April 23, 97

		NOx EFFICIENCY TABLE						
			BURNER	NOx		CONTROLLED	UNCONTROLLED	
AQD #	SOURCE	MMBTU/hr	lb/MMBTU	lb/10^6ft^3	scf/hr	lb/hr	lb/hr	EFFICIENCY
80	CALCINER	400	0.05	550	386473	20*	212.56*	90.59
82	DRYER	200	0.15	550	193237	30	106.28	71.77
85	BOILER	100	0.038	140	96618	3.8	13.53	71.91
17		400	0.05	550	386473			90.6
48	like 82	1035 BTU/scf				10	106.28	90.6
	Uncontrolled emissions per AP 42					*400 x .05	550 x 386,473	(212.56 - 20/212.56) x 100

~~1035 Btu/scf~~

~~400,000,000 Btu ÷ 1035 Btu/scf~~

VOC 17

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TABLE 1.4-1. UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION[a]

Furnace size & type (10^6 Btu/hr heat input)	Particulate[b]		Sulfur dioxide[c]		Nitrogen oxides[d]		Carbon monoxide[e]		Volatile organics			
									Nonmethane		Methane	
	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$	$kg/10^6 m^3$	$lb/10^6 ft^3$
Utility boilers (> 100)	16 - 80	1 - 5	9.6	0.6	8800[h]	550[h]	640	40	23	1.4	4.8	0.3
Industrial boilers (10 - 100)	16 - 80	1 - 5	9.6	0.6	2240	140	560	35	44	2.8	48	3
Domestic and commercial boilers (< 10)	16 - 80	1 - 5	9.6	0.6	1600	100	320	20	84	5.3	43	2.7

[a]Expressed as weight/volume fuel fired.
[b]References 15-18.
[c]Reference 4. Based on avg. sulfur content of natural gas, 4600 $g/10^6$ Nm^3 (2000 $gr/10^6$ scf).
[d]References 4-5, 7-8, 11, 14, 18-19, 21.
[e]Expressed as NO_2. Tests indicate about 95 weight % NO_x is NO_2.
[f]References 4, 7-8, 16, 18, 22-25.
[g]References 16, 18. May increase 10 - 100 times with improper operation or maintenance.
[h]For tangentially fired units, use 4400 $kg/10^6$ m^3 (275 $lb/10^6$ ft^3). At reduced loads, multiply factor by load reduction coefficient in Figure 1.4-1. For potential NO_x reductions by combustion modification, see text. Note that NO_x reduction from these modifications will also occur at reduced load conditions.

VOC #17 – 0.54 PPH 0.68
#48 – 0.27 PPH 0.34

CA3 uncontrolled 132.85
controlled 12.5 90.59%

1,400 scf/hr 0.14 PPH

3,000 ft/min × π r² = 42,000

2.11 × 2

4.22

13. Air contaminant control equipment:

Burner

Emission Point	Type	Pollutant Removed	Efficiency
AQD #74	Baghouse	PM_{10}	99.99 %
AQD #75	Baghouse	PM_{10}	99.99 %
AQD #76	Baghouse	PM_{10}	99.99 %
AQD #77	Baghouse	PM_{10}	99.99 %
AQD #78	Baghouse	PM_{10}	99.99 %
AQD #79	Baghouse	PM_{10}	99.99 %
AQD #80	ESP	PM_{10}	99.99 %
	Low NO_X Burner	NO_X	90.45 %
AQD #81	Baghouse	PM_{10}	99.99 %
AQD #82	ESP	PM_{10}	99.99 %
	Low NO_X Burner	NO_X	71.36 %
AQD #83	Bin Vent	PM_{10}	99.99 %
AQD #84	Baghouse	PM_{10}	99.99 %
AQD #85	Low NO_X Burner	NO_X	71.50 %

- 0.051 lb/MMBtu

0.15 lb/MMBtu

0.038 lb/MMBtu

<400 mBtu

200

100

14. Type of combustion unit(check if applicable) :

A. Coal _____

1. Pulverized _____:

General _____; Dry Bottom _____; With Flyash Reinjection _____;

2. Spreader Stoker _____:

With Flyash Reinjection _____; Without Flyash Reinjection _____; Cyclone _____;

Hand-Fired _____;

B. Fuel Oil_____

Horizontally Fired _____; Tangentially Fired _____;

C. Natural Gas ___X___

D. If other, please specify_____

Hourly fuel consumption (estimate for new equipment) Calciner 386,473 scf /hr
Dryer 193,237 scf/hr
Boiler 96,618 scf/hr