LM2500 Performance Model
Permanent Project

Parameter	Variables	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Cold Max	Ann Avg
Generator Output, kw	**27353**	27353	27353	27353	27353	27353	27353	27353	27353	27353	27353	27353	27353		29213	27353
Fuel Flow, lb/hr	**10431.3**	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3	10431.3		10796.4	10431.3
Fuel HHV, BTU/lb	**23085**	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085		23085	23085
Fuel HHV, BTU/scf	**1050**	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050		1050	1050
Heat Input, mmBTU/hr (HHV)		240.81	240.81	240.81	240.81	240.81	240.81	240.81	240.81	240.81	240.81	240.81	240.81		249.24	240.81
Heat Rate, BTU/kw-hr (HHV)		8804	8804	8804	8804	8804	8804	8804	8804	8804	8804	8804	8804		8532	8804
Themal Efficiency (HHV)		38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%	38.8%		40.0%	38.8%
Exhaust Temp, F	**367**	367	367	367	367	367	367	367	367	367	367	367	367		350	367
Wet Exhaust Flow, lb/sec	**168**	168	168	168	168	168	168	168	168	168	168	168	168		176	168
Stack Height, ft	**70**	70	70	70	70	70	70	70	70	70	70	70	70		70	70
Stack Dia, ft	**9.11**	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11		9.11	9.11
Stack Area, sq ft		65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2		65.2	65.2
Exhaust Flow, wscfs		2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430	2430		2550	2430
Exhaust Flow, wacfs		3807	3807	3807	3807	3807	3807	3807	3807	3807	3807	3807	3807		3912	3807
Exhaust Flow, wacms		107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8		110.8	107.8
Stack Area, sq m		6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06		6.06	6.06
Exhaust Velo, m/s		17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8		18.3	17.8
Exhaust Height, m		21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3		21.3	21.3
Exhaust, dscfs @ 14.63%		1871	1871	1871	1871	1871	1871	1871	1871	1871	1871	1871	1871		1962	1871
Exhaust, mmdscfh @ 14.63%		6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73		7.06	6.73
Exhaust, mmdscfh @ 15%		7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16	7.16		7.51	7.16
Dry Fd factor, dscf/mmBTU		8391	8391	8391	8391	8391	8391	8391	8391	8391	8391	8391	8391		8505	8391
Uncontrolled Emissions																
NO_X, ppmvd @ 15%		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0
ROC, ppmvd @15%		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		6.0	4.0
CO, ppmvd @ 15%		40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0		44.0	40.0
Controlled Emissions	**Efficiency**															
NO_X, ppmvd @ 15%	**80%**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
ROC, ppmvd @15%	**65%**	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4		2.1	1.4
CO, ppmvd @ 15%	**90%**	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.4	4.0
NH_3, ppmvd @ 15%	**5.0**	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Controlled Emissions																
NO_X, lb/hr		4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27		4.48	4.27
ROC, lb/hr		0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42		0.65	0.42
CO, lb/hr		2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08		2.40	2.08
SO_2, lb/hr @ 0.0006 lb/mmbtu		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14		0.15	0.14
PM_{10}, lb/hr @ 0.0066 lb/mmbtu		1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59		1.64	1.59
NH_3, lb/hr		1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58		1.66	1.58
Controlled Emissions																
NO_X, lb/day (lb/start, stop)		102.55	102.55	102.55	102.55	102.55	102.55	102.55	102.55	102.55	102.55	102.55	102.55		107.58	102.55
ROC, lb/day (lb/start, stop)		9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99		15.72	9.99
CO, lb/day (lb/start, stop)		49.94	49.94	49.94	49.94	49.94	49.94	49.94	49.94	49.94	49.94	49.94	49.94		57.62	49.94
SO_2, lb/day (lb/start, stop)		3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47		3.59	3.47
PM_{10}, lb/day (lb/start, stop)		38.14	38.14	38.14	38.14	38.14	38.14	38.14	38.14	38.14	38.14	38.14	38.14		39.48	38.14
NH_3, lb/day (lb/start, stop)		37.90	37.90	37.90	37.90	37.90	37.90	37.90	37.90	37.90	37.90	37.90	37.90		39.76	37.90

Exhaust	mol wt	wet vol%	lb/lb-mol	dry vol%	lb/lb-mol
N_2 + Ar	28.16	63.31	17.83	82.25	23.16
O_2	32	11.26	3.60	**14.63**	4.68
CO_2	44	2.40	1.06	3.12	1.37
H_2O	18	23.03	4.15		0.00
Total		100.00	**26.63**	100.00	29.22

Emission Factor	Cold Max lb/mmcf	Ann Avg lb/mmcf
NO_X	18.8831	18.6310
ROC	2.7586	1.8145
CO	10.1147	9.0725
SO_2	0.6300	0.6300
PM_{10}	6.9299	6.9299
NH_3	6.9785	6.8854

Permanent Project: Base Load

SIC	4911	
PROCESS EQPT DESCRIPTION	LM2500 Gas Turbine	
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas	
TOTAL YEARLY PROCESS RATE	1949.43	mmcf
AVERAGE HOURLY PROCESS RATE	0.2293	mmcf
MAXIMUM HOURLY PROCESS RATE	0.2374	mmcf
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf
ON-LINE TIME	**8500**	**hrs/yr**
AVERAGE UNIT RATING	27.35	MW
AVERAGE HEAT INPUT	240.81	mmBTU/hr
MAX UNIT RATING	29.21	MW
MAX HEAT INPUT	249.24	mmBTU/hr

EMITTENT NAME	EMITTENT CONC.	AVG EF LBS/MMCF	MAX EF LBS/MMCF	ACTUAL LBS/HR	ACTUAL LBS/DAY	ANNUAL LBS/YR	ANNUAL TONS/YR	CNT MAX LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)	5.00	18.6310	18.8831	4.2729	102.5502	36319.9	18.160	4.4823	107.5752
Reactive Hydrocarbons (ROC) as CH_4	1.40	1.8145	2.7586	0.4161	9.9875	3537.2	1.769	0.6548	15.7153
Carbon Monoxide (CO)	4.00	9.0725	10.1147	2.0807	49.9375	17686.2	8.843	2.4010	57.6229
Sulfur Dioxide (SO_2)	0.12	0.6300	0.6300	0.1445	3.4677	1228.1	0.614	0.1495	3.5890
Particulates (as PM_{10})	0.0016	6.9299	6.9299	1.5893	38.1442	13509.4	6.755	1.6450	39.4792
Ammonia Slip (NH_3)	5.00	6.8854	6.9785	1.5791	37.8990	13422.6	6.711	1.6565	39.7561
Total HAPS (non-ammonia)	CAS NO.	1.2042	1.2042	0.2762	6.6281	2347.5	1.174	0.2858	6.8601
Acetaldehyde	75070	0.0148	0.0148	0.0034	0.0815	28.9	0.014	0.0035	0.0843
Acrolein	107028	0.0036	0.0036	0.0008	0.0198	7.0	0.004	0.0009	0.0205
Benzene	71432	0.0045	0.0045	0.0010	0.0249	8.8	0.004	0.0011	0.0258
Ethyl Benzene	100414	0.0053	0.0053	0.0012	0.0291	10.3	0.005	0.0013	0.0301
Formaldehyde	50000	0.0141	0.0141	0.0032	0.0776	27.5	0.014	0.0033	0.0803
Hexane	110543	0.7000	0.7000	0.1605	3.8530	1364.6	0.682	0.1662	3.9878
Naphthalene	91203	0.0003	0.0003	0.0001	0.0018	0.6	0.000	0.0001	0.0018
PAHs	1151	0.0001	0.0001	0.0000	0.0004	0.2	0.000	0.0000	0.0005
Propylene	115071	0.4209	0.4209	0.0965	2.3166	820.5	0.410	0.0999	2.3977
Toluene	108883	0.0290	0.0290	0.0067	0.1598	56.6	0.028	0.0069	0.1654
Xylenes	1210	0.0116	0.0116	0.0027	0.0636	22.5	0.011	0.0027	0.0659

Permanent Project: Composite Emissions

SIC	4911	
PROCESS EQPT DESCRIPTION	LM2500 Gas Turbine	
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas	
TOTAL YEARLY PROCESS RATE	1949.43	mmcf
AVERAGE HOURLY PROCESS RATE	0.2293	mmcf
MAXIMUM HOURLY PROCESS RATE	0.2374	mmcf
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf
ON-LINE TIME	8500	hrs/yr
AVERAGE UNIT RATING	27.35	MW
AVERAGE HEAT INPUT	240.81	mmBTU/hr
MAX UNIT RATING	29.21	MW
MAX HEAT INPUT	249.24	mmBTU/hr
AVERAGE STACK TEMP	367	Deg F
AVERAGE STACK TEMP	459	Deg K
AVERAGE STACK FLOW	228410	wacf/min
STACK HYDRAULIC DIAMETER	9.11	ft
STACK HYDRAULIC DIAMETER	2.78	m
STACK HYDRAULIC AREA	65.18	sq ft
AVG STACK VELOCITY	3504.20	ft/min
AVG STACK VELOCITY	17.80	m/sec
STACK HEIGHT AGL	70.00	ft
STACK HEIGHT AGL	21.34	m

Annual Fuel Usage	**1,949.43**	**mmcf**
Annual Heat Input, HHV	**2,046,879**	**mmBTU**
Annual Energy Conversion, HHV	**793,524**	**mmBTU**
Annual Waste Heat, HHV	**1,253,355**	**mmBTU**
Annual Energy Production	**232,501**	**MW-hrs**
Average Heat Rate, HHV	**8,804**	**BTU/kw-hr**
Average Thermal Efficiency, HHV	**38.77%**	

	AVERAGE		MAXIMUM
Parameter	grams/sec		grams/sec
NO_X	0.52240		0.56476
ROG	0.05088		0.08250
CO	0.25438		0.30251
SO_2	0.01766		0.01884
PM_{10}	0.19431		0.20726
NH_3	0.19306		0.20871
TOT HAPS	0.03376		0.03601
75070	0.00041		0.00044
107028	0.00010		0.00011
71432	0.00013		0.00014
100414	0.00015		0.00016
50000	0.00040		0.00042
110543	0.01963		0.02094
91203	0.00001		0.00001
1151	0.00000		0.00000
115071	0.01180		0.01259
108883	0.00081		0.00087
1210	0.00032		0.00035

Permanent Project: Composite Emissions

EMITTENT NAME	CAS NO.	ANNUAL LBS/YR	ANNUAL TONS/YR	ACTUAL LBS/HR	ACTUAL LBS/DAY	AVERAGE LBS/HR	AVERAGE LBS/DAY	MAXIMUM LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)		36,319.9	18.16	4.2729	102.5502	4.1461	99.5065	4.4823	107.5752
Reactive Hydrocarbons (ROC) as CH_4		3,537.2	1.77	0.4161	9.9875	0.4038	9.6911	0.6548	15.7153
Carbon Monoxide (CO)		17,686.2	8.84	2.0807	49.9375	2.0190	48.4553	2.4010	57.6229
Sulfur Dioxide (SO_2)		1,228.1	0.61	0.1445	3.4677	0.1402	3.3647	0.1495	3.5890
Particulates (as PM_{10})		13,509.4	6.75	1.5893	38.1442	1.5422	37.0121	1.6450	39.4792
Ammonia Slip (NH_3)		13,422.6	6.71	1.5791	37.8990	1.5323	36.7741	1.6565	39.7561
Total HAPS (non-ammonia)		2,347.5	1.17	0.2762	6.6281	0.2680	6.4314	0.2858	6.8601
Acetaldehyde	75070	28.9	0.01	0.0034	0.0815	0.0033	0.0790	0.0035	0.0843
Acrolein	107028	7.0	0.00	0.0008	0.0198	0.0008	0.0192	0.0009	0.0205
Benzene	71432	8.8	0.00	0.0010	0.0249	0.0010	0.0241	0.0011	0.0258
Ethyl Benzene	100414	10.3	0.01	0.0012	0.0291	0.0012	0.0282	0.0013	0.0301
Formaldehyde	50000	27.5	0.01	0.0032	0.0776	0.0031	0.0753	0.0033	0.0803
Hexane	110543	1,364.6	0.68	0.1605	3.8530	0.1558	3.7386	0.1662	3.9878
Naphthalene	91203	0.6	0.00	0.0001	0.0018	0.0001	0.0017	0.0001	0.0018
PAHs	1151	0.2	0.00	0.0000	0.0004	0.0000	0.0004	0.0000	0.0005
Propylene	115071	820.5	0.41	0.0965	2.3166	0.0937	2.2479	0.0999	2.3977
Toluene	108883	56.6	0.03	0.0067	0.1598	0.0065	0.1551	0.0069	0.1654
Xylenes	1210	22.5	0.01	0.0027	0.0636	0.0026	0.0617	0.0027	0.0659

Phase 2 - Each Unit Emissions with Controls	Control Efficiency	AHU lb/hr	AHC lb/hr	MHU lb/hr	MHC lb/hr	MDU lb/day	MDC lb/day	AA lb/yr	30-DAY lb/day
Nitrogen Oxides (as NO_2)	80%	20.73	4.15	22.41	4.48	537.88	107.58	36,320	102.55
Reactive Hydrocarbons (ROC) as CH_4	65%	1.15	0.40	1.87	0.65	44.90	15.72	3,537	9.99
Carbon Monoxide (CO)	90%	20.19	2.02	24.01	2.40	576.23	57.62	17,686	49.94
Sulfur Dioxide (SO_2)	0%	0.14	0.14	0.15	0.15	3.59	3.59	1,228	3.47
Particulates (as PM_{10})	0%	1.54	1.54	1.64	1.64	39.48	39.48	13,509	38.14
Ammonia Slip (NH_3)		0.00	1.53	0.00	1.66	0.00	39.76	13,423	37.90

Permanent Project
Multiple Unit Emissions

SIC	4911		
PROCESS EQPT DESCRIPTION	**LM2500 Gas Turbine, N =**		2
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas		
TOTAL YEARLY PROCESS RATE	3898.86	mmcf	
AVERAGE HOURLY PROCESS RATE	0.4587	mmcf	
MAXIMUM HOURLY PROCESS RATE	0.4747	mmcf	
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf	
ON-LINE TIME	8500	hrs/yr	
AVERAGE UNIT RATING	54.71	MW	
AVERAGE HEAT INPUT	481.62	mmBTU/hr	
MAX UNIT RATING	58.43	MW	
MAX HEAT INPUT	498.48	mmBTU/hr	
AVERAGE STACK TEMP	367	Deg F	
AVERAGE STACK TEMP	459	Deg K	
AVERAGE STACK FLOW	456821	wacf/min	
STACK HYDRAULIC DIAMETER	12.88	ft	
STACK HYDRAULIC DIAMETER	3.93	m	
STACK HYDRAULIC AREA	130.36	sq ft	
AVG STACK VELOCITY	3504.20	ft/min	
AVG STACK VELOCITY	17.80	m/sec	
STACK HEIGHT AGL	70.00	ft	
STACK HEIGHT AGL	21.34	m	

Annual Fuel Usage	**3,898.86**	**mmcf**
Annual Heat Input, HHV	**4,093,757**	**mmBTU**
Annual Energy Conversion, HHV	**1,587,048**	**mmBTU**
Annual Waste Heat, HHV	**2,506,709**	**mmBTU**
Annual Energy Production	**465,001**	**MW-hrs**
Average Heat Rate, HHV	**8,804**	**BTU/kw-hr**
Average Thermal Efficiency, HHV	**38.77%**	

	AVERAGE		MAXIMUM
Parameter	grams/sec		grams/sec
NO_X	1.04480		1.12951
ROG	0.10175		0.16501
CO	0.50877		0.60503
SO_2	0.03533		0.03768
PM_{10}	0.38862		0.41452
NH_3	0.38612		0.41743
TOT HAPS	0.06753		0.07203
75070	0.00083		0.00089
107028	0.00020		0.00022
71432	0.00025		0.00027
100414	0.00030		0.00032
50000	0.00079		0.00084
110543	0.03925		0.04187
91203	0.00002		0.00002
1151	0.00000		0.00000
115071	0.02360		0.02518
108883	0.00163		0.00174
1210	0.00065		0.00069

Permanent Project
Multiple Unit Emissions

EMITTENT NAME	CAS NO.	ANNUAL LBS/YR	ANNUAL TONS/YR	ACTUAL LBS/HR	ACTUAL LBS/DAY	AVERAGE LBS/HR	AVERAGE LBS/DAY	MAXIMUM LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)		72,640	36.32	8.546	205.100	8.292	199.013	8.965	215.150
Reactive Hydrocarbons (ROC) as CH_4		7,074	3.54	0.832	19.975	0.808	19.382	1.310	31.431
Carbon Monoxide (CO)		35,372	17.69	4.161	99.875	4.038	96.911	4.802	115.246
Sulfur Dioxide (SO_2)		2,456	1.23	0.289	6.935	0.280	6.729	0.299	7.178
Particulates (as PM_{10})		27,019	13.51	3.179	76.288	3.084	74.024	3.290	78.958
Ammonia Slip (NH_3)		26,845	13.42	3.158	75.798	3.065	73.548	3.313	79.512
Total HAPS (non-ammonia)		4,695	2.35	0.552	13.256	0.536	12.863	0.572	13.720
Acetaldehyde	75070	58	0.03	0.007	0.163	0.007	0.158	0.007	0.169
Acrolein	107028	14	0.01	0.002	0.040	0.002	0.038	0.002	0.041
Benzene	71432	18	0.01	0.002	0.050	0.002	0.048	0.002	0.052
Ethyl Benzene	100414	21	0.01	0.002	0.058	0.002	0.056	0.003	0.060
Formaldehyde	50000	55	0.03	0.006	0.155	0.006	0.151	0.007	0.161
Hexane	110543	2,729	1.36	0.321	7.706	0.312	7.477	0.332	7.976
Naphthalene	91203	1	0.00	0.000	0.004	0.000	0.003	0.000	0.004
PAHs	1151	0	0.00	0.000	0.001	0.000	0.001	0.000	0.001
Propylene	115071	1,641	0.82	0.193	4.633	0.187	4.496	0.200	4.795
Toluene	108883	113	0.06	0.013	0.320	0.013	0.310	0.014	0.331
Xylenes	1210	45	0.02	0.005	0.127	0.005	0.123	0.005	0.132

Phase 2 - Both Units		Actual	Actual	Permitted
Emissions with Controls		lb/hr	lb/day	Tons/yr
Nitrogen Oxides (as NO_2)		8.55	205.10	36.32
Reactive Hydrocarbons (ROC) as CH_4		0.83	19.98	3.54
Carbon Monoxide (CO)		4.16	99.88	17.69
Sulfur Dioxide (SO_2)		0.29	6.94	1.23
Particulates (as PM_{10})		3.18	76.29	13.51
Ammonia Slip (NH_3)		3.16	75.80	13.42

Rule 212 and 1401 Health Risk Assessment, Tier 4 Analysis

Note 1: Emission rates from PTE/permitted calculations
Note 2: Operating schedule = 24 hrs/day
Note 3: Unit risk factors, REL, and MP values from Table 8A (Risk Assessment Procedures, August 18, 2000).
Note 4: Target Organs by TAC from Tables 10-A & 10-B (Risk Assessment Procedures).
Note 5: X/Q values obtained via ISCST3 modeling (micrograms/cubic meter).

Substance Name	Qhr (lbs/hr)	Q_{tons} (tons/yr)	X/Q (residential)	X/Q (industrial)	X/Q_{max} (HIA)	LEA (residential)	LEA (industrial)	Unit Risk Factor (U)	REL (Chronic)	REL (Acute)	MP (MICR)	MP (Chronic)	MET (Chronic)	AF (Acute)	MICR (residential)	MICR (industrial)	Chronic Index (HIC)	Acute Index (HIA)
Ammonia	3.3130	13.4226	1.88351	4.22000	21.94736	1.00	0.14		2.00E+02	3.20E+03		1.0	1.00	1.0	-	-	1.26E-01	2.27E-02
Acetaldehyde	0.0070	0.0289	1.88351	4.22000	21.94736	1.00	0.14	2.70E-06	9.00E+00		1.0	1.0	1.00		1.47E-07	4.60E-08	6.04E-03	-
Acrolein	0.0017	0.0070	1.88351	4.22000	21.94736	1.00	0.14		6.00E-02	1.90E-01		1.0	1.00	1.0	-	-	2.20E-01	1.97E-01
Benzene	0.0021	0.0088	1.88351	4.22000	21.94736	1.00	0.14	2.90E-05	6.00E+01	1.30E+03	1.0	1.0	1.00	0.83	4.81E-07	1.51E-07	2.77E-04	3.01E-05
Ethyl Benzene	0.0025	0.0103	1.88351	4.22000	21.94736	1.00	0.14		2.00E+03			1.0	1.00		-	-	9.69E-06	-
Formaldehyde	0.0067	0.0275	1.88351	4.22000	21.94736	1.00	0.14	6.00E-06	3.00E+00	9.40E+01	1.0	1.0	1.00	1.0	3.11E-07	9.74E-08	1.73E-02	1.56E-03
Hexane	0.3323	1.3646	1.88351	4.22000	21.94736	1.00	0.14		7.00E+03			1.0	1.00		-	-	3.67E-04	-
Naphthalene	0.0002	0.0006	1.88351	4.22000	21.94736	1.00	0.14		9.00E+00			1.0	1.00		-	-	1.31E-04	-
PAHs	0.0000	0.0002	1.88351	4.22000	21.94736	1.00	0.14	1.10E-03			12.7				4.10E-06	1.29E-06	-	-
Propylene	0.1998	0.8205	1.88351	4.22000	21.94736	1.00	0.14		3.00E+03			1.0	1.00		-	-	5.15E-04	-
Toluene	0.0138	0.0566	1.88351	4.22000	21.94736	1.00	0.14		3.00E+02	3.70E+04		1.0	1.00	1.0	-	-	3.55E-04	8.18E-06
Xylenes	0.0055	0.0225	1.88351	4.22000	21.94736	1.00	0.14		7.00E+02	2.20E+04		1.0	1.00	1.0	-	-	6.06E-05	5.47E-06
														Total Maximum Individual Cancer Risk (MICR) =	**5.04E-06**	**1.58E-06**	**3.72E-01**	**2.22E-01**

TOTAL CHRONIC HAZARD INDEX PER ORGAN

System	HIC
CV/BL	0.00028
CNS/PNS	0.00106
IMMUN	0.00000
ENDO	0.00001
EYE	0.23756
KIDN	0.00001
GI/LV	0.00001
REPR	0.00064
RESP	0.37135
SKIN	0.00000

TOTAL ACUTE HAZARD INDEX PER ORGAN

System	HIA
CV/BL	0.00003
CNS/PNS	0.00001
EYE	0.22172
IMMUN	0.00159
KIDN	0.00000
GI/LV	0.00000
REPR	0.00004
RESP	0.22172
SKIN	0.00000

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Acute and Chronic Hazard Index Target Organs

Substance	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC		ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	CHRONIC
Name	CV/BL	CNS/PNS	IMMUN	ENDO	EYE	KIDN	GI/LV	REPR	RESP	SKIN		CV/BL	CNS/PNS	EYE	IMMUN	KIDN	GI/LV	REPR	RESP	SKIN	CV/BL
Ammonia									1					1					1		-
Acetaldehyde									1												-
Acrolein					1				1					1					1		-
Benzene	1	1						1	1			1			1			1			2.77E-04
Ethyl Benzene				1		1	1	1													-
Formaldehyde					1				1					1	1				1		-
Hexane		1																			-
Naphthalene									1												-
PAHs																					-
Propylene									1												-
Toluene		1						1	1				1	1				1	1		-
Xylenes		1							1					1					1		-
																					2.77E-04

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ıd Chronic Hazard Index Totals (Cumulative Effect)

Substance	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC		ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE
Name	CNS/PNS	IMMUN	ENDO	EYE	KIDN	GI/LV	REPR	RESP	SKIN		CV/BL	CNS/PNS	EYE	IMMUN	KIDN	GI/LV	REPR	RESP	SKIN
Ammonia	-	-	-	-	-	-	-	1.26E-01	-		-	-	2.27E-02	-	-	-	-	2.27E-02	-
Acetaldehyde	-	-	-	-	-	-	-	6.04E-03	-		-	-	-	-	-	-	-	-	-
Acrolein	-	-	-	2.20E-01	-	-	-	2.20E-01	-		-	-	1.97E-01	-	-	-	-	1.97E-01	-
Benzene	2.77E-04	-	-	-	-	-	2.77E-04	2.77E-04	-		3.01E-05	-	-	3.01E-05	-	-	3.01E-05	-	-
Ethyl Benzene	-	-	9.69E-06	-	9.69E-06	9.69E-06	9.69E-06	-	-		-	-	-	-	-	-	-	-	-
Formaldehyde	-	-	-	1.73E-02	-	-	-	1.73E-02	-		-	-	1.56E-03	1.56E-03	-	-	-	1.56E-03	-
Hexane	3.67E-04	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	1.31E-04	-		-	-	-	-	-	-	-	-	-
PAHs	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Propylene	-	-	-	-	-	-	-	5.15E-04	-		-	-	-	-	-	-	-	-	-
Toluene	3.55E-04	-	-	-	-	-	3.55E-04	3.55E-04	-		-	8.18E-06	8.18E-06	-	-	-	8.18E-06	8.18E-06	-
Xylenes	6.06E-05	-	-	-	-	-	-	6.06E-05	-		-	-	5.47E-06	-	-	-	-	5.47E-06	-
	1.06E-03	0.00E+00	9.69E-06	2.38E-01	9.69E-06	9.69E-06	6.42E-04	3.71E-01	0.00E+00		3.01E-05	8.18E-06	2.22E-01	1.59E-03	0.00E+00	0.00E+00	3.82E-05	2.22E-01	0.00E+00

Permanent Project: Fuel Gas

Component Gas	Chemical Formula	Molecular Weight	HHV btu/scf	Composition mole fraction	Composition Mole Wt	HHV btu/scf	HHV btu/lb
Carbon Dioxide	CO_2	44		0.0100	0.44		
Hydrogen Sulfide	H_2S	34		4.0E-06	0.0001		
Mercaptans	CH_3SH, C_2H_5SH	55		5.0E-06	0.0003		
Other Sulfur	COS, CS_2	68		2.0E-06	0.0001		
Water	H_2O	18		0.0002	0.0036		
Nitrogen	N_2	28		0.0090	0.25		
Oxygen	O_2	32		0.0010	0.03		
Methane	CH_4	16	1010	0.9248	14.80	934.0	
Ethane	C_2H_6	30	1769	0.0350	1.05	61.9	
Propane	C_3H_8	44	2518	0.0150	0.66	37.8	
Butane	C_4H_{10}	58	3264	0.0050	0.29	16.3	
TOTAL				**1.0000**	**17.52**	**1050.0**	**23085.3**