stack ID**
1	1/1/84	2070. cfm	018	LIME UNLOADING FILTER SEPARATOR 518 SQ FT CLOTH AREA	1
2	1/1/84	2030. cfm	018	6 LIME STORAGE SILOS BAGHOUSES 189 SQ FT CLOTH AREA	2
3	1/1/84	1460. cfm	018	6 LIME SUPPLY SILOS BAGHOUSES 189 SQ FT CLOTH AREA	3
4	1/1/84	2070. cfm	018	SODA ASH UNLOADING FILTER SEPARATORE 518 SQ FT CLOTH AREA	4
5	1/1/84	1990. cfm	018	6 SODA ASH STORAGE SILOS BAGHOUSES 189 SQ FT CLOT AREA	5
6	1/1/84	900. cfm	018	2 SODA ASH STORAGE SILOS BAGHOUSES 189 SQ FT CLOT AREA	6
18	1/1/84	343. cfm	053	RECAL FURNACE QUENCHER & VENTURI SCRUBER ***(NO LONGER IN USE – HISTORICAL REFERENCE ONLY))***	
19	1/1/84	343. cfm	055	RECAL FURNACE IMPINGEMENT TRAY SEPARATOR *(NO LONGER IN USE – HISTORICAL REFERENCE ONLY)*	
23	1/1/84	1092. cfm	018	2 SALT SILO BAGHOUSES, 31 SQ FT CLOTH AREA	23
26	02/15/00	1100. cfm	101	ABRASIVE BLAST MEDIA STORAGE HOPPER ***HEPA FILTER***	26
56		cfm	096	VAPOR BALANCE FOR LOADING REUELING TRUCK	
102[1]	1/1/84	600. cfm	018	3 RECAL LIME STORAGE SILOS BAGHOUSES 189 SQ FT CLOTH AREA	102
118	1/1/84	343. cfm	075	RECAL FURNACE CYCLONE SEPARATOR *(NO LONGER IN USE – HISTORICAL REFERENCE ONLY)*	
119	1/1/84	343. cfm	999	RECALCINATOR FURNACE, HIGH LIME CONTENT *(NO LONGER IN USE – HISTORICAL REFERENCE ONLY)*	

[1] Control device 102 flow rate (600 cfm) represents the flow rate from the recalcined lime transfer blower for the 3 lime storage silos that are typically used for recalcined lime storage. The design of these silos and emissions control systems is identical to the six lime storage silos represented by Control Device 2. All 9 silos were designed and permitted for storage of either direct lime deliveries or recalcined lime. When used for direct lime delivery, the silos represented by Control Device 102 have the same flow rates, velocities, and air to cloth ratios as Control Device 2.

* Reconstruction means any component of the control device was replaced and the cost (fixed capital) of the new component(s) was more than half of what it would have cost to purchase or construct a new control device.

** Air or water flow rate in the cubic feet per minute.

GENERAL PROCESS FORMS

The General Process Forms came preprinted with process information. PVNGS re-entered the originals on electronic forms. The following summarizes the significant changes.

1. Four new emergency generator sets were added in 2004 as part of a security modification upgrade. Three of the units are identical and were grouped into one process. The other engine was listed as a separate process. The specific release points associated with these processes are:
    - Process ID 31, Security Substation L Emergency Diesel Generator (179 hp)
    - Process ID 32, Security Hubs 2, 3, 4 Emergency Generators (35 hp)

2. Two new processes were added to the emissions report to address emissions from various small stationary and portable combustion units fired by diesel or liquefied petroleum gas (LPG). These processes were added to be consistent with the Non-Title V Permit application submitted to the County. The specific release points associated with these process are:
    - Process ID 33, Miscellaneous Diesel Fuel Burning Combustion Equipment (< 10 MMBtu / HR)
    - Process ID 34, Miscellaneous LPG Burning Combustion Equipment.

3. There were no rail deliveries of bulk chemicals during the reporting year.

4. Process ID 24, Compressor Rental – ILRT Leak Test, was added in 2000. However, Integrated Leak Rate Testing (ILRT) is only performed periodically in accordance with Nuclear Regulatory Commission requirements. There were no emissions from this process during the reporting year.

5. The steam generating cleaning process was modified in 2003. The steam generator cleaning evaporator discharge (Process ID 28) was replaced with the steam generator evaporator condenser discharge (Process ID 29) and Steam generator evaporator condenser cooling tower (Process ID 30). The processes associated with chemical cleaning of the steam generators (S/G) typically occur once every five to seven years per Unit. Therefore, the release forms were written to cover releases from any Unit during a given year. The specific release points associated with this process are:
    - Process ID 27, Atmospheric Dump Valve Releases from S/G Chemical Cleaning (Units 1, 2, or 3)
    - Process ID 29, S/G Chemical Cleaning Evaporator Condenser Discharge
    - Process ID 30, S/G Chemical Cleaning Evaporator Condenser Cooling Tower

    There was no steam generator cleaning conducted during the reporting year.

6. Emissions reported for miscellaneous diesel and gasoline engines include emissions from both small stationary engines (North Annex Back-up Generator & the Construction Pond Pumps) as well as from the remaining non-road engines.

GENERAL PROCESS FORMS (continued)

7. The County forms were pre-printed with emissions factors for the existing processes. A one-page emissions calculation page was included as supplemental information as necessary for each process. For some processes, additional information was necessary to calculate emissions. In these instances, additional information is supplied in the section titled, “Emissions Factor Calculation Sheets”. Processes with additional information are noted below.

    - Combustion Sources using diesel fuel: The actual fuel sulfur content is used to determine sulfur dioxide emissions. Fuel analyses of the individual fuel sulfur contents were used as a basis for sulfur dioxide emission rates.

    - The VOC emission factor for the Unit Cooling Towers, Process ID 17, was adjusted to reflect site specific use of chemicals added to the towers.

    - The PM10 and VOC emission factors for the Portable Cooling Towers, Process ID 22, were adjusted to reflect days of operation to coincide with how records are maintained.

    - VOC emission factors for the Various Evaporative Processes, Process ID’s 60 through 67, change slightly each year depending on actual chemical use. These factors were developed based on material balance for the current year’s chemical usage.

    - The emission factors for the Auxiliary Boiler, Process ID 16, were different than the ones listed on the pre-printed form. The emission factors used were obtained from the Maricopa County Air Quality Department Website.

    - The emission factors for the new emergency diesel generators added as part of a security upgrade modification, Process ID 31 and Process ID 32, were based on manufacturer emission data for the specific type of engines installed.

    - The emission factors for miscellaneous diesel and LPG burning combustion equipment, Process ID 33 and Process ID 34, were obtained from the Maricopa County Air Quality Department Website.

    - The ammonia emission factor for Process ID 90 was updated based on release data from the year 2004.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **1**

2. Process Type/Description: **LIME UNLOADING FILTER SEPARATOR (USED FOR RR DELIVERIES OF LIME ONLY)**

3. Stack ID(s) (only if required on Stack Form) **1**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: ~~30510498~~ ***30510405*** (*8 digit number*) ~~BULK MATERIAL UNLOAD: LIME~~ ***BULK MATL UNLOADING: LIMESTONE***

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **0** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **LIME DELIVERED BY RAIL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***0***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information					Control Device Information					
15	**16**		**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)		Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**100**		**TON**	**N**	**2**	**100.000**	**1**		**99.960**	**3**	***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION — PERMIT NO.: 8600896, 030132

2004 EMISSIONS INVENTORY

Lime Unloading Filter-Separator	MC Process ID No.:	1
PVNGS Source No.: LSN-S01	MC Stack No.:	1
SCC: 30510405	MC Control ID No.:	1

Material Used	0	T	NO RAIL DELIVERIES

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	4.00E-02	lb/T loaded	by material balance	0 lb

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **2**

2. Process Type/Description: **LOADING/UNLOADING LIME INTO STORAGE SILOS**

3. Stack ID(s) (only if required on Stack Form) **2** **102**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510405** (*8 digit number*) **BULK MATL UNLOADING: LIMESTONE**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **LIME**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***17,942***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10[1]	**100**	**TON**	**N**	**2**	**100.000**	***2***		**99.970**	**3**	***538*** **lbs**

[1] *There are 9 lime storage silos. The emissions control system on each silo is the same. Since all lime used was direct loaded, the emission factors associated with the primary control device is 2 rather than 102. The primary control devices 2 and 102 are not in series.*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Lime Storage Silo
PVNGS Source ID No.: AWLSNTO1A-F, AWLSNTO2A-C
SCC: 30510405

MC Process ID No.: 2
MC Stack No.: 2
MC Control ID No.: 2, 102

Material Processed:

Recalcined Lime	0	T
Lime by Truck	17,942	T
Lime by Rail	0	
Sum	17,942	T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	3.00E-02	lb/T loaded	by material balance	538 lb

Notes:

1) Vendor data given for PM. Assume PM_{10} = 1/2 * PM.
2) The silo acts as an expansions vessel, allowing most of the particulate to fall out due to gravity.
   A conservative estimate of 10% going to the filter was used, 90% dropout inherent in transfer process.
3) Filter efficiency is 99.97%.
4) All of these factors are included in the emissions factor shown above.
5) Annual emissions reflects the sum of emissions from both recalcined lime and pebble lime.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **3**

2. Process Type/Description: **LOADING/UNLOADING LIME INTO SUPPLY SILOS (6)**

3. Stack ID(s) (only if required on Stack Form) **3**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510405** (*8 digit number*) **BULK MATL UNLOADING: LIMESTONE**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **LIME (~~RECALCINED &~~ PEBBLE)**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***18,104***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**100**	**TON**	**N**	**2**	**100.000**	**3**		**99.970**	**3**	***543*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Lime Supply Silos
PVNGS Source ID No.: AWLSNTO3A-F
SCC: 30510405

MC Process ID No.: 3
MC Stack No.: 3
MC Control ID No.: 3

Material Processed
Lime Used 18,104 T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	3.00E-02	lb/T loaded	by material balance	543 lb

Notes:

1) Vendor data given for PM. Assume PM_{10} = 1/2 * PM.
2) The silo acts as an expansions vessel, allowing most of the particulate to fall out due to gravity. A conservative estimate of 10% going to the filter was used, 90% dropout inherent in transfer process.
3) Filter efficiency is 99.97%.
4) All of these factors are included in the emissions factor shown above.
5) Annual emissions reflects the sum of emissions from both recalcined lime and pebble lime.
6) The sum of recalcined lime produced and pebble lime delivered is used for the amount of material.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **4**

2. Process Type/Description: **SODA ASH UNLOADING FILTER SEPARATOR (USED FOR RAILROAD DELIVERIES OF SODA ASH ONLY)**

3. Stack ID(s) (only if required on Stack Form) **4**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510498** (*8 digit number*) **BULK MATL UNLOADING: MINERAL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **0** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **SODA ASH**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***0***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information					Control Device Information					
15	**16**		**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)		Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**100**		**TON**	**N**	**2**	**100.000**	**4**		**99.960**	**3**	***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Soda Ash Unloading Filter-Separator
PVNGS Source ID No.: AWSXNS01
SCC: 30510498

MC Process ID No.: 4
MC Stack No.: 4
MC Control ID No.: 4

Material Processed 0 T NO RAIL DELIVERIES

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	4.00E-02	lb/T loaded	by material balance	0 lb

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **5**

2. Process Type/Description: **LOADING/UNLOADING SODA ASH INTO STORAGE SILOS (6)**

3. Stack ID(s) (only if required on Stack Form) **5**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510498** (*8 digit number*) **BULK MATL UNLOADING: MINERAL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **SODA ASH**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) 9,471

12. – Fuel Sulfur Content (in percent) _____ %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**100**	**TON**	**N**	**2**	**100.000**	**5**		**99.970**	**3**	***284*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Soda Ash Storage Silos	MC Process ID No.: 5
PVNGS Source ID No.: AWSXNTO1A-F	MC Stack No.: 5
SCC: 30510498	MC Control ID No.: 5

Material Processed

Soda Ash by Truck	9,471 T
Soda Ash by Rail	0 T
Sum	9,471 T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	3.00E-02	lb/T loaded	by material balance	284 lb

Notes:

1) Vendor data given for PM. Assume PM_{10} = 1/2 * PM.
2) The silo acts as an expansions vessel, allowing most of the particulate to fall out due to gravity. A conservative estimate of 10% going to the filter was used, 90% dropout inherent in transfer process.
3) Filter efficiency is 99.97%.
4) All of these factors are included in the emissions factor shown above.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **6**

2. Process Type/Description: **LOADING/UNLOADING SODA ASH INTO SUPPLY SILOS (2)**

3. Stack ID(s) (only if required on Stack Form) **6**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510498** (*8 digit number*) **BULK MATL UNLOADING: MINERAL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **SODA ASH**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***9,452***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**100**	**TON**	**N**	**2**	**100.000**	**6**		**99.970**	**3**	***284*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Soda Ash Supply Silo	MC Process ID No.:	6
PVNGS Source ID No.: AWSXNTO2A,B	MC Stack No.:	6
SCC: 30510498	MC Control ID No.:	6

Material Processed 9,452 T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	3.00E-02	lb/T loaded	by material balance	284 lb

Notes:

1) Vendor data given for PM. Assume PM_{10} = 1/2 * PM.
2) The silo acts as an expansions vessel, allowing most of the particulate to fall out due to gravity.
   A conservative estimate of 10% going to the filter was used, 90% dropout inherent in transfer process.
3) Filter efficiency is 99.97%.
4) All of these factors are included in the emissions factor shown above.
5) The amount of soda ash delivered is used as the amount of material.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **7**

2. Process Type/Description: **MISC. PORTABLE DIESEL ENGINES < 600 HP (NON-ROAD AND MOVABLE STATIONARY ENGINES)**

3. Stack ID(s) (only if required on Stack Form) _____ _____ _____ _____ _____

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **IND: DISTIL. OIL (DIESEL) - RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25%**

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year _____

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *26,598*

12. – Fuel Sulfur Content (in percent) *0.03* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**130**	**M GALS**	**N**	**5**						***3,458*** **lbs**
NOX	**604**	**M GALS**	**N**	**5**						***16,065*** **lbs**
PM-10	**42.5**	**M GALS**	**N**	**5**						***1,130*** **lbs**
SOX[1]	~~*5.68*~~ ***4.26***	**M GALS**	**N**	**3**						***113*** **lbs**
VOC	**49.3**	**M GALS**	**N**	**5**						***1,311*** **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Miscellaneous Portable Diesel Engines **MC Process ID No.: 7**
PVNGS Source ID No.: None
SCC: 20200102

Fuel Use **26,598 gal**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.30E+02	lb/M gal	AP-42, Sect. 3.3	3,458 lb
NO_2	6.04E+02	lb/M gal	AP-42, Sect. 3.3	16,065 lb
PM10	4.25E+01	lb/M gal	AP-42, Sect. 3.3	1,130 lb
SO_2	4.26E+00	lb/M gal	by material balance	113 lb
Ozone (VOC)	4.93E+01	lb/M gal	AP-42, Sect. 3.3	1,311 lb

Notes:

1) Emissions calculations are for non-road engines and movable stationary sources.
2) All of this equipment was less than 600 hp. Emissions are based on fuel consumption.
3) A maximum fuel sulfur content of 0.03 % by weight at a fuel density of 7.1 lbs / gal was assumed.
4) Fuel use from movable stationary sources was 1,191 gallons. This represents 4.0% of the total emissions.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **8**

2. Process Type/Description: **MISC PORTABLE GASOLINE ENGINES (NON-ROAD AND MOVABLE STATIONARY ENGINES)**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200301** (*8 digit number*) **IND: GASOLINE - RECIPROCATING**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **GASOLINE**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***607***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**7900**	**M GALS**	**N**	**5**						***4,795*** **lbs**
NOX	**205**	**M GALS**	**N**	**5**						***124*** **lbs**
PM-10	**12.6**	**M GALS**	**N**	**5**						***8*** **lbs**
SOX	**11.1**	**M GALS**	**N**	**5**						***7*** **lbs**
VOC	**382**	**M GALS**	**N**	**5**						***232*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Miscellaneous Portable Gasoline Engines
PVNGS Source ID No.: None
SCC: 20200301

MC Process ID No.: 8

Fuel Use 607 gallons

CRITERIA POLLUTANT	EMISSIONS FACTOR	SOURCE	EMISSIONS
CO	7.90E+03 lb/Mgal	AP-42, Sect. 3.3	4,795 lb
NO_2	2.05E+02 lb/Mgal	AP-42, Sect. 3.3	124 lb
PM10	1.26E+01 lb/Mgal	AP-42, Sect. 3.3	8 lb
SO_2	1.11E+01 lb/Mgal	AP-42, Sect. 3.3	7 lb
Ozone (VOC)	3.82E+02 lb/Mgal	AP-42, Sect. 3.3	232 lb

Notes:

1) Emissions rates are based fuel consumption.
2) Emissions factors are based on AP-42 Section 3.3 Gasoline and Diesel Industrial Engines dated 10/96.
3) Gasoline Heating Value is 20,300 BTU/lb.
4) Emissions calculations are for non-road engines. There were no movable stationary sources using gasoline used at PVNGS.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **9**

2. Process Type/Description: **6 EMERGENCY GENERATORS @ 7670 HP, NRC-SAFETY POWER "EDG"**

3. Stack ID(s) (only if required on Stack Form) **9**

4. Process TIER Code: ~~**030202**~~ ***020599*** ***FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION*** ~~**FUEL COMB. OTHER: COMMERCIAL/INST OIL - DISTILLATE**~~

5. SCC Code: **20200401** (*8 digit number*) **INDUSTRIAL: LG. BORE ENGINE: DIESEL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**518**~~ ***587*** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***221,735***

12. – Fuel Sulfur Content (in percent) ***0.04*** %

12. Units of Measure: (*for example: tons, gallons, million cu ft, acres, units produced etc.*) **GALS**

13. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**116**	**M GALS**	**N**	**5**						***25,721*** **lbs**
NOX	**438**	**M GALS**	**N**	**5**						***97,120*** **lbs**
PM-10	**7.85**	**M GALS**	**N**	**5**						***1,741*** **lbs**
SOX[1]	**5.68**	**M GALS**	**N**	**3**						***1,259*** **lbs**
VOC	**11.2**	**M GALS**	**N**	**5**						***2,483*** **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Emergency Diesel Generators, Units 1-3,
PVNGS Source ID No.: 1,2,3 M-DGA, DGB-HO1
SCC: 20200401

MC Process ID No.: 9

MC Stack No.: 9

Operating Hours	586.6	hrs (aggregate)
Fuel Use Rate	378	gallons per hour
Total Fuel Use	221,735	gallons (estimated)

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.16E+02	lb/M gal	AP-42, Sect. 3.4	25,721 lb
NO_2	4.38E+02	lb/M gal	AP-42, Sect. 3.4	97,120 lb
PM10	7.85E+00	lb/M gal	AP-42, Sect. 3.4	1,741 lb
SO_2	5.68E+00	lb/M gal	by material balance	1,259 lb
Ozone (VOC)	1.12E+01	lb/M gal	AP-42, Sect. 3.4	2,483 lb

Notes:

1) Emissions rates are based on nameplate full load (maximum) fuel consumption.
2) The fuel sulfur content was 0.04 % S by weight at a density of 7.1 lbs fuel / gal.
3) Fuel heating value is 19,300 BTU/lb (137,000 BTU/gal at a density of 7.1 lb/gal)

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **10**
2. Process Type/Description: **TSC GENERATOR, 1000 HP**
3. Stack ID(s) (only if required on Stack Form)
4. Process TIER Code: ***020599*** ~~**030202**~~ ***FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION*** ~~**FUEL COMB. OTHER: COMMERCIAL/INST OIL - DISTILLATE**~~
5. SCC Code: **20200401** (*8 digit number*) **INDUSTRIAL: LG. BORE ENGINE: DIESEL**
6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%
7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**21**~~ ***33*** Weeks/Year
8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**
9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**
10. ☒ Used (*input*) or ☐ Produced (*output*)
11. Annual Amount: (*a number*) ***2,475***
12. – Fuel Sulfur Content (in percent) 0.21 %
13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**
14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**116**	**M GALS**	**N**	**5**						***287*** **lbs**
NOX	**438**	**M GALS**	**N**	**5**						***1,084*** **lbs**
PM-10	**7.85**	**M GALS**	**N**	**5**						***19*** **lbs**
SOX[1]	~~**27**~~ ***29.8***	**M GALS**	**N**	**3**						***74*** **lbs**
VOC	**11.2**	**M GALS**	**N**	**5**						***28*** **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

- **1** = Continuous Emissions Monitoring Measurements
- **2** = Best Guess/ Engineering Judgment
- **3** = Material balance
- **4** = Source Test Measurements (Stack Test)
- **5** = AP-42/Fire Method or Emission Factor
- **6** = State or Local Agency Emission Factor
- **7** =Manufacturer Specifications
- **8** =Site-Specific Emission Factor
- **9** =Vendor Emission Factor
- **10** =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

- **1** =Tested efficiency / EPA reference method
- **2** =Tested efficiency / other source test method
- **3** =Design value from manufacturer
- **4** =Best Guess / engineering estimate
- **5** =Calculated, based on material balance
- **6** =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION 2004 EMISSIONS INVENTORY	PERMIT NO.: 8600896, 030132

Technical Support Center Emergency Diesel PVNGS Source ID No.: AMDGNOTO1 SCC: 20200401	MC Process ID No.: 10 MC Stack No.: 10

Operating Hours	**33**	**hrs**
Fuel Use Rate	**75**	**gal/hr**
Total Fuel Use	**2,475**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.16E+02	lb/M gal	AP-42, Sect. 3.4	287 lb
NO_2	4.38E+02	lb/M gal	AP-42, Sect. 3.4	1084 lb
PM10	7.85E+00	lb/M gal	AP-42, Sect. 3.4	19 lb
SO_2	2.98E+01	lb/M gal	by material balance	74 lb
Ozone (VOC)	1.12E+01	lb/M gal	AP-42, Sect. 3.4	28 lb

Notes:

1) Operating hours were rounded to the nearest whole number
2) Emissions rates are based on nameplate full load (maximum) fuel consumption.
3) The fuel sulfur content was 0.21% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **11**

2. Process Type/Description: **SECURITY GENERATOR, 227 HP**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **INDUSTRIAL: DISTILLATE OIL; RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**21**~~ *28* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *252*

12. – Fuel Sulfur Content (in percent) *0.06* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**130**	**M GALS**	**N**	**5**						*33* **lbs**
NOX	**604**	**M GALS**	**N**	**5**						*152* **lbs**
PM-10	**42.5**	**M GALS**	**N**	**5**						*11* **lbs**
SOX[1]	**8.52**	**M GALS**	**N**	**3**						*2* **lbs**
VOC	**49.3**	**M GALS**	**N**	**5**						*12* **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION 2004 EMISSIONS INVENTORY	PERMIT NO.: 8600896, 030132

Security Headquarters Emergency Generator PVNGS Source ID No.: AASKNEO1 SCC: 20200102	MC Process ID No.: 11 MC Stack No.: 11

Operating Hours	**28**	**hr**
Fuel Use Rate	**9**	**gal/hr**
Total Fuel Use	**252**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.30E+02	lb/M gal	AP-42, Sect. 3.3	33 lb
NO_2	6.04E+02	lb/M gal	AP-42, Sect. 3.3	152 lb
PM10	4.25E+01	lb/M gal	AP-42, Sect. 3.3	11 lb
SO_2	8.52E+00	lb/M gal	by material balance	2 lb
Ozone (VOC)	4.93E+01	lb/M gal	AP-42, Sect. 3.3	12 lb

Notes:

1) Emission rates are based on the nameplate full load (maximum) fuel consumption.
2) The average fuel sulfur content was assumed to be 0.06% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **12**

2. Process Type/Description: **FIRE PROTECTION PUMPS, 2 @ 190 HP**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **INDUSTRIAL: DISTILLATE OIL; RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **42** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *412*

12. – Fuel Sulfur Content (in percent) *0.04* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**130**	**M GALS**	**N**	**5**						***54*** **lbs**
NOX	**604**	**M GALS**	**N**	**5**						***249*** **lbs**
PM-10	**42.5**	**M GALS**	**N**	**5**						***18*** **lbs**
SOX[1]	~~**4.26**~~ *5.68*	**M GALS**	**N**	**3**						***2*** **lbs**
VOC	**49.3**	**M GALS**	**N**	**5**						***20*** **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Fire Protection Pump **MC Process ID No.: 12**
PVNGS Source ID No.: AMFPNPO1A/B **MC Stack No.: 12**
SCC: 20200102

Operating Hours	**42**	**hours**
Fuel Use Rate	**9.8**	**gal/hr per pump**
Total Fuel Use	**412**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.30E+02	lb/M gal	AP-42, Sect. 3.3	54 lb
NO_2	6.04E+02	lb/M gal	AP-42, Sect. 3.3	249 lb
PM10	4.25E+01	lb/M gal	AP-42, Sect. 3.3	18 lb
SO_2	5.68E+00	lb/M gal	by material balance	2 lb
Ozone (VOC)	4.93E+01	lb/M gal	AP-42, Sect. 3.3	20 lb

Notes:

1) Emission rates are based on the nameplate full load (maximum) fuel consumption.
2) The average fuel sulfur content was 0.04 % at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **13**

2. Process Type/Description: **ADMIN-A GENERATOR, 600 HP**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: ***020599*** ~~**030202**~~ — ***FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION*** ~~**FUEL COMB. OTHER: COMMERCIAL/INST OIL - DISTILLATE**~~

5. SCC Code: **20200401** (*8 digit number*) — **IND: LG. BORE ENGINE-DIESEL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**41**~~ ***36*** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***1,080***

12. – Fuel Sulfur Content (in percent) 0.03 %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**116**	**M GALS**	**N**	**5**						***125*** **lbs**
NOX	**438**	**M GALS**	**N**	**5**						***473*** **lbs**
PM-10	**7.85**	**M GALS**	**N**	**5**						***8*** **lbs**
SOX[1]	**4.26**	**M GALS**	**N**	**3**						***5*** **lbs**
VOC	**11.2**	**M GALS**	**N**	**5**						***12*** **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Administration Building A Diesel **MC Process ID No.: 13**
PVNGS Source ID No.: A Generator **MC Stack No.: 13**
SCC: 20200401

Operating Hours	**36**	**hr**
Fuel Use Rate	**30**	**gal/hr**
Total Fuel Use	**1080**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.16E+02	lb/M gal	AP-42, Sect. 3.3	125 lb
NO_2	4.38E+02	lb/M gal	AP-42, Sect. 3.3	473 lb
PM10	7.85E+00	lb/M gal	AP-42, Sect. 3.3	8 lb
SO_2	4.26E+00	lb/M gal	by material balance	5 lb
Ozone (VOC)	1.12E+01	lb/M gal	AP-42, Sect. 3.3	12 lb

Notes:

1) Emission rates are based on the nameplate full load (maximum) fuel consumption.
2) The average fuel sulfur content was 0.03% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **14**

2. Process Type/Description: **ADMIN-B GENERATOR, 289 HP**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **IND: DISTIL. OIL (DIESEL) -RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**30**~~ *33* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *396*

12. – Fuel Sulfur Content (in percent) 0.04 %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**130**	**M GALS**	**N**	**5**						*51* **lbs**
NOX	**604**	**M GALS**	**N**	**5**						*239* **lbs**
PM-10	**42.5**	**M GALS**	**N**	**5**						*17* **lbs**
SOX[1]	~~**4.26**~~ *5.68*	**M GALS**	**N**	**3**						*2* **lbs**
VOC	**49.3**	**M GALS**	**N**	**5**						*20* **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Administration Building B Diesel **MC Process ID No.: 14**
PVNGS Source ID No.: B Generator **MC Stack No.: 14**
SCC: 20200102

Operating Hours	**33**	**hr**
Fuel Use Rate	**12**	**gal/hr**
Total Fuel Use	**396**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.30E+02	lb/M gal	AP-42, Sect. 3.3	51 lb
NO_2	6.04E+02	lb/M gal	AP-42, Sect. 3.3	239 lb
PM10	4.25E+01	lb/M gal	AP-42, Sect. 3.3	17 lb
SO_2	5.68E+00	lb/M gal	by material balance	2 lb
Ozone (VOC)	4.93E+01	lb/M gal	AP-42, Sect. 3.3	20 lb

Notes:
1) Emission rates are based on the nameplate full load (maximum) fuel consumption.
2) The average fuel sulfur content was 0.04% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **16**

2. Process Type/Description: **AUXILIARY BOILER** ~~**(PERMIT LIMIT: 535,500 GAL)**~~

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: ***020202*** ~~**010202**~~ ***FUEL COMB.: INDUSTRIAL: OIL*** ~~**FUEL COMB. ELEC. UTIL.: OIL-DISTALLATE**~~

5. SCC Code: **10100501** (*8 digit number*) **IND: GRDES 1&2 OIL-NORMFIRE**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **1** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *1*

12. – Fuel Sulfur Content (in percent) *0.04* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	5	**M GALS**	**N**	**6**						***0*** **lbs**
NOX	24	**M GALS**	**N**	**6**						***0*** **lbs**
PM-10[1]	~~1~~ *2*	**M GALS**	**N**	**6**						***0*** **lbs**
SOX [2]	~~5.7~~ *5.68*	**M GALS**	**N**	**3**						***0*** **lbs**
VOC[1]	~~0.76~~ *0.2*	**M GALS**	**N**	**6**						***0*** **lbs**
										lbs

[1] Updated emissions factors from AP-42 and published on County website for SCC Code. See Calculation Sheet No. 5

[2] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Auxiliary Boiler **MC Process ID No.: 16**
PVNGS Source ID No.: ASN-B02 **MC Stack No.: 16**
SCC: 10100501

Hours of Operation **Less than 1 hr**
Fuel Consumption **1 gal**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	5.00E+00	lb/M gal	Maricopa County	0 lb
NO_2	2.40E+01	lb/M gal	Maricopa County	0 lb
PM10	2.00E+00	lb/M gal	Maricopa County	0.0 lb
SO_2	5.68E+00	lb/M gal	by material balance	0 lb
Ozone (VOC)	2.00E-01	lb/M gal	Maricopa County	0.00 lb

Notes:

1) Emissions are based on the metered fuel consumption.
2) The average fuel sulfur content was 0.04% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **17**

2. Process Type/Description: **3 UNIT COOLING TOWERS, W/ 3 TOWERS PER UNIT (TOTAL HOURS OF OPERATION)**

3. Stack ID(s) (only if required on Stack Form) **17**

4. Process TIER Code: **140699** **MISCELLANEOUS: COOLING TOWERS**

5. SCC Code: **38500101** (*8 digit number*)

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **HRS OF OPERATION, AGGREGATE**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***23,880***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **HRS OF OPERATION**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10[1]	**2.663**	**HR OF OPERATI**	**N**	~~**2**~~ ***8***						***63,592*** **lbs**
VOC[1]	~~**0.867**~~ ***0.924***	**HR OF OPERATI**	**N**	~~**2**~~ ***8***						***22,065*** **lbs**

[1] ***Emission factors updated based on engineering calculation and material balance. See Calculation Sheet No. 2.***

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Units 1, 2, and 3 Cooling Tower
PVNGS ID No.: CWN-W01,2,3
SCC Code: 38500101

MC Process ID No.: 17 (includes all 3 units, all 9 towers)
MC Stack No.: 17

Total Operating Days	995 days
Total Operating Hours	23,880 hours

POLLUTANTS	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	2.663E+00	lb/day	Non-Title V Permit Application	63,592 lb
VOC (Total)	9.240E-01	lb/day	Materials balance & CARB	22,065 lb

Notes:

Non Chloroform VOC Emission Factor:
Non Chloroform VOC Emissions are based on chemical use in the unit cooling towers. During 2002 , the defoaming agents used in the cooling towers contained VOC per manufacturer testing. The emissions factor was calculated based on the total VOC calculated to be added to the system by chemical use records divided by the total number of operating days.

Total Non Chloroform VOC = (23 totes of AF1091)(300 gallons AF1091 / tote)(2.55 lbs VOC / gallon) = 17,595 lbs
Non Chloroform VOC Emission Factor = 17,595 lbs / 23,880 hr = 0.737 lb / hr

Chloroform VOC Emission Factor:
The chloroform emissions factor of 20 kg-s/cubic m-yr, was obtained from Table 8.6-2, Emission Factor for Volatile Organic Compounds from "Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California", Science Applications, Inc., prepared for California State Air Resources Board, August 11, 1981.

Chloroform VOC Emissions Factor = (20 kg-s/cubic m-yr)(1 yr/365 d)(1 d / 24 hr)(2.2 lb / kg) (1 min / 60 s) (1 cubic m / 264.1 gal) (Circulating Water Flow in gal / min)
Chloroform VOC Emissions Factor = (20 kg-s/cubic m-yr)(1 yr/365 d)(1 d / 24 hr)(2.2 lb / kg) (1 min / 60 s) (1 cubic m / 264.1 gal) (590,000 gal/min)
Chloroform VOC Emissions Factor = 0.187 lbs / hr

Total VOC Emission Factor:
VOC Emissions Factor = Non Chloroform Emissions Factor + Chloroform Emissions Factor
VOC Emissions Factor = 0.737 lb / hr + 0.187 lb / hr
VOC Emissions Factor = 0.924 lb / hr

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **20**

2. Process Type/Description: **2 DIESEL FIRED "GAS" TURBINES, ~~NON~~ NRC LEVEL EMERGY POWER. CO, NOX, PM10 ESF FROM VENDOR DATA~~, PERMIT LIMIT 400 HRS~~**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: ~~**010599**~~ *020599* ~~**FUEL COMB. ELEC.UTIL.: INTERNAL COMBUSTION**~~ ***FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION***

5. SCC Code: **20200101** (*8 digit number*) **INDUSTRIAL: DISTILLATE OIL: TURBINE**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25%**

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~**67**~~ *51* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***6,137***

12. – Fuel Sulfur Content (in percent) 0.03 %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**11.3**	**M GALS**	**N**	~~**2**~~ ***9***						***69*** **lbs**
NOX	**117**	**M GALS**	**N**	~~**2**~~ ***9***						***718*** **lbs**
PM-10	**24.6**	**M GALS**	**N**	~~**2**~~ ***9***						***151*** **lbs**
SOX[1]	**4.3**	**M GALS**	**N**	**3**						***26*** **lbs**
VOC	**0.057**	**M GALS**	**N**	**5**						***0.3*** **lbs**
										lbs

[1] *SOX Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Station Blackstart Turbine **MC Process ID No.: 20**
PVNGS Source ID No.: AMGTNKO1A/B **MC Stack No.: 20**
SCC: 20200101

2003 Operating Hours	**51**	**hours**
Fuel Consumption	**6,137**	**gallons (aggregate)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.13E+01	lb/M gal	Vendor data	69 lb
NO_2	1.17E+02	lb/M gal	Vendor data	718 lb
PM10	2.46E+01	lb/M gal	Vendor data	151 lb
SO_2	4.26E+00	lb/M gal	by material balance	26 lb
Ozone (VOC)	5.62E-02	lb/M gal	AP-42, Sect. 3.1	0.3 lb

Notes:

1) Fuel Consumption was based on fuel totalizer readings.
2) The average fuel sulfur content was 0.03% by weight at a fuel density of 7.1 lbs / gal.
3) Vendor data given for PM. PM10 assumed equivalent to PM.
4) The VOC emissions factor is based on AP-42 Section 3.1 Stationary Gas Turbines dated 04/00.
4) The Pb (lead) emissions factor is based on AP-42 Section 3.1 Stationary Gas Turbines dated 04/00.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **21**

2. Process Type/Description: **CHEMICAL STORAGE BLDG GENERATOR, 150 HP**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **INDUSTRIAL: DISTILLATE OIL: RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~57~~ *43* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *292*

12. – Fuel Sulfur Content (in percent) *0.03* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**130.0**	**M GALS**	**N**	**5**						*38* **lbs**
NOX	**604.0**	**M GALS**	**N**	**5**						*176* **lbs**
PM-10	**42.5**	**M GALS**	**N**	**5**						*12* **lbs**
SOX[1]	~~7.1~~ *4.26*	**M GALS**	**N**	**3**						*1* **lbs**
VOC	**49.3**	**M GALS**	**N**	**5**						*14* **lbs**

[1] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Chemical Storage Building Diesel **MC Process ID No.: 21**
PVNGS Source ID No.: C Generator **MC Stack No.: 21**
SCC: 20200102

Operating Hours	**43**	**hrs**
Fuel Use Rate	**6.8**	**gal/hr**
Total Fuel Use	**292**	**gal (estimated)**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.30E+02	lb/M gal	AP-42, Sect. 3.3	38 lb
NO_2	6.04E+02	lb/M gal	AP-42, Sect. 3.3	176 lb
PM10	4.25E+01	lb/M gal	AP-42, Sect. 3.3	12 lb
SO_2	4.26E+00	lb/M gal	by material balance	1 lb
Ozone (VOC)	4.93E+01	lb/M gal	AP-42, Sect. 3.3	14 lb

Notes:

1) Emission rates are based on the nameplate full load (maximum) fuel consumption.
2) A maximum fuel sulfur content of 0.03 % by weight (4.3 lb/Mgal) was assumed for this calculation.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **22**

2. Process Type/Description: **PORTABLE COOLING TOWER (UNITS ARE BASED ON TDS-HRS, EF BACK CALCULATED)**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **140699** **MISCELLANEOUS: COOLING TOWERS**

5. SCC Code: **38500101** (*8 digit number*) **COOLING TOWERS: PROC COOLING: MECH DRAFT**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year ~~2016~~ *1,872* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **HRS OF OPERATION**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *1,872*

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **HRS OF OPERATION**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10[1]	~~19~~ *0.147*	**HR OF OPERATI**	**N**	**5**						*275* **lbs**
VOC[1]	**0.0019**	**HR OF OPERATI**	**N**	**2**						*4* **lbs**

[1] *Emissions factor back-calculated using AP-42 methodology and published VOC emissions factors. See Calculation Sheet No. 3*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

PORTABLE COOLING TOWER
SCC Code: 38500101

MC Process ID No.: 22
MC Stack No.: 22

Average TDS	**2,430 ppm**
Operating Days	**78 days**
Operating Hours	**1872 hours**

POLLUTANTS	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	1.47E-01	lb/day	manufacturer's data	275 lb
VOC (Chloroform)	1.90E-03	lb/day	CARB Reference	4 lb

Notes:

The emissions inventory forms allow the use of only one conversion factor unit per source (i.e. hours or TDS). "Hours of Operation" has been selected as the common unit. Emissions and emissions factors calculations are provided below.

Emissions factors for PM_{10} and chloroform are derived from formulas below.

Where: CFR = circulating flow rate (gpm) (2 cells) = 6,000
F1 = Liquid Drift Rate (fraction of flow rate) = 0.002% = 0.00002

Particulate Matter:

PM-10 (lb/hr) = CFR x F1 x 8.4 lb/gal x 60 min/hr x (1/1,000,000 ppm) x Average TDS
PM-10 (lb/hr) = {6000 x 0.00002 x 8.4 x 60 x (1/1,000,000) x 2,430}= 0.147 lbs/hr

Chloroform:

The chloroform emissions factor of 20 kg-s/cubic m-yr, was obtained from Table 8.6-2, Emission Factor for Volatile Organic Compounds from "Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California", Science Applications, Inc., prepared for California State Air Resources Board, August 11, 1981.

Chloroform VOC Emissions Factor = (20 kg-s/cubic m-yr)(1 yr/365 d)(1 d / 24 hr)(2.2 lb / kg) (1 min / 60 s) (1 cubic m / 264.1 gal) (Circulating Water Flow in gal / min)
Chloroform VOC Emissions Factor = (20 kg-s/m-yr)(1 yr/365 d)(1 d / 24 hr)(2.2 lb / kg) (1 min / 60 s) (1 cubic m / 264.1 gal) (6,000 gal/min)

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **23**

2. Process Type/Description: **LOADING/UNLOADING SALT SILOS (2)**

3. Stack ID(s) (only if required on Stack Form) **23**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30510498** (*8 digit number*) **BULK MATL UNLOADING: MINERAL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **SALT**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***6,047***

12. – Fuel Sulfur Content (in percent) _____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**		**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)		Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**10.0**		**TON**	**N**	**2**	**100.000**	**23**		**99.000**	***3***	***605*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Salt Silos	**MC Process ID No.: 23**
PVNGS Source ID No.: AMSSMS02A,B	**MC Stack No.: 23**
SCC: 30510498	**MC Control ID No.: 23**

Material Processed 6,047 T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	1.00E-01	lb/T loaded	by material balance	605 lb

Notes:

1) Vendor data given for PM. Assume PM_{10} = 1/2 x PM.
2) The silo acts as an expansions vessel, allowing most of the particulate to fall out due to gravity.
   The salt delivered is a large particle size.
   A conservative estimate of 1.0% going to the filter was used, 99% dropout inherent in transfer process.
3) Filter efficiency is 99%.
4) All of these factors are included in the emissions factor shown above.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **24**

2. Process Type/Description: **ILRT LEAK TEST RENTAL COMPRESSOR - REQUIRED EVERY 10 YEARS ~~NOT PERFORMED IN 2002~~**

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: **020599** **FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION**

5. SCC Code: **20200102** (*8 digit number*) **INDUSTRIAL: DISTILLATE OIL: RECIP**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **0** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **DIESEL,**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***0***

12. – Fuel Sulfur Content (in percent) ____%

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) **0.001**

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**0.74**	**M GALS**	**N**	**7**						***0*** **lbs**
NOX	**6.1**	**M GALS**	**N**	**7**						***0*** **lbs**
PM-10	**0.1**	**M GALS**	**N**	**7**						***0*** **lbs**
SOX	**0.0852**	**M GALS**	**N**	**7**						***0*** **lbs**
VOC	**0.02**	**M GALS**	**N**	**7**						***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **26**

2. Process Type/Description: **ABRASIVE BLAST MEDIA STORAGE HOPPER**

3. Stack ID(s) (only if required on Stack Form) **26**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **30900201** (*8 digit number*) **ABRASIVE BLASTING: METAL: GENERAL**

6. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **ABRASIVE BLAST MEDIA**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***48***

12. – Fuel Sulfur Content (in percent) _____ %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **TONS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information					Control Device Information				
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	**20**	**TONS**	**N**	**2**	**100.000**	**26**		**99.00**	**3**	***10*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Abrasive Media Hopper
PVNGS Source No. - None Assigned
SCC 30900201

MC Process ID No.: 26
MC Stack No.: 26
MC Control ID No.: 26

Material Loaded 48 T

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
PM10	2.00E-01	lb/T loaded	by material balance	10 lb

Notes:

1) Assumes 99% dropout rate of material due to large particle size. Only 1% goes to filter.
2) Filter efficiency based on typical value for HEPA filters of 99.00 %
3) Assumes all emissions are PM10.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **27**

2. Process Type/Description: **STEAM GENERATOR CHEMICAL CLEANING – ATMOS. DUMP VALVE STACKS UNITS 1, 2 , 3**

3. Stack ID(s) (only if required on Stack Form) **27**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **39999999** (*8 digit number*) **MISC. INDUSTRIAL PORCESS: OTHER NOT CLASSIFIED**

6. Seasonal Throughput Percent: Dec-Feb **0**% Mar-May **0**% Jun-Aug **0%** Sep-Nov **100**%

7. Normal Operating Schedule: Hours/Day **12** Days/Week **1** Hours/Year **12** Weeks/Year

8. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **HRS OF OPERATION (VENT TIME)**

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) ***0***

12. – Fuel Sulfur Content (in percent) _____ %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **HRS OF OPERATION**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	**16**		**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)		Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	**9.9**		**HR OF OPERATI**	**N**	**2**						***0*** **lbs**
VOC	**102**		**HR OF OPERATI**	**N**	**2**						***0*** **lbs**
NHX	**9.9**		**HR OF OPERATI**	**N**	**2**						***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **29**

2. Process Type/Description: **STEAM GENERATOR CHEMICAL CLEANING – EVAPORATOR CONDENSER DISCHARGE**

3. Stack ID(s) (only if required on Stack Form) **29**

4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

5. SCC Code: **39999999** (8 digit number) **MISC. INDUSTRIAL PROCESS: OTHER NOT CLASSIFIED**

6. Seasonal Throughput Percent: Dec-Feb **0**% Mar-May **0**% Jun-Aug **0%** Sep-Nov **100**%

7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **1080** Weeks/Year

8. Typical Hours of Operation: (military time) Start **00:00** End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **GALLONS PROCESSED**

10. ☒ Used (input) or ☐ Produced (output)

11. Annual Amount: (a number) ***0***

12. – Fuel Sulfur Content (in percent) _____ %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **GALS**

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information					Control Device Information					
15	**16**		**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)		Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
NH3	**0.032247**		**GALLONS**	**N**	**2**						***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: **30**
2. Process Type/Description: **STEAM GENERATOR CHEMICAL CLEANING – EVAPORATOR COOLING TOWER**
3. Stack ID(s) (only if required on Stack Form) **30**
4. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**
5. SCC Code: **39999999** (8 digit number) **MISC. INDUSTRIAL PROCESS: OTHER NOT CLASSIFIED**
6. Seasonal Throughput Percent: Dec-Feb **0**% Mar-May **0**% Jun-Aug **0%** Sep-Nov **100**%
7. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **1080**
8. Typical Hours of Operation: (military time) Start **00:00** End **23:59**
9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") **HOURS OF OPERATION**
10. ☒ Used (input) or ☐ Produced (output)
11. Annual Amount: (a number) ***0***
12. – Fuel Sulfur Content (in percent) _____ %
13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) **HRS OF OPERATION**
14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units)

	Emission Factor (EF) Information				Control Device Information					
15	16	17	18	19	20	21	22	23	23	25
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM10	**0.015**	**HR OF OPERATI**	**N**	**2**						***0*** **lbs**

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: *31*

2. Process Type/Description: *SECURITY SUBSTATION L EMERGENCY GENERATOR (179 HP)*

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: *020599* *FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION*

5. SCC Code: *20200102* (*8 digit number*) *INDUSTRIAL: DISTALLATE OIL: RECIP*

6. Seasonal Throughput Percent: Dec-Feb *25*% Mar-May *25*% Jun-Aug *25*% Sep-Nov *25*%

7. Normal Operating Schedule: Hours/Day *24* Days/Week *7* Hours/Year *2.3* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start *00:00* End **23:59**

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") *DIESEL*

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *19*

12. – Fuel Sulfur Content (in percent) 0.03 %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) *GALS*

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) *0.001*

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO1	*106*	*M GALS*	*N*	*7*						*2* **lbs**
NOX1	*407*	*M GALS*	*N*	*7*						*8* **lbs**
PM-101	*14.6*	*M GALS*	*N*	*7*						*0* **lbs**
SOX2	*4.26*	*M GALS*	*N*	*3*						*0* **lbs**
VOC1	*6.34*	*M GALS*	*N*	*7*						*0* **lbs**

[1] *Emissions factor from vendor testing. See Calculation Sheet No. 6*
[2] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Security Substation L Emergency Diesel Generator **MC Process ID No.: 31**
PVNGS Source ID No.: AMQFNH01*A*Engine
SCC: 20200102

Operating Hours	**2.3**	**hr**
Fuel Use Rate	**8.2**	**gal/hr**
Fuel Use	**19**	**gal**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	1.06E+02	lb/Mgal	Vendor Data	2 lb
NO_2	4.07E+02	lb/Mgal	Vendor Data	8 lb
PM10	1.46E+01	lb/Mgal	Vendor Data	0 lb
SO_2	4.26E+00	lb/Mgal	by material balance	0 lb
Ozone (VOC)	6.34E+00	lb/Mgal	Vendor Data	0 lb

Notes:

1) A maximum fuel sulfur content of 0.03 % by weight at a fuel density of 7.1 lbs / gal was assumed.
2) Calculated from the following vendor emission data, engine power of 170 bhp, and fuel use rate of 8.2 gal / hr:
   CO (lb/Mgal) = [(2.33 g / hp - hr) (170 hp) (1 lb / 454 g)] / [(8.2 gal fuel / hr) (1 Mgal / 1000 gal)] = 106 lb / Mgal
   NOx (lb/hr) = [(8.92 g / hp - hr) (170 hp) (1 lb / 454 g)] / [(8.2 gal fuel / hr) (1 Mgal / 1000 gal)] = 407 lb NOx / Mgal
   PM10 (lb/hr) = [(0.33 g / hp - hr) (170 hp) (1 lb / 454 g)] / [(8.2 gal fuel / hr) (1 Mgal / 1000 gal)] = 14.6 lb PM10 / Mgal
   VOC (lb/hr) = [0.14 g / hp - hr) (170 hp) (1 lb / 454 g)] / [(8.2 gal fuel / hr) (1 Mgal / 1000 gal)] = 6.34 lb VOC / Mgal

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: *32*

2. Process Type/Description: *SECURITY HUBS 2, 3, 4 EMERGENCY DIESEL GENERATORS (TOTAL OF 3 ENGINES AT 35 HP EACH)*

3. Stack ID(s) (only if required on Stack Form) _____ _____ _____ _____ _____

4. Process TIER Code: *020599* *FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION*

5. SCC Code: *20200102* (*8 digit number*) *INDUSTRIAL: DISTILLATE OIL - RECIP*

6. Seasonal Throughput Percent: Dec-Feb *25*% Mar-May *25*% Jun-Aug *25*% Sep-Nov *25*%

7. Normal Operating Schedule: Hours/Day *24* Days/Week *7* Hours/Year *9.5* Weeks/Year _____

8. Typical Hours of Operation: (*military time*) Start *00:00* End *23:59*

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") *DIESEL (AGGREGATE)*

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *20*

12. – Fuel Sulfur Content (in percent) 0.03 %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) *GALS*

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) *0.001*

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	*54.8*	*M GALS*	*N*	*7*						*1* **lbs**
NOX	*385*	*M GALS*	*N*	*7*						*8* **lbs**
PM-10	*7.14*	*M GALS*	*N*	*7*						*0* **lbs**
SOX	*4.26*	*M GALS*	*N*	*3*						*0* **lbs**
VOC	*21.9*	*M GALS*	*N*	*7*						*0* **lbs**

[1] *Emissions factor from vendor testing.. See Calculation Sheet No. 7*

[2] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Security Hubs 2-4 Emergency Diesel Generators **MC Process ID No.: 32**
PVNGS Source ID No.: AMQFNH01*B*Engine; AMQFNH01*C*Engine; AMQFNH01*D*Engine
SCC: 20200102

Operating Hours (aggregate)	**9.5**	**hr**
Fuel Use Rate	**2.1**	**gal/hr**
Fuel Use	**20**	**gal**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	5.48E+01	lb/Mgal	Vendor Data	1 lb
NO_2	3.85E+02	lb/Mgal	Vendor Data	8 lb
PM10	7.14E+00	lb/Mgal	Vendor Data	0 lb
SO_2	4.26E+00	lb/Mgal	by material balance	0 lb
Ozone (VOC)	2.19E+01	lb/Mgal	Vendor Data	0 lb

Notes:

1) A maximum fuel sulfur content of 0.03 % by weight at a fuel density of 7.1 lbs / gal was assumed.
2) Calculated from the following vendor emission data, engine power of 170 bhp, and fuel use rate of 2.1 gal / hr:
   CO (lb/Mgal) = [(1.49 g / hp - hr) (35 hp) (1 lb / 454 g)] / [(2.1 gal fuel / hr) (1 Mgal / 1000 gal)] = 54.8 lb / Mgal
   NOx (lb/hr) = [(10.5 g / hp - hr) (35 hp) (1 lb / 454 g)] / [(2.1 gal fuel / hr) (1 Mgal / 1000 gal)] = 385 lb NOx / Mgal
   PM10 (lb/hr) = [(0.20 g / hp - hr) (35 hp) (1 lb / 454 g)] / [(2.1 gal fuel / hr) (1 Mgal / 1000 gal)] = 7.14 lb PM10 / Mgal
   VOC (lb/hr) = [0.60 g / hp - hr) (35 hp) (1 lb / 454 g)] / [(2.1 gal fuel / hr) (1 Mgal / 1000 gal)] = 21.9 lb VOC / Mgal

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: *33*

2. Process Type/Description: *MISC. DIESEL FUEL BURNING COMBUSTION EQUIPMENT (< 10 MMBTU / HR)*

3. Stack ID(s) (only if required on Stack Form) _____ _____ _____ _____ _____

4. Process TIER Code: *010202* *FUEL COMB. ELEC. UTIL.: OIL-DISTALLATE*

5. SCC Code: *10200503* (*8 digit number*) *INDUSTRIAL; DISTALLATE OIL < 10 MMBTU*

6. Seasonal Throughput Percent: Dec-Feb *25*% Mar-May *25*% Jun-Aug *25*% Sep-Nov *25*%

7. Normal Operating Schedule: Hours/Day *24* Days/Week *7* Hours/Year _____ Weeks/Year _____

8. Typical Hours of Operation: (*military time*) Start *00:00* End *23:59*

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") *DIESEL*

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *53*

12. – Fuel Sulfur Content (in percent) *0.03* %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) *GALS*

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) *0.001*

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	*5*	*M GALS*	*N*	*6*						*0* **lbs**
NOX	*20*	*M GALS*	*N*	*6*						*1* **lbs**
PM-101	*2*	*M GALS*	*N*	*6*						*0* **lbs**
SOX 2	*4.26*	*M GALS*	*N*	*3*						*0* **lbs**
VOC1	*0.2*	*M GALS*	*N*	*6*						*0* **lbs**
										lbs

[1] Updated emissions factors from County website for SCC Code. See Calculation Sheet No. 8

[2] *Emission Factor updated with fuel sulfur content. See Calculation Sheet No. 1*

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION **PERMIT NO.: 8600896, 030132**
2004 EMISSIONS INVENTORY

Misc Diesel Fuel Burning Combustion Equipment **MC Process ID No.: 33**
PVNGS Source ID No.: None **MC Stack No.: None**
SCC: 10200503

Fuel Consumption **53** **gal**

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	5.00E+00	lb/M gal	AP-42, Sect. 1.3	0 lb
NO_2	2.00E+01	lb/M gal	AP-42, Sect. 1.3	1 lb
PM10	2.00E+00	lb/M gal	AP-42, Sect. 1.3	0.1 lb
SO_2	4.26E+00	lb/M gal	by material balance	0 lb
Ozone (VOC)	2.00E-01	lb/M gal	AP-42, Sect. 1.3	0.01 lb

Notes:

1) Emissions are based on the metered fuel consumption.
2) The average fuel sulfur content was 0.03% by weight at a fuel density of 7.1 lbs / gal.

General Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process ID: *34*

2. Process Type/Description: *MISC. LPG BURNING COMBUSTION EQUIPMENT*

3. Stack ID(s) (only if required on Stack Form)

4. Process TIER Code: *010301* *FUEL COMB. ELEC. UTIL.: GAS*

5. SCC Code: *10201002* (*8 digit number*) *INDUSTRIAL; LPG: PROPANE*

6. Seasonal Throughput Percent: Dec-Feb *25*% Mar-May *25*% Jun-Aug *25*% Sep-Nov *25*%

7. Normal Operating Schedule: Hours/Day *24* Days/Week *7* Hours/Year *1* Weeks/Year

8. Typical Hours of Operation: (*military time*) Start *00:00* End *23:59*

9. Emissions based on: (name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled") *LPG (PROPANE)*

10. ☒ Used (*input*) or ☐ Produced (*output*)

11. Annual Amount: (*a number*) *24*

12. – Fuel Sulfur Content (in percent) ___ ___ %

13. Units of Measure: (for example: tons, gallons, million cu ft, acres, units produced etc.) *GALS*

14. Unit Conversion Factor: (if needed to convert Unit of Measure to correlate with emission factor units) *0.001*

	Emission Factor (EF) Information				Control Device Information					
15	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**23**	**25**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO [1]	*3.2*	*M GALS*	*N*	*6*						*0* **lbs**
NOX [1]	*19*	*M GALS*	*N*	*6*						*0* **lbs**
PM-10 [1]	*0.6*	*M GALS*	*N*	*6*						*0* **lbs**
SOX [1]	*0.02*	*M GALS*	*N*	*6*						*0* **lbs**
VOC [1]	*0.6*	*M GALS*	*N*	*6*						*0* **lbs**
										lbs

[1] Updated emissions factors from County website for SCC Code. See Calculation Sheet No. 9

***Calculation Method Codes**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess/ Engineering Judgment
3 = Material balance
4 = Source Test Measurements (Stack Test)
5 = AP-42/Fire Method or Emission Factor
6 = State or Local Agency Emission Factor
7 =Manufacturer Specifications
8 =Site-Specific Emission Factor
9 =Vendor Emission Factor
10 =Trade Group Emission Factor

**** Control Efficiency Reference Codes**

1 =Tested efficiency / EPA reference method
2 =Tested efficiency / other source test method
3 =Design value from manufacturer
4 =Best Guess / engineering estimate
5 =Calculated, based on material balance
6 =Estimated, based on a published value

PALO VERDE NUCLEAR GENERATING STATION
2004 EMISSIONS INVENTORY

PERMIT NO.: 8600896, 030132

Misc LPG Burning Combustion Equipment
PVNGS Source ID No.: None
SCC: 10201002

MC Process ID No.: 34
MC Stack No.: None

Fuel Consumption 24 gal

CRITERIA POLLUTANT	EMISSIONS FACTOR		SOURCE	ANNUAL EMISSIONS
CO	3.20E+00	lb/M gal	Maricopa County	0.08 lb
NO_2	1.90E+01	lb/M gal	Maricopa County	0.46 lb
PM10	6.00E-01	lb/M gal	Maricopa County	0.01 lb
SO_2	2.00E-02	lb/M gal	Maricopa County	0.00 lb
Ozone (VOC)	6.00E-01	lb/M gal	Maricopa County	0.01 lb

Notes:

1) A Sulfur content for LPG was assumed to be the same as butane, 0.18 gr per cubic meter, per footnote in Table 1.5-2 of AP-42.

EVAPORATIVE PROCESS FORMS

The Evaporative Process Forms were preprinted with much of the process information.

Van refueling operations from a bulk delivery vessel are no longer conducted. The gasoline emissions for working and Standing losses, Process ID's 51, 52, 54, and 55, were determined using EPA Tanks 4.09b computer program. Emissions for loading operations, Process ID's 53, 56, and 57, were determined using County emissions factors. Supplemental emissions information is provided under the section titled, "Gasoline Tank Emissions."

Evaporative Process ID's 60 through 67 were determined from site wide product use information by merging database information from material purchase and distribution, material chemical information, and daily user logs. The amount of materials and VOC emissions were determined by this compilation. The emissions factor was back-calculated from these results. This submittal includes the summary information for each evaporative process. Detailed information is maintained and available upon request.

A detailed ammonia emissions analysis for water treatment activities was conducted for the 1998 emissions summary. During 2004 this analysis was updated based on current emissions calculations and use data. These results are now used as a basis to estimate ammonia emissions. The summary data is provided for Process ID 90, Ammonia Releases.

Evaporative Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **HORIZONTAL FIXED ROOF STORAGE TANKS, CALC USING EPA TANKS 4.09B**

2. Process TIER Code: **090212** **STORAGE & TRANSPORT: PETROLEUM PROD – NON-RESALE**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
51		**GASOLINE (AS1), WORKING**	*60,605*	**GL**	**VOC**	~~0.00981~~ 0.00980	**GAL**		**%**		**%**		*594*
52		**GASOLINE (AS1), STANDING**	*2,622*	**LB**	**VOC**	**1.0**	**LB**		**%**		**%**		*2,622*
54		**GASOLINE (AS2), WORKING**	*60,605*	**GL**	**VOC**	~~0.00981~~ 0.00980	**GAL**		**%**		**%**		*594*
55		**GASOLINE (AS2), STANDING**	*3,935*	**LB**	**VOC**	**1.0**	**LB**		**%**		**%**		*3,935*

The emissions for Process ID's 51 through 55 were determined using the EPA Tanks 4.09b computer program. See the section "Gasoline Tank Emissions" for more information on these processes.

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **GAS. LOADING LOSSES: #53 CONSUMER; #56 TO REFUEL TRUCK; #57 VANS FROM TRUCKS**
2. Process TIER Code: **090212** **STORAGE & TRANSPORT: PETROLEUM PROD – NON-RESALE**
3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%
4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**
5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
53		**GASOLINE (AS1), LOADING**	*60,605*	**GL**	**VOC**	**0.0117**	**GAL**		**%**		**%**		*709*
56	**56**	**GASOLINE (AS2), LOADING**	*0*	**GL**	**VOC**	**0.01045**	**GAL**		**100.00 %**	**56**	**%**	**6**	*0*
57		**GASOLINE (AS2), FUELING**	*0*	**GL**	**VOC**	**0.0117**	**GAL**		**%**		**%**		*0*

See the section "Gasoline Tank Emissions" for more information on these processes.

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **ADHESIVES (GLUES, EPOXY GLUES, CAULKS, ETC.)**

2. Process TIER Code: **080401** **SOLVENT USE: SURFACE COATING- INDUSTRIAL ADHESIVES**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
60		**ADHESIVES**	*4,485*	**GL**	**VOC**	~~0.831~~ *1.7781*	**GAL**		**%**		**%**		*7975*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 4.*

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **CLEANERS, DEGREASERS, ETC.**

2. Process TIER Code: **080103** **SOLVENT USE: DEGREASING – COLD CLEANING**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
61		**CLEANERS**	*550*	**GL**	**VOC**	~~*3.7432*~~ *4.7545*	**GAL**	*470*	**%**		**%**		*2,145*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 4.*

Refer to Waste Stream Number 01 for detailed information regarding disposal.

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896, 030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **LUBRICANTS**

2. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
62		**LUBRICANTS**	*626*	**GL**	**VOC**	~~3.36~~ *1.024*	**GAL**		**%**		**%**		*641*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 4.*

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896,030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **MISCELLANEOUS (INCLUDES LABORATORY & WATER TREATMENT CHEMICALS, INKS, JANITORIAL ETC)**
2. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**
3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%
4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**
5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
63		**MISC CHEMICALS**	*2,845*	**GL**	**VOC**	~~1.2624~~ *1.3128*	**GAL**		**%**		**%**		*3,735*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 4.*

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896,030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **GENERAL MAINTENANCE PAINTING (PAINTS, SOLVENTS, THINNERS, SEALANTS, ETC.)**

2. Process TIER Code: **080419** **SOLVENT USE: SURFACE COATING- MAINTENANCE COATING**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
64		**COATINGS**	*3,933*	**GL**	**VOC**	~~1.5844~~ *1.1447*	**GAL**		**%**		**%**		*4,502*
65		**SOLVENTS, THINNERS**	*354*	**GL**	**VOC**	~~7.115~~ *7.0904*	**GAL**	*1,069*	**%**		**%**		*1,441*
66		**SURFACE PREP FILLERS, CLNRS, ETC**	*743*	**GL**	**VOC**	~~2.0899~~ *0.7873*	**GAL**		**%**		**%**		*585*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No.4.*

Refer to Waste Stream Number 02 for detailed information regarding disposal.

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896,030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **ASPHALT PAVING OPERATIONS**

2. Process TIER Code: **080602** **SOLVENT USE: NONINDUSTRIAL – OTHER ASPHALT**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
67		**ASPHALT PRODUCTS**	*3,070*	**GL**	**VOC**	~~**0.2500**~~ *1.1625*	**GAL**		**%**		**%**		*3,569*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 4.*

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Evaporative Process Form 2004

Permit Number(s): **8600896,030132**

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1. Process Type/Description: **AMMONIA RELEASES FROM CIRCULATING WATER SYSTEMS**

2. Process TIER Code: **071099** **MISCELLANEOUS INDUSTRIAL PROCESSES**

3. Seasonal Throughput Percent: Dec-Feb **25**% Mar-May **25**% Jun-Aug **25**% Sep-Nov **25**%

4. Normal Operating Schedule: Hours/Day **24** Days/Week **7** Hours/Year **8760**

5. Typical Hours of Operation: (*military time*) Start **00:00** End **23:59**

6	7	8	9		10	11		12	13	14			15
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC. HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
90		**AMMONIUM HYDROXIDE**	*592,298*	**LB**	**NHX**	~~*0.2996*~~ *0.02522*	**LB**		**%**		**%**		*14,938*

[1] *Emissions factor back-calculated using material balance. See Calculation Sheet No. 9.*

NOTE: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-Site Recycling/Disposal Form to receive credit for reduced emissions.

****Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best Guess / engineering estimate
5 = Calculated, based on material balance
6 = Estimated, based on a published value

Gasoline Tank Emissions

The EPA Tanks 4.09b computer program was used to determine the working and standing losses for gasoline storage tanks. A printout of the reports from that program is provided in this section.

The loading and filling losses are determined based on the emissions factors provided by Maricopa County.

GASOLINE EMISSIONS
YEAR 2004

This sheet contains the Emissions Calculations and Emissions Factors Information for the Year 2004 Gasoline Emissions. The Gasoline VOC Emissions for 2004 have been reduced from the previous years primarily due to decreased usage resulting from the elimination of van refueling activities.

The Gasoline Working and Standing (or Breathing) Emissions (Sources 51, 52, 54, and 55) are determined by the EPA 4.09b computer model (computer printouts are attached). Gasoline Loading Emissions (Source 53, 56, and 57) are based on County Emissions Factors.

Since van refueling operations using a bulk delivery truck were discontinued in 2000, there was no direct distribution to vehicles from Tank AS-2. The contents of Tank AS-2 were transferred to Tank AS-1 for distribution to vehicles. As a result, there were no vehicle fuel loading losses from Tank AS-2. In addition, emission estimates conservatively assume that the total throughput for the year went through both tanks and includes working and standing loses from each tank.

2004 Gasoline Tank Throughput (gallons)

AS-1 = 60,605	Assumes a throughput volume equal to the amount of fuel delivered to both tanks (60,605 gal).
AS-2 = 60,605	Assumes a throughput volume equal to the total amount of fuel delivered. Assumed contents of tank were transferred to AS-1 for delivery to vehicles.

Average Reid Vapor Pressure Readings = 9 (maximum value based on fuel receipt records)

Gasoline Working and Standing Emissions

The gasoline working and standing (or breathing) emissions are determined by the EPA Tanks 4.09b program. The program uses the tank characteristics (including tank size), fuel throughput for each gasoline tank, fuel characteristics, and regional weather data. The working and standing emissions determined by the program for the year 2004 are:

Tank No.	Working Losses (lbs)	Standing Losses (lbs)
AS-1	594	2,622
AS-2	594	3,935

The Emissions Factors for the Standing Losses are 1.0. Therefore, the Annual Usage is equal to the Estimated Emissions.

The Emissions Factors for the Working Losses are back-calculated from the throughput and calculated emissions. For example:

AS-1 Estimated Emissions = 594 lbs; and throughput = 60,605 gal.

AS-1 Working Loss Emissions Factor = 594 lbs / 60,605 gal = 0.00980 lbs/gal

Gasoline Loading Losses

The gasoline loading losses are based on County emissions factors. Since van refueling operations using a bulk delivery vehicle stopped, there is no direct distribution of gasoline from Tank AS-2. Therefore, all loading losses were assumed to occur at Tank AS-1 and were based on the total throughput of Tank AS-1 (assumes that the contents of Tank AS-2 passed through AS-1). A sample calculation is provided below:

AS-1 Throughput = 60,605 gal and the Loading Emissions factor preprinted on emissions form = 0.0117
AS-1 Emissions = 60,605 gal x 0.0117 lb/gal = 709 lbs

GASOLINE EMISSIONS
YEAR 2004

Source No. and Description	Annual Usage	Emissions Factor	Emissions Calculation Method	Control Device Efficiency	VOC Emissions
			AS1		
51 working losses	60,605 gal	0.00980 lb/gal	Tanks 4.0	NA	594 lbs
52 standing losses	2,622 lb	1.0000 lb/lb	Tanks 4.0	NA	2,622 lbs
53 loading losses vehicle fueling	60,605 gal	0.0117 lb/gal	County Emissions Factor	NA	709 lbs
			AS2		
54 working losses	60,605 gal	0.00980 lb/gal	Tanks 4.0	NA	594 lbs
55 standing losses	3,935 lb	1.0000 lb/lb	Tanks 4.0	NA	3,935 lbs
56 loading losses refueling truck	0 gal	0.01045 lb/gal	County Emissions Factor	90%	0 lbs
57 loading losses for remote van fueling	0 gal	0.0117 lb/gal	County Emissions Factor	NA	0 lbs
Total					8,454 lbs

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	AS-1 (2004 Emissions)
City:	Tonopah
State:	Arizona
Company:	Palo Verde Nuclear Generating Station - APS
Type of Tank:	Horizontal Tank
Description:	Small gasoline tank at autoshop

Tank Dimensions

Shell Length (ft):	32.00
Diameter (ft):	7.90
Volume (gallons):	12,000.00
Turnovers:	5.05
Net Throughput (gal/yr):	60,605.00
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):	-0.06
Pressure Settings (psig):	0.12

Meteorological Data used in Emissions Calculations: Phoenix, Arizona (Avg Atmospheric Pressure = 14.12 psia)

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 9)	All	75.04	68.08	81.99	72.61	6.1481	5.3933	6.9851	67.0000			92.00	Option 4: RVP=9, ASTM Slope=3

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	594.40	2,621.95	3,216.35

TANKS 4.0
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	AS-2 (2004 Emissions)
City:	Tonopah
State:	Arizona
Company:	Palo Verde Nuclear Generating Station - APS
Type of Tank:	Horizontal Tank
Description:	Large gasoline tank at autoshop

Tank Dimensions

Shell Length (ft):	37.00
Diameter (ft):	9.50
Volume (gallons):	20,000.00
Turnovers:	3.03
Net Throughput (gal/yr):	60,605.00
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):	-0.06
Pressure Settings (psig):	0.12

Meteorological Data used in Emissions Calculations: Phoenix, Arizona (Avg Atmospheric Pressure = 14.12 psia)

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 9)	All	75.04	68.08	81.99	72.61	6.1481	5.3933	6.9851	67.0000			92.00	Option 4: RVP=9, ASTM Slope=3

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	594.40	3,935.43	4,529.83

TANKS 4.0
Emissions Report - Summary Format
Total Emissions Summaries - All Tanks in Report

Annual Emissions Report

Tank Identification				Losses (lbs)
AS-1 (2004 Emissions)	Palo Verde Nuclear Generating Station - APS	Horizontal Tank	Tonopah, Arizona	3,216.35
AS-2 (2004 Emissions)	Palo Verde Nuclear Generating Station - APS	Horizontal Tank	Tonopah, Arizona	4,529.83
Total Emissions for all Tanks:				7,746.17

EMISSIONS FACTOR CALCULATION SHEETS

Additional emissions calculation information has been provided for the following processes:

Calculation Sheet No. 1 – Diesel Fuel Combustion Sources
(Process ID 7, 9, 10, 11, 12, 13, 14, 16, 20, 21, 24, 31, 32, 33)

Calculation Sheet No. 2 – Unit Cooling Towers
(Process ID 17)

Calculation Sheet No. 3 – Portable Cooling Tower
(Process ID 22)

Calculation Sheet No. 4 – Various Evaporative Processes
(Process ID 60, 61, 62, 63, 64, 65, 66, 67)

Calculation Sheet No. 5 – Auxiliary Boiler
(Process ID 16)

Calculation Sheet No. 6 – Security Substation L EDG
(Process ID 31)

Calculation Sheet No. 7 – Security Hubs 2, 3, 4 EDGs
(Process ID 32)

Calculation Sheet No. 8 – Misc. Diesel Burning Combustion Equipment
(Process ID 33)

Calculation Sheet No. 9 – Misc. LPG Burning Combustion Equipment
(Process ID 34)

Calculation Sheet No. 10 -Ammonia Releases from Circulating Water Systems
(Process ID 90)

EMISSIONS FACTOR CALCULATION SHEET NO 1

Permit Number: **8600896, 030132**

Process ID No. **7, 9, 10, 11, 12, 13, 14, 16, 20, 21, 24, 31, 32, 33**

Process Description: **Diesel Combustion Sources**

Description of Correction: **Calculation of Fuel Sulfur Content and SOX Emission Factors**

SO_2 emissions are derived from the fuel sulfur content. All sulfur in the fuel is assumed to be converted to SO_2 during combustion. The following method was used to calculate the SO_2 emissions factor.

SO_2 Emissions Factor (lb SO_2 / M GAL) Calculation Method:

SO_2 Emissions Factor = Fuel Sulfur Content (%S) x (1 lb S/100 lb fuel) x (2 lb SO_2/lb S) x (7.1 lb fuel/gal) x (1000 gal/M GAL)

= Fuel Sulfur Content (%S) x (142)

SO_2 Emission Factors:

Diesel fuel was sampled and analyzed for fuel sulfur content during the year 2004. Emissions factors were calculated using the above formula and the average fuel sulfur content for each combustion source. The table below shows the fuel sulfur content and the corresponding emissions factor for each Process ID that combusts diesel fuel:

General Process ID	Process Description	Fuel Sulfur Content (% S by wt)	Emission Factor (lb SO_2 / M GAL)
7	Miscellaneous Portable Diesel Engines	0.03	4.26
9	Unit Emergency Diesel Generators	0.04	5.68
10	Technical Support Center Diesel Generator	0.21	29.82
11	Security Diesel Generator	0.06	8.52
12	Fire Protection Pump Diesels	0.04	5.68
13	Administration Building A Diesel Generator	0.03	4.26
14	Administration Building B Diesel Generator	0.04	5.68
16	Auxiliary Boiler	0.04	5.68
20	Emergency Gas Turbine Generators	0.03	4.26
21	Chemical Storage Building Diesel Generator	0.03	4.26
24	ILRT Testing Rental Compressor	*	*
31	Security Substation L Diesel Generator	0.03	4.26
32	Security Hubs 2, 3, 4 Diesel Generators	0.03	4.26
33	Misc. Diesel Burning Combustion Equipment	0.03	4.26

** There were no emissions from this process during the year. The emissions factor was not calculated.*

EMISSIONS FACTOR CALCULATION SHEET NO 2

Permit Number: **8600896, 030132**

Process ID No. **17**

Process Description: **Unit Cooling Towers**

Description of Correction: **Updated to PM-10 and VOC Emission Factors**

The methodology for calculating PM-10 and VOC Emissions from the Unit Cooling Towers was re-evaluated as part of the Non-Title V permit application update. The methodology is a refinement of the AP-42 method that calculated a critical droplet diameter that contains enough dissolved solids that will create a 10-micron diameter solid particle upon evaporation of the water. Based on a measured particle size distribution, the mass fraction of droplets less than the critical droplet diameter can then be used to estimate the PM-10 fraction emitted from the towers. The method was reviewed by the USEPA and approved for use at PVNGS (see attached correspondence)

VOC emissions from the cooling towers were re-assessed. Chloroform emissions were calculated using an emissions factor obtained from Table 8.6-2 in “Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California", Science Applications, Inc., prepared for the California State Air Resources Board and dated August 11, 1981.

The water treatment chemicals used in the cooling tower were evaluated for VOC content. Some of the chemicals contained VOC as measured using EPA test method 24. EPA test method 24 is used to measure VOC in paints and inks by heating small weighed quantity of the paint / ink in an oven to drive off organic solvents and water. The dried material is weighed again to determine the weight of material lost. The loss is corrected for water and exempt compounds to determine VOC content. However, this method may not be applicable to very dilute concentrations water treatments chemicals (ppm levels) since the vapor pressure of the water treatment chemical and operating temperature of the cooling towers is very low. However, it was conservatively assumed that all of the VOC added to the towers evaporated.

The following sections describe the methods used to derive the emissions factors used.

PM-10 Emission Factor Calculation Method:

The attached document provides the formula approved by the USEPA for calculating PM-10 emissions. A maximum PM-10 emissions rate, based on days of operation with a Total Dissolved Solids (TDS) concentration in the range of 0 to 30,000 ppm was calculated to be 0.03196 Tons PM-10 / day. This factor was used to determine the emissions factor as follows:

PM-10 Emissions Factor = (0.03196 Tons PM-10 / Day) (2000 lbs / Ton) (1 Day / 24 hr)
= 2.663 lbs / hr

EMISSIONS FACTOR CALCULATION SHEET NO 2

Permit Number: **8600896, 030132**

Process ID No. **17**

Process Description: **Unit Cooling Towers**

Description of Correction: **Updated to PM-10 and VOC Emission Factors**

VOC Emission Factor Calculation Method:

The cooling towers were examined for VOC emissions. Testing indicates that chloroform is formed as a by-product when the cooling tower circulating water is chlorinated. The amount of chloroform produced can vary widely. Chloroform emissions were calculated from an emissions factor (20 kg-s/m^3-yr) obtained from Table 8.6-2 in "Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California", Science Applications, Inc., prepared for the California State Air Resources Board and dated August 11, 1981 (see attached copy of table). The design circulating flow rate of 590,000 gallons per minute was used in the calculation.

VOC Emissions Factor 1 = (20 kg-s/ m^3-yr)(1 yr/365 d)(2.2 lb / kg) (1 min / 60 s)
X (1 m^3 / 264.1 gal) (590,000 gal / min) (1 d / 24 hr)
= 0.187 lb VOC / hr

Water treatment chemicals are also added to the cooling tower water to reduce potential foaming of the water. The concentration in the circulating water is maintained in the parts per million level. Conservatively assuming that all of the VOC contained in the water treatment chemicals evaporates through the towers, a non-chloroform VOC emissions factor can be determined.

One chemical was used during 2004 that contained VOC as measured by EPA method 24. The VOC concentrations of the chemical was 2.55 lbs / gallon for AF1091. The amounts used during 2004 were based on use records and total operating hours. During 2004, twenty-three totes containing 300 gallons each of AF1091 (6,900 gallons total) were purchased. The non-chloroform emissions were calculated from the following:

VOC Emissions Factor 2 = (6,900 gal AF1091) (2.55 lb / gal) / 23,880 hr
= 0.737 lbs / hr

The VOC Emissions Factor is the sum of the chloroform and non-chloroform VOC emissions factors.

VOC Emission Factor = 0.187 + 0.737 = 0.924 lbs/hr

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

March 27, 2003

Dale Lieb
Maricopa County Environmental Services Department
Air Quality Division
1001 North Central Ave. Suite 200
Phoenix, AZ 85004

Dear Mr. Lieb:

Thank you for consulting EPA on the issue of PM_{10} emissions from cooling tower at the Palo Verde Nuclear Generating Station (PVNGS). EPA has reviewed the cooling tower PM_{10} emissions documentation provided by Mr. Harvey Lesan of Arizona Public Service. EPA concurs with the methodology used to estimate the quantity of PM_{10} emissions from the cooling tower, and accepts the following equation proposed by PVNGS to calculate the maximum potential emissions of PM_{10} from those cooling towers: PM_{10} (tons per year) = .03196*D, where D is the number of operating days per year.

The documentation provided by Mr. Lesan included 1) the letter from Mr. Lesan to Emmanuelle Rapicavoli of EPA Region 9 on "Palo Verde Nuclear Generating Station (PVNGS) PM_{10} Emissions Calculations for Units 1, 2, 3 Cooling Towers", dated 12/30/02, 2) the letter from Mr. Lesan to Ms. Rapicavoli, same subject but dated 1/7/03, with attached "Review of Palo Verde Cooling Tower PM_{10} Calculations" by Mr. Kenneth Hennon of Power Generation Technologies, and 3) the document "PM_{10} Emissions Calculations: Supplemental Information", incorporating the 1990 "Drift Test Report of a 16 Cell Crossflow Circular Mechanical Cooling Tower" and more recent calculations and correspondence. These documents were reviewed by EPA Region IX and by EPA's Office of Air Quality Planning and Standards (OAQPS).

After consultation with OAQPS, Region IX believes the method used by PVNGS to be a valid method for measuring PM_{10} emissions from their cooling towers because PVNGS did conduct source-specific testing, using methods favorably reviewed by a contractor in the cooling tower field and by EPA.

EPA had initially been concerned about the emissions levels being considerably less than would be calculated from AP-42 ("Compilation of Air Pollutant Emission Factors", section 13.4). This is admittedly a conservative method, since it assumes that 100% of the dissolved material in cooling tower drift droplets ends up as PM_{10}; in reality, much of this material ends up in larger particles. However, some recent submissions from permit applicants to EPA Region IX suggested that only a few percent of the dissolved material ends up as PM_{10}. These estimates were based on calculations that accounted for droplet size distribution, but the latter was

measured by uncertain methods, measured at cooling towers of different types and in different condition than those applicants' facilities and did not account for the solids concentration of the cooling tower recirculating water. In addition, cooling tower configuration and maintenance history can affect drift and drift droplet size.

In short, cooling tower emission calculations that differ from AP-42 should be based on source tests of drift and droplet size and include a reasonable range of recirculating water solids concentrations. All permits, including minor source permits, for sources that include cooling towers should include a provision for good maintenance practices, including periodic inspection and repair of the drift eliminators.

The issue of PM_{10} from cooling towers is of increasing importance because of the large number of gas-fired power plants being built, for which the cooling towers can be the largest PM_{10} emission source. In some cases, the applicability of New Source Review (NSR), Prevention of Significant Deterioration (PSD), or of Title V requirements (as here for PVNGS), can hinge on the cooling tower emissions.

Should you have further questions on this issue, please contact Scott Bohning (415/947-4127, bohning.scott@epa.gov) or Emmanuelle Rapicavoli (415/972-3969, rapicavoli.emmanuelle@epa.gov).

Sincerely,

Gerardo C. Rios
Chief, Permits Office

cc: Harvey Lesan, Arizona Public Service

EMISSIONS FACTOR CALCULATION SHEET NO 3

Permit Number: **8600896, 030132**

Process ID No. **22**

Process Description: **Portable Cooling Tower**

Description of Correction: **Updated PM-10 and VOC Emission Factors**

The emissions inventory forms allow the use of only one conversion factor unit per process (i.e. hours or TDS). "Hours of Operation" has been selected as the common unit. Emissions and emissions factors that were back calculated are provided below.

PM-10 Emission Factor Calculation:

PM-10 emissions can be calculated from the following formula:

PM (lb/hr) = CFR x F1 x 8.4 lb/gal x 60 min/hr x ($1/10^6$ ppm) x TDS

Where:

CFR = circulating flow rate (gpm) (2 cells) = 6,000
F1 = Liquid Drift Rate (fraction of flow rate) = 0.002% = 0.00002
Average TDS = 2,430 ppm

Substituting in the parameters gives:

PM (lbhr) = [6000 x 0.00002 x 8.4 x 60 x ($1/10^6$) x 2,430] lbs/hr = 0.147 lb / hr

VOC Emissions Factor Calculation Method

Chloroform VOC emissions were calculated from an emissions factor (20 kg-s/m^3-yr) obtained from Table 8.6-2 in “Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California", Science Applications, Inc., prepared for the California State Air Resources Board and dated August 11, 1981 (see Calculation Sheet No. 2 for copy of table). The design circulating flow rate of 6,000 gallons per minute was used in the calculation.

VOC Emissions Factor 1 = (20 kg-s/ m^3-yr)(1 yr/365 d)(2.2 lb / kg) (1 min / 60 s)
X (1 m^3 / 264.1 gal) (6,000 gal / min) (1 d / 24 hr)
= 0.0019 lb VOC / hr

EMISSIONS FACTOR CALCULATION SHEET NO 4

Permit Number: **8600896, 030132**

Process ID No. **60, 61, 62, 63, 64, 65, 66, 67**

Process Description: **Various Evaporative Processes**

Description of Correction: **Updated VOC Emissions Factors**

Evaporative Process ID's 60 through 67 were determined from site wide product use information by merging database information from material purchase and distribution, material chemical information, and daily user logs. The amount of materials and VOC emissions were determined by this compilation. The emissions factor was back-calculated from these results. This submittal includes the summary information for each evaporative process. Detailed information is maintained and available upon request.

The emissions factors used were determined from the following equation:

VOC Emission Factor = (Total lbs VOC Emitted) / (Total gallons material used)

A summary of the evaporative data and emission factor calculations is provided below:

Process ID	Process Description	Total VOC Emitted (lbs)	Total Gallons Used (gal)	VOC Emissions Factor (lb / gal)
60	Adhesives	7975	4485	1.7781
61	Cleaners	2,615	550	4.7545
62	Lubricants	641	626	1.0240
63	Misc	3,735	2845	1.3128
64	Coatings - Paints	4,502	3933	1.1447
65	Coatings - Solvents	2,510	354	7.0904
66	Coatings - Surface Prep	585	743	0.7873
67	Asphalt Products	3,569	3,070	1.1625

EMISSIONS FACTOR CALCULATION SHEET NO 5

Permit Number: **8600896, 030132**

Process ID No. **16**

Process Description: **Auxiliary Boiler**

Description of Correction: **Updated PM10 and VOC Emission Factors**

All emission factors, except for SO_x were obtained from the County Website for SCC Code 10100501 (see attached). Refer to Emission Factor Calculation Sheet No. 1 for the SO_x emission factor calculation method.

			Emission Factor					
Industry Category	**SCC Description**	**SCC Code**	**CO**	**NOx**	**PM10**	**SOx**	**VOC**	**Emission Factor Unit**
Sand/Gravel	Pile Forming: Stacker, Load out,Mining / Plant Feed Handling with Watering	30502505			0.00055 controlled			lb/ton sand/gravel processed
Sand/Gravel	Bulk Loading	30502506			0.0024			lb/ton sand/gravel
Sand/Gravel	Stockpiles, raw material storage	30502507			630			lb/acre-yr stored
Sand/Gravel	Crushing (Primary, secondary, tertiary)	30502510			0.00054 controlled			lb/ton sand/gravel
Sand/Gravel	Screening	30502511			0.00074 controlled			lb/ton sand/gravel
Electrical Equipment	Electrical Windings Reclamation Single Chamber Incinerator/Oven	31307001	10	3	4.7	2.5	3	lb/ton charged
Electrical Equipment	Electrical Windings Reclamation Multiple Chamber Incinerator/Oven	31307002	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Single Chamber Incinerator	31401001	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Multiple Chamber Incinerator	31401002	10	3	4.7	2.5	3	lb/ton charged
Government Solid Waste Disposal	Incineration: Sludge Multiple Hearth	50100515	31	5	8.2	20	1.7	lb/ton dried sludge burned
Commercial/Institutional Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50200101	10	3	4.7	2.5	3	lb/ton waste burned
Commercial/Institutional Solid Waste Disposal	Incineration: Special Purpose Pathological & Cremation	50200505	0.6	11	0.8	1.4	0.2	lb/ton medical waste burned
Industrial Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50300101	10	3	4.7	2.5	3	lb/ton charged
Utility:	Residual Oil #6 Normal Firing	10100401	5	47	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Residual Oil #6 Tangential Firing	10100404	5	32	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Distillate Oil Normal Firing	10100501	5	24	2	143.6(S)	0.2	lb/1000 gallons
Utility:	Natural Gas Normal Firing > 100 MM Btu/Hr	10100601	84	190	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Normal Firing < 100 MMBtu/Hr	10100602	84	100	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Tangential Firing	10100604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	Residual Oil #6 10-100 MMBtu/Hr	10200402	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #6 < 10 MMBtu/Hr	10200403	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #5 > 10 MMBtu/Hr	10200404	5	47	8.6	162.7(S)	0.28	lb/1000 gallons
Industrial	Distillate Oil #1 or #2 > 10 MMBtu/Hr	10200501	5	24	2	147.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil 10-100 MMBtu/Hr	10200502	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil < 10 MMBtu/Hr	10200503	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil #4 > 100 MM Btu/Hr	10200504	5	47	6	155.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil Cogeneration Boiler	10200505	5	20	1	143.6(S)	0.2	lb/1000 gallons
Industrial	Natural Gas Over 100 MMBtu/Hr	10200601	84	280	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas 10-100 MMBtu/Hr	10200602	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas < 10 MMBtu/Hr	10200603	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas Cogeneration Boiler	10200604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	LPG: Butane	10201001	3.6	21	0.6	0.09(S)	0.6	lb/1000 gallons
Industrial	LPG: Propane	10201002	3.2	19	0.6	0.02	0.6	lb/1000 gallons
Commercial/Institutional	Distillate Oil Grade 1 & 2 Oil	10300501	5	24	1.08	142(S)	0.34	lb/1000 gallons

EMISSIONS FACTOR CALCULATION SHEET NO 6

Permit Number: **8600896, 030132**

Process ID No. **31**

Process Description: **Security Substation L Emergency Generator**

Description of Correction: **CO, NOx, PM-10 & VOC Emission Factors**

Engine manufacturer emission data were used to determine the CO, NOx, PM-10, and VOC emission factors for the Security Substation L Emergency Generator. A copy of the manufacturer exhaust emission data sheet for the specific engine is attached. The emission factors were calculated based on an engine horse power of 170 bhp @ 1800 rpm and fuel use rate of 8.2 gal / hr while loaded. The specific calculations are described below. The SOx Emission Factor was calculated based on mass balance. Refer to Calculation Sheet 1 for a description of how the SOx Emission Factor was calculated.

CO Emission Factor:

$$CO\ (lb/Mgal) = \frac{(2.33\ g/hp\cdot hr)(170\ hp)(1\ lb/454\ g)}{(8.2\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 106\ lb/Mgal$$

NOx Emission Factor:

$$NOx\ (lb/Mgal) = \frac{(8.92\ g/hp\cdot hr)(170\ hp)(1\ lb/454\ g)}{(8.2\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 407\ lb/Mgal$$

PM-10 Emission Factor:

$$PM\text{–}10\ (lb/Mgal) = \frac{(0.33\ g/hp\cdot hr)(170\ hp)(1\ lb/454\ g)}{(8.2\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 14.6\ lb/Mgal$$

VOC Emission Factor:

$$VOC\ (lb/Mgal) = \frac{(0.14\ g/hp\cdot hr)(170\ hp)(1\ lb/454\ g)}{(8.2\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 6.34\ lb/Mgal$$

Power Generation

Exhaust Emission Data Sheet
100DGDB
60 Hz Diesel Generator Set

Engine Information:

Model:	Cummins, Inc 6BT5.9-G6	Bore:	4.02 in. (102 mm)
Type:	4 Cycle, In-line, 6 Cylinder Diesel	Stroke:	4.72 in. (120 mm)
Aspiration:	Turbocharged	Displacement:	359 cu. in. (5.9 liters)
Compression Ratio:	16.5:1		
Emission Control Device:	Turbocharger		

	Standby	Prime
PERFORMANCE DATA		
BHP @ 1800 RPM (60 Hz)	170	155
Fuel Consumption (gal/Hr)	8.2	7.6
Exhaust Gas Flow (CFM)	835	790
Exhaust Gas Temperature (°F)	995	955
EXHAUST EMISSION DATA		
HC (Total Unburned Hydrocarbons)	0.14	0.17
NOx (Oxides of Nitrogen as NO2)	8.92	8.02
CO (carbon Monoxide)	2.33	1.64
PM (Particular Matter)	0.33	0.28

All values are Grams per HP-Hour

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (±2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel Temperature:	99 ± 9 °F (at fuel pump inlet)
Intake Air Temperature:	77 ± 9 °F
Barometric Pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference Standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

EMISSIONS FACTOR CALCULATION SHEET NO 7

Permit Number: **8600896, 030132**

Process ID No. **32**

Process Description: **Security Hubs 2, 3, 4 Emergency Generators**

Description of Correction: **CO, NOx, PM-10 & VOC Emission Factors**

Engine manufacturer emission data were used to determine the CO, NOx, PM-10, and VOC emission factors for the Security Hubs 2, 3, and 4 Emergency Generators. A copy of the manufacturer exhaust emission data sheet for the specific engines is attached. The emission factors were calculated based on an engine horse power of 35 bhp @ 1800 rpm and fuel use rate of 2.1 gal / hr while loaded. The specific calculations are described below. The SOx Emission Factor was calculated based on mass balance. Refer to Calculation Sheet 1 for a description of how the SOx Emission Factor was calculated.

CO Emission Factor:

$$CO\ (lb/Mgal) = \frac{(1.49\ g/hp\cdot hr)(35\ hp)(1\ lb/454\ g)}{(2.1\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 54.8\ lb/Mgal$$

NOx Emission Factor:

$$NOx\ (lb/Mgal) = \frac{(10.5\ g/hp\cdot hr)(35\ hp)(1\ lb/454\ g)}{(2.1\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 385\ lb/Mgal$$

PM-10 Emission Factor:

$$PM\text{–}10\ (lb/Mgal) = \frac{(0.20\ g/hp\cdot hr)(35\ hp)(1\ lb/454\ g)}{(2.1\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 7.14\ lb/Mgal$$

VOC Emission Factor:

$$VOC\ (lb/Mgal) = \frac{(0.60\ g/hp\cdot hr)(35\ hp)(1\ lb/454\ g)}{(2.1\ gal\ fuel/hr)(1\ Mgal/1000\ gal)} = 21.9\ lb/Mgal$$

Power Generation

Exhaust Emission Data Sheet
20DNAF
60 Hz Diesel Generator Set

Engine Information:

Model:	Onan 4-cylinder-Turbo Water-cooled	Bore:	3.38 in. (86 mm)
Type:	4 Cycle, In-line, 4 Cylinder Diesel	Stroke:	3.15 in. (80 mm)
Aspiration:	Turbocharged	Displacement:	113.5 cu. in. (1.9 liters)
Compression Ratio:	16.2:1		
Emission Control Device:	Turbocharger		

	Standby	Prime
PERFORMANCE DATA		
BHP @ 1800 RPM (60 Hz)	35	32
Fuel Consumption (gal/Hr)	2.1	1.9
Exhaust Gas Flow (CFM)	150	150
Exhaust Gas Temperature (°F)	750	715
EXHAUST EMISSION DATA		
HC (Total Unburned Hydrocarbons)	0.60	N/A
NOx (Oxides of Nitrogen as NO2)	10.50	N/A
CO (carbon Monoxide)	1.49	N/A
PM (Particular Matter)	0.20	N/A

All values are Grams per HP-Hour

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (±2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel Temperature:	99 ± 9 °F (at fuel pump inlet)
Intake Air Temperature:	77 ± 9 °F
Barometric Pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference Standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

EMISSIONS FACTOR CALCULATION SHEET NO 8

Permit Number: **8600896, 030132**

Process ID No. **33**

Process Description: **Misc. Diesel Burning Combustion Sources**

Description of Correction: **CO, NOx, PM-10 & VOC Emission Factors**

All emission factors, except for SO_x were obtained from the County Website for SCC Code 10200503 (see attached). Refer to Emission Factor Calculation Sheet No. 1 for the SO_x emission factor calculation method.

			Emission Factor					
Industry Category	**SCC Description**	**SCC Code**	**CO**	**NOx**	**PM10**	**SOx**	**VOC**	**Emission Factor Unit**
Sand/Gravel	Pile Forming: Stacker, Load out,Mining / Plant Feed Handling with Watering	30502505			0.00055 controlled			lb/ton sand/gravel processed
Sand/Gravel	Bulk Loading	30502506			0.0024			lb/ton sand/gravel
Sand/Gravel	Stockpiles, raw material storage	30502507			630			lb/acre-yr stored
Sand/Gravel	Crushing (Primary, secondary, tertiary)	30502510			0.00054 controlled			lb/ton sand/gravel
Sand/Gravel	Screening	30502511			0.00074 controlled			lb/ton sand/gravel
Electrical Equipment	Electrical Windings Reclamation Single Chamber Incinerator/Oven	31307001	10	3	4.7	2.5	3	lb/ton charged
Electrical Equipment	Electrical Windings Reclamation Multiple Chamber Incinerator/Oven	31307002	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Single Chamber Incinerator	31401001	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Multiple Chamber Incinerator	31401002	10	3	4.7	2.5	3	lb/ton charged
Government Solid Waste Disposal	Incineration: Sludge Multiple Hearth	50100515	31	5	8.2	20	1.7	lb/ton dried sludge burned
Commercial/Institutional Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50200101	10	3	4.7	2.5	3	lb/ton waste burned
Commercial/Institutional Solid Waste Disposal	Incineration: Special Purpose Pathological & Cremation	50200505	0.6	11	0.8	1.4	0.2	lb/ton medical waste burned
Industrial Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50300101	10	3	4.7	2.5	3	lb/ton charged
Utility:	Residual Oil #6 Normal Firing	10100401	5	47	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Residual Oil #6 Tangential Firing	10100404	5	32	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Distillate Oil Normal Firing	10100501	5	24	2	143.6(S)	0.2	lb/1000 gallons
Utility:	Natural Gas Normal Firing > 100 MM Btu/Hr	10100601	84	190	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Normal Firing < 100 MMBtu/Hr	10100602	84	100	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Tangential Firing	10100604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	Residual Oil #6 10-100 MMBtu/Hr	10200402	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #6 < 10 MMBtu/Hr	10200403	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #5 > 10 MMBtu/Hr	10200404	5	47	8.6	162.7(S)	0.28	lb/1000 gallons
Industrial	Distillate Oil #1 or #2 > 10 MMBtu/Hr	10200501	5	24	2	147.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil 10-100 MMBtu/Hr	10200502	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil < 10 MMBtu/Hr	10200503	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil #4 > 100 MM Btu/Hr	10200504	5	47	6	155.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil Cogeneration Boiler	10200505	5	20	1	143.6(S)	0.2	lb/1000 gallons
Industrial	Natural Gas Over 100 MMBtu/Hr	10200601	84	280	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas 10-100 MMBtu/Hr	10200602	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas < 10 MMBtu/Hr	10200603	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas Cogeneration Boiler	10200604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	LPG: Butane	10201001	3.6	21	0.6	0.09(S)	0.6	lb/1000 gallons
Industrial	LPG: Propane	10201002	3.2	19	0.6	0.02	0.6	lb/1000 gallons
Commercial/Institutional	Distillate Oil Grade 1 & 2 Oil	10300501	5	24	1.08	142(S)	0.34	lb/1000 gallons

EMISSIONS FACTOR CALCULATION SHEET NO 9

Permit Number: **8600896, 030132**

Process ID No. **34**

Process Description: **Misc. LPG Burning Combustion Sources**

Description of Correction: **CO, NOx, PM-10 & VOC Emission Factors**

All emission factors, except for SO_x were obtained from the County Website for SCC Code 10201002 (see attached). Refer to Emission Factor Calculation Sheet No. 1 for the SO_x emission factor calculation method.

			Emission Factor					
Industry Category	**SCC Description**	**SCC Code**	**CO**	**NOx**	**PM10**	**SOx**	**VOC**	**Emission Factor Unit**
Sand/Gravel	Pile Forming: Stacker, Load out,Mining / Plant Feed Handling with Watering	30502505			0.00055 controlled			lb/ton sand/gravel processed
Sand/Gravel	Bulk Loading	30502506			0.0024			lb/ton sand/gravel
Sand/Gravel	Stockpiles, raw material storage	30502507			630			lb/acre-yr stored
Sand/Gravel	Crushing (Primary, secondary, tertiary)	30502510			0.00054 controlled			lb/ton sand/gravel
Sand/Gravel	Screening	30502511			0.00074 controlled			lb/ton sand/gravel
Electrical Equipment	Electrical Windings Reclamation Single Chamber Incinerator/Oven	31307001	10	3	4.7	2.5	3	lb/ton charged
Electrical Equipment	Electrical Windings Reclamation Multiple Chamber Incinerator/Oven	31307002	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Single Chamber Incinerator	31401001	10	3	4.7	2.5	3	lb/ton charged
Transportation Equipment	Brake Shoe Debonding Multiple Chamber Incinerator	31401002	10	3	4.7	2.5	3	lb/ton charged
Government Solid Waste Disposal	Incineration: Sludge Multiple Hearth	50100515	31	5	8.2	20	1.7	lb/ton dried sludge burned
Commercial/Institutional Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50200101	10	3	4.7	2.5	3	lb/ton waste burned
Commercial/Institutional Solid Waste Disposal	Incineration: Special Purpose Pathological & Cremation	50200505	0.6	11	0.8	1.4	0.2	lb/ton medical waste burned
Industrial Solid Waste Disposal	Incineration: General Multiple Chamber Incinerator	50300101	10	3	4.7	2.5	3	lb/ton charged
Utility:	Residual Oil #6 Normal Firing	10100401	5	47	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Residual Oil #6 Tangential Firing	10100404	5	32	9.2(S) + 3.2	163(S)	0.76	lb/1000 gallons
Utility:	Distillate Oil Normal Firing	10100501	5	24	2	143.6(S)	0.2	lb/1000 gallons
Utility:	Natural Gas Normal Firing > 100 MM Btu/Hr	10100601	84	190	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Normal Firing < 100 MMBtu/Hr	10100602	84	100	7.6	0.6	5.5	lb/MM cu ft
Utility:	Natural Gas Tangential Firing	10100604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	Residual Oil #6 10-100 MMBtu/Hr	10200402	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #6 < 10 MMBtu/Hr	10200403	5	55	8.03(S) + 2.65	159(S)	0.28	lb/1000 gallons
Industrial	Residual Oil #5 > 10 MMBtu/Hr	10200404	5	47	8.6	162.7(S)	0.28	lb/1000 gallons
Industrial	Distillate Oil #1 or #2 > 10 MMBtu/Hr	10200501	5	24	2	147.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil 10-100 MMBtu/Hr	10200502	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil < 10 MMBtu/Hr	10200503	5	20	2	144(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil #4 > 100 MM Btu/Hr	10200504	5	47	6	155.7(S)	0.2	lb/1000 gallons
Industrial	Distillate Oil Cogeneration Boiler	10200505	5	20	1	143.6(S)	0.2	lb/1000 gallons
Industrial	Natural Gas Over 100 MMBtu/Hr	10200601	84	280	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas 10-100 MMBtu/Hr	10200602	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas < 10 MMBtu/Hr	10200603	84	100	7.6	0.6	5.5	lb/MM cu ft
Industrial	Natural Gas Cogeneration Boiler	10200604	24	170	7.6	0.6	5.5	lb/MM cu ft
Industrial	LPG: Butane	10201001	3.6	21	0.6	0.09(S)	0.6	lb/1000 gallons
Industrial	LPG: Propane	10201002	3.2	19	0.6	0.02	0.6	lb/1000 gallons
Commercial/Institutional	Distillate Oil Grade 1 & 2 Oil	10300501	5	24	1.08	142(S)	0.34	lb/1000 gallons

EMISSIONS FACTOR CALCULATION SHEET NO 10

Permit Number: **8600896, 030132**

Process ID No. **90**

Process Description: **AMMONIA RELEASES FROM CIRCULATING WATER SYSTEMS**

Description of Correction: **Ammonia Emission Factor**

Ammonia releases were based on operational data obtained during 1998. A detailed ammonia emissions analysis for water treatment activities was repeated during 2004. Ammonia releases from all emissions sources due to use of ammonium hydroxide during the year 2004 was recalculated in order to update the emissions factor. Results of the calculations are attached. The emissions factor was based on the total amount of ammonia released during 2004 (excluding the amount released from the S/G cleaning process) and the total amount of ammonium hydroxide used during the year. The emissions factor accounts for all releases of ammonia due to use in the secondary system.

Ammonia EF (lb / NH_3OH lb) = (total ammonia released in lbs) / (total ammonium hydroxide used in lbs)

= (14,938 lbs) / (592,298 NH_3OH lbs)

= 0.02522 (lb / NH_3OH lb)

AMMONIA RELEASE CALCULATIONS
AMMONIA USE
(JANUARY 1 TO DECEMBER 31, 2004)

Operating Parameter Data				
PARAMETER	**FULL FLOW**	**BYPASS**	**OUTAGE**	**ANY TIME**
%NH3 CONC	10.00	10.00	0.00	N/A
NH3 USE RATE (in/day-unit)	**40.00**	**20.00**	**0.00**	N/A
CONVERSION (gal / in)	N/A	N/A	N/A	**6.50**
DAY TANK VOLUME (gal)	N/A	N/A	N/A	**200**
NH3 BULK CONC (wt%)	N/A	N/A	N/A	**30.00**
BULK NH3 S.G.	N/A	N/A	N/A	**0.90**

Calculation Results				
UNIT 1				
PARAMETER	**FULL FLOW**	**BYPASS**	**OUTAGE**	**TOTAL**
NH3 DAY TANK USE (gal)	82,680	130	0	82,810
NH3 DAY TANK FILLS	413	1	0	414
NH3 BULK USE (gal)	27,560	43	0	27,603
NH3 BULK USE (lbs)	206,865	325	0	207,191
UNIT 2				
PARAMETER	**FULL FLOW**	**BYPASS**	**OUTAGE**	**TOTAL**
NH3 DAY TANK USE (gal)	71,500	8,320	0	79,820
NH3 DAY TANK FILLS	358	42	0	400
NH3 BULK USE (gal)	23,833	2,773	0	26,607
NH3 BULK USE (lbs)	178,893	20,817	0	199,710
UNIT 3				
PARAMETER	**FULL FLOW**	**BYPASS**	**OUTAGE**	**TOTAL**
NH3 DAY TANK USE (gal)	74,100	0	0	74,100
NH3 DAY TANK FILLS	371	0	0	371
NH3 BULK USE (gal)	24,700	0	0	24,700
NH3 BULK USE (lbs)	185,398	0	0	185,398
TOTALS				
PARAMETER	**FULL FLOW**	**BYPASS**	**OUTAGE**	**TOTAL**
NH3 DAY TANK USE (gal)	228,280	8,450	0	236,730
NH3 DAY TANK FILLS	1,142	43	0	1,185
NH3 BULK USE (gal)	76,093	2,817	0	78,910
NH3 BULK USE (lbs)	571,157	21,142	0	592,298

AMMONIA RELEASE CALCULATIONS
OPERATING HISTORY
(JANUARY 1 TO DECEMBER 31, 2004)

Operating Parameter Data

PARAMETER	FULL FLOW	BYPASS	OUTAGE
AMMONIA CONC (PPM) IN CONDENSER - UNI	1.56	20.16	0.00
AMMONIA CONC (PPM) IN CONDENSER - UNI	0.71	18.16	0.00
AMMONIA CONC (PPM) IN CONDENSER - UNI	2.68	0.00	0.00
AMMONIA DAY TANK CONC (wt%)	10.00	10.00	0.00

Unit 1 Operating History

DEMIN STATUS	START DATE	END DATE	DAYS	% NH3 CONC
FULL FLOW	1/1/2004	2/3/2004	33	10.00
OUTAGE	2/3/2004	2/7/2004	4	0.00
FULL FLOW	2/7/2004	4/2/2004	55	10.00
OUTAGE	4/2/2004	5/9/2004	37	0.00
FULL FLOW	5/9/2004	6/15/2004	37	10.00
OUTAGE	6/15/2004	6/21/2004	6	0.00
FULL FLOW	6/21/2004	11/9/2004	141	10.00
BYPASS	11/9/2004	11/10/2004	1	10.00
FULL FLOW	11/10/2004	1/1/2005	52	10.00

Unit 2 Operating History

DEMIN STATUS	START DATE	END DATE	DAYS	% NH3 CONC
FULL FLOW	1/1/2004	2/19/2004	49	10.00
OUTAGE	2/19/2004	3/8/2004	18	0.00
FULL FLOW	3/8/2004	6/12/2004	96	10.00
BYPASS	6/12/2004	6/15/2004	3	10.00
OUTAGE	6/15/2004	6/19/2004	4	0.00
FULL FLOW	6/19/2004	6/29/2004	10	10.00
FULL FLOW	6/29/2004	7/13/2004	14	10.00
OUTAGE	7/13/2004	7/18/2004	5	0.00
FULL FLOW	7/18/2004	11/1/2004	106	10.00
BYPASS	11/1/2004	1/1/2005	61	10.00

Unit 3 Operating History

DEMIN STATUS	START DATE	END DATE	DAYS	% NH3 CONC
FULL FLOW	1/1/2004	2/28/2004	58	10.00
OUTAGE	2/28/2004	3/7/2004	8	0.00
FULL FLOW	3/7/2004	6/7/2004	92	10.00
OUTAGE	6/7/2004	6/10/2004	3	0.00
FULL FLOW	6/10/2004	6/15/2004	5	10.00
OUTAGE	6/15/2004	6/20/2004	5	0.00
FULL FLOW	6/20/2004	10/2/2004	104	10.00
OUTAGE	10/2/2004	12/6/2004	65	0.00
FULL FLOW	12/6/2004	1/1/2005	26	10.00

SUMMARY

UNIT	DAYS IN FULL FLOW	DAYS IN BYPASS	DAYS IN OUTAGE	TOTAL DAYS
UNIT 1	318	1	47	366
UNIT 2	275	64	27	366
UNIT 3	285	0	81	366
ALL UNITS	878	65	155	1,098

AMMONIA RELEASE CALCULATIONS
RELEASE SUMMARY
(JANUARY 1 TO DECEMBER 31, 2004)

RP #	RELEASE POINT DESCRIPTION	AMMONIA RELEASE (lbs)
1	Units 1, 2, 3 Secondary System Fugitive Emissions*	1,169
2-1	Unit 1 Secondary System Water Treatment Chemical Day Tank Vent	211
2-2	Unit 2 Secondary System Water Treatment Chemical Day Tank Vent	4,325
2-3	Unit 3 Secondary System Water Treatment Chemical Day Tank Vent	4,011
3-1	Unit 1 Maint Steam Safety Relief Valves	6
3-2	Unit 2 Maint Steam Safety Relief Valves	39
3-3	Unit 3 Maint Steam Safety Relief Valves	11
4-1	Unit 1 Atmospheric Dump Valves (Operation)	0
4-2	Unit 2 Atmospheric Dump Valves (Operation)	0
4-3	Unit 3 Atmospheric Dump Valves (Operation)	0
4-1	Unit 1 Atmospheric Dump Valves (Cleaning)	0
4-2	Unit 2 Atmospheric Dump Valves (Cleaning)	0
4-3	Unit 3 Atmospheric Dump Valves (Cleaning)	0
5-1	Unit 1 Condenser Off Gas / Gland Seal Exhaust	6
5-2	Unit 1 Condenser Off Gas / Gland Seal Exhaust	16
5-3	Unit 1 Condenser Off Gas / Gland Seal Exhaust	9
6-1	Unit 1 Miscellaneous Secondary Steam Leaks	21
6-2	Unit 2 Miscellaneous Secondary Steam Leaks	55
6-3	Unit 3 Miscellaneous Secondary Steam Leaks	31
7	Retention Basins	4,168
8	Evaporation Ponds	0
9	Steam Generator Chemical Cleaning Evaporator Discharge	0
10	WRF Fugitive Emissions	0
11-1	Unit 1 Cooling Towers	291
11-2	Unit 2 Cooling Towers	309
11-3	Unit 3 Cooling Towers	260
12	Steam Generator Chemical Cleaning Condenser System Exhaust	0
	Total	***14,938***

Includes ammonia losses from spill reports. Total losses in pounds = **0.00*

Comments

(1) Fugitive emissions from Release Point 10 result were not calculated due to the low concentration of ammonia. They were assumed to be negligible.

(2) Evaporation pond emissions were considered insignificant and not calculated due to low ammonia concentration and incorporation into

(3) Unit cooling tower emissions only included those from the STP since other ammonia in water was not plant related.

Off-Site Recycling / Disposal Forms 2004

There were two waste streams identified that sent material offsite for disposal.

Waste Stream Number: 01 – Waste cold cleaning solvents / degreasers
These materials were spent solvents that were used for parts cleaning operations. These materials were sent offsite for disposal.

Waste Stream Number: 02 – Waste paint thinners / cleaning solvents
These materials were the paint thinners and cleaning solvents that could not be recycled onsite. All materials were sent offsite for disposal.

WASTE DEGREASERS

Web Form

Off-Site Recycling/Disposal Form 2004

Permit number(s) 8600896, 030132

Provide one off-site recycling/disposal form for each waste stream at your business location. A waste stream is the waste from one or more processes mixed together to make one waste product before it is taken off site for recycling, disposal or combustion.

1) Assign a unique two-digit ID number to identify the waste stream that will be described below. 01
(Start with ID# 01 for first waste stream. Make a copy of this blank form and use 02 for second, etc.)

2) What was the quantity of this waste stream in 2004? 495 *Check one:* ☑ pounds ☐ gallons
Indicate whether this quantity is reported in pounds or gallons. Keep waste disposal company manifests as proof that this amount of waste was taken off site.

3) What was the **average** pollutant content of the waste stream? NOTE: Report in the same units (pounds or gallons) as used in Line 2.

VOC 0.95 lbs/unit HAP&NON 0 lbs/unit NHx 0 lbs/unit

4) Calculate the **total** annual pollutant content of the waste in this waste stream.
(volume of waste, from Line 2) x (pollutant content, from Line 3) = Total pollutants in waste stream, in lbs/yr.

VOC 470 lbs/yr HAP&NON N/A lbs/yr NHx N/A lbs/yr

5) List the process ID numbers of the processes contributing to this waste stream. Also estimate the pounds of pollutant that each process contributed to this waste stream.

NOTE: Column totals in the table below must equal the total for each pollutant type reported on line 4. The quantities you report below for each pollutant and process must also be reported in column 12 on the Evaporative Process Form.
See the Instructions for an example of a completed Off-Site Recycling/Disposal Form.

Process ID		Annual VOC (lbs)	Annual HAP&NON (lbs)	Annual NHx (lbs)
61	Contributed about	470 lbs	N/A lbs	N/A lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs
	Contributed about	lbs	lbs	lbs

WASTE PAINT THINNER

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1) Assign a unique two-digit ID number to identify the waste stream that will be described below. 02
(Start with ID# 01 for first waste stream. Make a copy of this blank form and use 02 for second, etc.)

2) What was the quantity of this waste stream in 2004? 1125
Check one: ☑ pounds ☐ gallons
Indicate whether this quantity is reported in pounds or gallons. Keep waste disposal company manifests as proof that this amount of waste was taken off site.

3) What was the **average** pollutant content of the waste stream? NOTE: Report in the same units (pounds or gallons) as used in Line 2.

VOC 0.95 lbs/unit HAP&NON 0 lbs/unit NHx 0 lbs/unit

4) Calculate the **total** annual pollutant content of the waste in this waste stream.
(volume of waste, from Line 2) x (pollutant content, from Line 3) = Total pollutants in waste stream, in lbs/yr.

VOC 1069 lbs/yr HAP&NON N/A lbs/yr NHx N/A lbs/yr

5) List the process ID numbers of the processes contributing to this waste stream. Also estimate the pounds of pollutant that each process contributed to this waste stream.

NOTE: Column totals in the table below must equal the total for each pollutant type reported on line 4. The quantities you report below for each pollutant and process must also be reported in column 12 on the Evaporative Process Form.
See the Instructions for an example of a completed Off-Site Recycling/Disposal Form.

Process ID	Annual VOC (lbs)	Annual HAP&NON (lbs)	Annual NHx (lbs)
65 Contributed about	1069 lbs	N/A lbs	N/A lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs
Contributed about	lbs	lbs	lbs