Contents of Report

The Title V Operating Permit requires a semi-annual report by January 31 and July 31 of each year. This report for the semi-annual reporting period of January 1, 2000 through June 30, 2000, contains the following sections:

1. Fuel Burning Equipment
2. Kymene Process Area
3. AKD Process Area
4. HRA Process Area
5. Poly-Pale Process Area
6. RAD Process Area
7. Neuphor Process Area
8. Kymene LDAR Monitoring
9. RAD LDAR Monitoring
10. Deviations from Permit Requirements

Fuel Burning Equipment

FUEL BURNING REPORT SUMMARY

As required by 5.B.6 and 5.B.7, monthly records of the type and quantity of fuel combusted are provided in this section. Only natural gas was combusted during this semi-annual reporting period.

MONITORING, RECORDKEEPING & REPORTING REQUIREMENT **5.A.4**

YEAR 2000

GAS USAGE - MCF

EMISSION POINT	DESCRIPTION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
AC001	Poly-pale nat. gas Dowtherm boiler	0	960	3360	1680	1200	2160	0			0			9360
AF001	RAD nat. gas Dowtherm boiler	2040	1680	0	960	2160	360		0	0	0	0	0	7200
AG001	HRA nat. gas Dowtherm boiler	998	383	391	375	221	303							2671
AG002	HRA nat. gas Dowtherm boiler	0	0	0	0	0	0		0	0	0	0	0	0
AJ001	Rosin dist. nat. gas Dowtherm boiler	71	93	142	104	0	461							871
AK001	Hydrogen nat. gas Dowtherm boiler	0	0	0	0	0	0	0	0	0	0	0	0	0
AL001	Silica nat. gas Dowtherm boiler	0	0	0	0	0	0	0	0	0	0	0	0	0
AM001	No. 5 package boiler	33224	33069	25713	25229	20967	23615							161817
AM002	No. 6 package boiler	369	0	1742	501	0	0	0	0	0				2612
AN001	Reg. furnace nat. gas boiler	0	0	0	0	0	0	0	0	0	0	0	0	0
														184531

T5ngas

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 01/00

02/07/00 20:13:44
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
01/01/00	1	500	100	8.072	3.260	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	25	24.0	44.9	110.5	6.0	0.5981	1932	1012.7000	1957
2	3	2	19	24.0	50.3	110.9	3.6	0.5981	1431	1012.7000	1449
3	4	3	21	24.0	48.9	110.5	5.3	0.5981	1616	1012.7000	1637
4	5	4	44	24.0	42.0	108.9	20.4	0.5981	3346	1012.7000	3388
5	6	5	42	24.0	42.1	108.6	21.5	0.5981	3234	1012.7000	3276
6	7	6	42	24.0	42.6	107.7	23.1	0.5981	3218	1012.7000	3259
7	8	7	49	24.0	42.7	107.9	23.0	0.5981	3698	1012.7000	3745
8	9	8	36	24.0	45.4	109.1	13.8	0.5981	2731	1012.7000	2766
9	10	9	29	24.0	46.0	109.8	8.0	0.5981	2176	1012.7000	2204
10	11	10	35	24.0	43.2	109.4	13.7	0.5981	2699	1012.7000	2733
11	12	11	36	24.0	44.0	109.9	12.4	0.5981	2748	1012.7000	2783
12	13	12	32	24.0	46.0	110.4	9.3	0.5981	2404	1012.7000	2435
13	14	13	39	24.0	43.7	109.5	19.4	0.5981	3003	1012.7000	3041
14	15	14	52	24.0	43.0	108.5	26.9	0.5981	3971	1012.7000	4021
15	16	15	42	24.0	43.7	109.4	17.3	0.5981	3176	1012.7000	3216
16	17	16	36	24.0	44.5	110.0	12.4	0.5981	2736	1012.7000	2771
17	18	17	29	24.0	46.2	110.5	8.2	0.5981	2180	1012.7000	2208
18	19	18	28	24.0	46.6	110.5	7.6	0.5981	2132	1012.7000	2159
19	20	19	33	24.0	45.3	109.8	11.0	0.5981	2490	1012.7000	2522
20	21	20	51	24.0	43.2	108.3	25.3	0.5981	3849	1012.7000	3898
21	22	21	47	24.0	43.6	108.7	21.8	0.5981	3547	1012.7000	3592
22	23	22	38	24.0	45.5	109.2	14.3	0.5981	2877	1012.7000	2914
23	24	23	46	24.0	43.8	108.4	23.9	0.5981	3489	1012.7000	3533
24	25	24	60	24.0	44.3	106.9	36.7	0.5981	4567	1012.7000	4625
25	26	25	62	23.8	49.4	117.4	34.6	0.5981	4622	1012.7000	4681
26	27	26	60	24.0	49.1	122.2	31.5	0.5981	4527	1012.7000	4584
27	28	27	57	24.0	47.6	121.8	30.5	0.5981	4299	1012.7000	4354
28	29	28	63	24.0	47.1	121.9	34.1	0.5981	4790	1012.7000	4851
29	30	29	61	24.0	46.3	122.3	30.5	0.5981	4613	1012.7000	4672
30	31	30	63	24.0	46.9	122.0	35.6	0.5981	4812	1012.7000	4873
31	1	31	60	24.0	48.0	122.5	31.2	0.5981	4569	1012.7000	4627
Total									101482		102773

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
01/01/00	C	4.8	1.0700	2.0260	0.0000	95.1060	1.0090	0.2430	0.0760	0.1080	0.0590	0.0610	0.2420

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 02/00

03/07/00 20:11:31
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

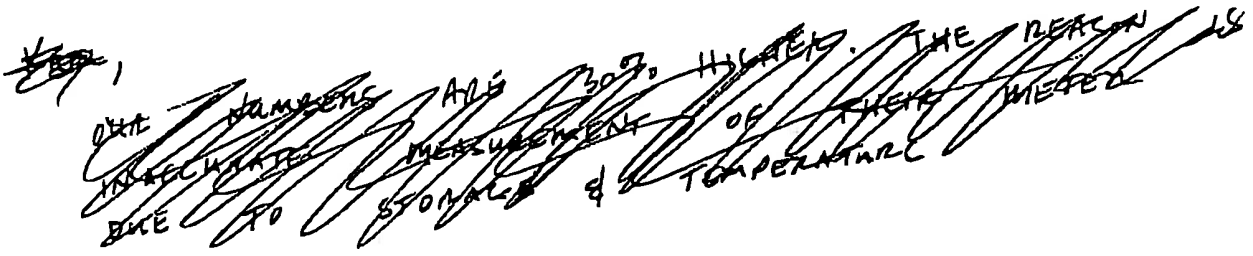
EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
02/01/00	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	41	24.0	47.7	122.3	18.5	0.5981	3086	1012.7000	3125
2	3	2	46	24.0	48.7	121.6	30.3	0.5981	3463	1012.7000	3507
3	4	3	41	24.0	46.1	122.3	23.5	0.5981	3114	1012.7000	3154
4	5	4	44	24.0	46.7	122.3	22.0	0.5981	3311	1012.7000	3353
5	6	5	53	24.0	46.3	121.8	31.0	0.5981	4017	1012.7000	4068
6	7	6	49	24.0	45.7	122.0	27.6	0.5981	3713	1012.7000	3760
7	8	7	0	24.0	45.4	122.6	23.0	0.5981	3164	1012.7000	3194
8	9	8	42	24.0	44.9	121.9	29.6	0.5981	3227	1012.7000	3268
9	10	9	39	24.0	42.0	122.5	15.9	0.5981	3010	1012.7000	3048
10	11	10	36	24.0	44.3	122.4	13.0	0.5981	2770	1012.7000	2805
11	12	11	29	24.0	47.0	123.8	8.9	0.5981	2227	1012.7000	2255
12	13	12	26	24.0	47.1	123.5	7.0	0.5981	2015	1012.7000	2041
13	14	13	27	24.0	47.8	123.2	6.9	0.5981	2054	1012.7000	2080
14	15	14	61	24.0	43.7	123.2	41.5	0.5981	4660	1012.7000	4719
15	16	15	65	24.0	45.6	123.6	39.9	0.5981	4928	1012.7000	4991
16	17	16	61	24.0	45.6	123.6	38.7	0.5981	4675	1012.7000	4734
17	18	17	66	24.0	47.4	123.2	44.6	0.5981	5037	1012.7000	5101
18	19	18	65	24.0	47.9	123.4	45.3	0.5981	4916	1012.7000	4978
19	20	19	62	24.0	44.7	123.6	41.7	0.5981	4755	1012.7000	4815
20	21	20	63	24.0	45.3	123.1	40.9	0.5981	4802	1012.7000	4863
21	22	21	61	24.0	44.0	123.2	36.6	0.5981	4657	1012.7000	4716
22	23	22	59	24.0	44.9	123.2	38.1	0.5981	4487	1012.7000	4544
23	24	23	71	24.0	45.5	123.1	56.7	0.5981	5419	1012.7000	5488
24	25	24	73	24.0	45.8	123.6	54.6	0.5981	5525	1012.7000	5595
25	26	25	69	24.0	47.4	123.1	52.0	0.5981	5241	1012.7000	5308
26	27	26	74	24.0	46.4	122.9	50.1	0.5981	5617	1012.7000	5688
27	28	27	76	24.0	44.2	122.6	57.4	0.5981	5772	1012.7000	5845
28	29	28	60	24.0	44.9	122.7	38.6	0.5981	4588	1012.7000	4646
29	1	29	78	24.0	46.1	123.0	55.8	0.5981	5913	1012.7000	5988
Total									120153		121677

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
01/01/00	C	4.6	1.0700	2.0260	0.0000	95.1060	1.0090	0.2430	0.0760	0.1080	0.0590	0.0610	0.2420



Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 03/00

04/07/00 20:59:31
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
03/01/00	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	80	24.0	45.7	123.0	55.7	0.6001	6105	1010.6000	6170
2	3	2	83	24.0	45.4	122.9	61.6	0.6001	6340	1010.6000	6407
3	4	3	78	24.0	46.0	122.8	52.4	0.6001	5964	1010.6000	6027
4	5	4	75	24.0	44.7	122.4	54.7	0.6001	5698	1010.6000	5758
5	6	5	69	24.0	45.2	122.7	43.4	0.6001	5296	1010.6000	5352
6	7	6	73	24.0	45.9	123.0	46.8	0.6001	5576	1010.6000	5635
7	8	7	70	24.0	46.7	123.2	41.3	0.6001	5316	1010.6000	5372
8	9	8	68	24.0	47.4	123.2	39.0	0.6001	5187	1010.6000	5242
9	10	9	67	24.0	48.2	123.2	37.8	0.6001	5126	1010.6000	5180
10	11	10	72	24.0	47.9	123.2	42.9	0.6001	5489	1010.6000	5547
11	12	11	65	24.0	45.8	122.4	41.7	0.6001	4956	1010.6000	5009
12	13	12	61	24.0	46.0	122.2	37.7	0.6001	4661	1010.6000	4710
13	14	13	59	24.0	46.5	122.4	35.2	0.6001	4469	1010.6000	4516
14	15	14	76	24.0	46.9	122.6	52.5	0.6001	5771	1010.6000	5832
15	16	15	83	24.0	47.3	122.5	57.9	0.6001	6275	1010.6000	6342
16	17	16	75	24.0	47.2	122.7	49.2	0.6001	5723	1010.6000	5784
17	18	17	79	24.0	46.5	122.7	52.7	0.6001	5994	1010.6000	6058
18	19	18	77	24.0	46.5	122.5	49.7	0.6001	5841	1010.6000	5903
19	20	19	80	24.0	45.8	122.2	59.3	0.6001	6072	1010.6000	6136
20	21	20	64	24.0	46.6	122.4	44.1	0.6001	4861	1010.6000	4913
21	22	21	74	24.0	47.0	122.8	49.8	0.6001	5649	1010.6000	5709
22	23	22	76	24.0	47.1	122.9	49.8	0.6001	5801	1010.6000	5862
23	24	23	75	24.0	47.9	123.0	48.4	0.6001	5704	1010.6000	5764
24	25	24	72	24.0	48.2	123.0	43.5	0.6001	5470	1010.6000	5528
25	26	25	68	24.0	48.7	123.1	37.8	0.6001	5136	1010.6000	5190
26	27	26	78	24.0	47.2	122.5	50.9	0.6001	5894	1010.6000	5956
27	28	27	82	24.0	47.7	122.1	59.3	0.6001	6239	1010.6000	6306
28	29	28	76	24.0	49.4	122.7	50.5	0.6001	5790	1010.6000	5851
29	30	29	80	24.0	49.3	122.5	54.0	0.6001	6099	1010.6000	6164
30	31	30	81	24.0	49.2	122.7	57.6	0.6001	6150	1010.6000	6215
31	1	31	79	24.0	48.8	122.8	53.5	0.6001	5971	1010.6000	6034
Total									174623		176471

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
03/01/00	C	3.1	1.2600	2.1050	0.0000	94.9360	0.8650	0.2230	0.0780	0.1190	0.0730	0.0780	0.2630

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 04/00

05/05/00 20:29:05
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
04/01/00	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	75	23.0	49.8	122.8	47.7	0.5955	5494	1015.1000	5577
2	3	2	77	24.0	50.1	122.8	49.8	0.5955	5883	1015.1000	5972
3	4	3	86	24.0	48.1	122.3	64.0	0.5955	6538	1015.1000	6637
4	5	4	51	24.0	49.6	122.2	22.3	0.5955	3860	1015.1000	3918
5	6	5	76	24.0	49.8	122.5	57.6	0.5955	5786	1015.1000	5873
6	7	6	82	24.0	50.2	122.6	60.4	0.5955	6193	1015.1000	6287
7	8	7	81	24.0	50.0	122.7	55.1	0.5955	6157	1015.1000	6250
8	9	8	63	24.0	48.7	122.3	43.8	0.5955	4823	1015.1000	4896
9	10	9	76	24.0	48.5	122.3	53.9	0.5955	5751	1015.1000	5838
10	11	10	76	24.0	49.3	122.6	53.8	0.5955	5817	1015.1000	5905
11	12	11	79	24.0	49.8	122.8	54.9	0.5955	6018	1015.1000	6109
12	13	12	82	24.0	49.8	122.7	56.9	0.5955	6272	1015.1000	6367
13	14	13	84	24.0	49.2	122.4	59.5	0.5955	6419	1015.1000	6516
14	15	14	82	24.0	49.3	122.3	56.8	0.5955	6230	1015.1000	6324
15	16	15	75	24.0	49.3	122.3	47.5	0.5955	5697	1015.1000	5783
16	17	16	75	24.0	50.2	122.6	46.7	0.5955	5674	1015.1000	5760
17	18	17	76	24.0	50.0	122.6	50.0	0.5955	5797	1015.1000	5885
18	19	18	78	24.0	50.5	122.7	51.6	0.5955	5940	1015.1000	6030
19	20	19	77	24.0	53.6	122.9	49.4	0.5955	5823	1015.1000	5911
20	21	20	77	24.0	52.5	122.9	49.2	0.5955	5840	1015.1000	5928
21	22	21	78	24.0	51.3	122.5	51.2	0.5955	5943	1015.1000	6033
22	23	22	75	24.0	51.7	122.6	47.1	0.5955	5690	1015.1000	5776
23	24	23	75	24.0	50.4	122.3	46.7	0.5955	5703	1015.1000	5789
24	25	24	75	24.0	50.6	122.3	47.9	0.5955	5665	1015.1000	5751
25	26	25	77	24.0	50.5	122.3	50.9	0.5955	5877	1015.1000	5966
26	27	26	69	24.0	49.3	122.4	40.5	0.5955	5227	1015.1000	5306
27	28	27	68	24.0	50.3	122.4	38.6	0.5955	5186	1015.1000	5264
28	29	28	71	24.0	50.9	122.5	41.6	0.5955	5381	1015.1000	5462
29	30	29	67	24.0	51.2	122.6	37.3	0.5955	5091	1015.1000	5168
30	1	30	66	24.0	51.7	122.8	36.9	0.5955	5000	1015.1000	5076
Total									170775		173357

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
04/01/00	C	2.4	1.1410	1.7180	0.0000	95.3340	1.0320	0.2250	0.0690	0.1070	0.0640	0.0670	0.2430

#/mmcf (#/mmcf is standards!)

% by volume (mole %)

grains

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 05/00

06/07/00 18:59:44
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
05/01/00	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	56	24.0	52.4	122.8	26.9	0.5999	4263	1015.0000	4327
2	3	2	66	24.0	52.1	122.6	36.1	0.5999	5001	1015.0000	5076
3	4	3	67	24.0	52.2	122.5	36.9	0.5999	5055	1015.0000	5131
4	5	4	62	24.0	55.3	122.7	31.9	0.5999	4698	1015.0000	4768
5	6	5	63	24.0	53.8	122.7	32.7	0.5999	4731	1015.0000	4802
6	7	6	64	24.0	54.5	122.8	34.0	0.5999	4844	1015.0000	4917
7	8	7	66	24.0	55.4	122.8	36.4	0.5999	4996	1015.0000	5071
8	9	8	70	24.0	56.7	122.8	40.2	0.5999	5247	1015.0000	5326
9	10	9	61	24.0	57.5	123.0	32.0	0.5999	4618	1015.0000	4687
10	11	10	60	24.0	57.2	123.0	29.9	0.5999	4541	1015.0000	4609
11	12	11	58	24.0	59.0	123.0	28.0	0.5999	4377	1015.0000	4443
12	13	12	52	24.0	59.0	123.0	23.6	0.5999	3953	1015.0000	4012
13	14	13	52	24.0	57.4	123.0	22.4	0.5999	3920	1015.0000	3979
14	15	14	55	24.0	55.6	122.9	25.2	0.5999	4138	1015.0000	4200
15	16	15	58	24.0	56.6	122.8	28.0	0.5999	4378	1015.0000	4444
16	17	16	57	24.0	57.1	122.9	27.0	0.5999	4287	1015.0000	4351
17	18	17	52	24.0	59.5	122.9	23.5	0.5999	3943	1015.0000	4002
18	19	18	51	24.0	60.3	123.1	22.9	0.5999	3824	1015.0000	3881
19	20	19	48	24.0	60.5	123.2	20.9	0.5999	3626	1015.0000	3680
20	21	20	42	24.0	59.0	122.9	15.5	0.5999	3202	1015.0000	3250
21	22	21	45	24.0	57.9	122.8	17.2	0.5999	3390	1015.0000	3441
22	23	22	50	24.0	59.5	123.1	21.8	0.5999	3784	1015.0000	3841
23	24	23	51	24.0	61.5	123.2	22.7	0.5999	3849	1015.0000	3907
24	25	24	49	24.0	61.8	123.1	21.2	0.5999	3702	1015.0000	3758
25	26	25	48	24.0	61.8	123.1	20.0	0.5999	3629	1015.0000	3683
26	27	26	45	24.0	62.7	123.1	18.5	0.5999	3407	1015.0000	3458
27	28	27	43	24.0	63.3	123.1	16.0	0.5999	3197	1015.0000	3245
28	29	28	41	24.0	61.0	123.0	14.2	0.5999	3055	1015.0000	3101
29	30	29	45	24.0	59.9	123.0	17.4	0.5999	3372	1015.0000	3423
30	31	30	47	24.0	61.2	123.0	19.1	0.5999	3513	1015.0000	3566
31	1	31	46	24.0	61.2	123.0	18.7	0.5999	3494	1015.0000	3546
Total									126034		127925

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
05/01/00	C	2.8	1.2290	1.9370	0.0000	94.9830	0.9570	0.2470	0.0820	0.1280	0.0750	0.0790	0.2830

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 06/00

07/10/00 19:15:53
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Lola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
06/01/00	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1	48	24.0	61.6	123.1	20.5	0.5981	3634	1029.0000	3739
2	3	2	46	24.0	61.7	123.1	18.8	0.5981	3461	1029.0000	3561
3	4	3	45	24.0	62.0	123.2	17.8	0.5981	3356	1029.0000	3453
4	5	4	45	24.0	61.3	123.1	17.6	0.5981	3392	1029.0000	3490
5	6	5	48	24.0	59.7	122.9	20.1	0.5981	3639	1029.0000	3745
6	7	6	50	24.0	59.6	123.0	21.3	0.5981	3731	1029.0000	3839
7	8	7	50	24.0	58.8	122.9	21.0	0.5981	3724	1029.0000	3832
8	9	8	48	24.0	60.6	123.1	20.2	0.5981	3618	1029.0000	3723
9	10	9	46	24.0	60.1	123.1	18.5	0.5981	3455	1029.0000	3555
10	11	10	41	24.0	61.6	123.1	14.4	0.5981	3041	1029.0000	3129
11	12	11	43	24.0	61.7	123.2	16.0	0.5981	3222	1029.0000	3315
12	13	12	41	24.0	62.8	123.1	15.0	0.5981	3083	1029.0000	3172
13	14	13	42	24.0	63.2	122.9	15.2	0.5981	3133	1029.0000	3224
14	15	14	47	24.0	63.1	122.7	18.6	0.5981	3506	1029.0000	3608
15	16	15	46	24.0	62.0	122.5	18.2	0.5981	3452	1029.0000	3552
16	17	16	45	24.0	61.0	122.5	17.7	0.5981	3411	1029.0000	3510
17	18	17	41	24.0	61.5	122.5	14.9	0.5981	3111	1029.0000	3201
18	19	18	39	24.0	62.9	122.6	13.1	0.5981	2931	1029.0000	3016
19	20	19	43	24.0	63.4	122.7	15.5	0.5981	3182	1029.0000	3274
20	21	20	44	24.0	63.6	122.7	16.7	0.5981	3293	1029.0000	3388
21	22	21	47	24.0	64.6	122.8	19.0	0.5981	3516	1029.0000	3618
22	23	22	44	24.0	62.9	122.7	17.0	0.5981	3317	1029.0000	3413
23	24	23	46	24.0	63.1	122.7	18.4	0.5981	3479	1029.0000	3580
24	25	24	48	24.0	63.4	122.7	19.4	0.5981	3598	1029.0000	3702
25	26	25	53	24.0	62.1	122.7	23.5	0.5981	3956	1029.0000	4071
26	27	26	60	24.0	61.7	122.6	30.0	0.5981	4485	1029.0000	4615
27	28	27	55	24.0	63.2	122.7	25.5	0.5981	4138	1029.0000	4258
28	29	28	56	24.0	64.0	122.7	25.7	0.5981	4149	1029.0000	4269
29	30	29	54	24.0	62.1	122.6	24.0	0.5981	4008	1029.0000	4124
30	1	30	52	24.0	62.2	122.7	22.3	0.5981	3884	1029.0000	3997
Total									105905		108973

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
06/01/00	C	4.8	0.9230	1.4770	0.0000	95.0770	1.4750	0.3710	0.1130	0.1480	0.0700	0.0760	0.2700

Kymene Process Area

KYMENE PROCESS AREA REPORT SUMMARY

Kymene Reactor Scrubber (AA-001)

As required by 5.B.14, weekly operator maintenance checks were performed on the Kymene Reactor Scrubber (AA-001). No problems were noted during the weekly operator visual inspections.

The weekly operator maintenance check on the week of 1/3/00 was not recorded, and is reported as a deviation from a permitted requirement in this submittal.

Adipic Acid Dust Shaker (AA-002)

As required by 5.B.14, weekly operator maintenance checks were performed on the Adipic Acid Dust Shaker (AA-002). No problems were noted during the weekly operator visual inspections. Hercules Incorporated began a more thorough inspection of the Dust Shaker on 2/16/00, which included a mechanic removing the shaker door on a weekly basis and performing a visual inspection of the filter bags. Filter bags were replaced on 3/1, 5/25, and 6/19/00.

As required by 5.B.8, the amount of raw material processed and hours operated were recorded daily, and the records are included in this section.

The weekly operator maintenance check was not recorded on the week of 1/3/00, and is reported as a deviation from a permitted requirement in this submittal. The mechanic inspection of the filter bags was not recorded on the weeks of 3/6 and 5/15/00.

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Batch Number	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)		minutes	boxes	pounds	ton/hr	
6/30/00	350	90	8	12006	4	
7/2/00	351	90	8	12003	4	
7/5/00	352	90	8	12000	4	
7/6/00	353	90	8	12001	4	
7/6/00	354	90	8	12000	4	
7/6/00	355	90	8	12000	4	
7/8/00	356	90	8	12000	4	
7/8/00	357	90	8	12000	4	
7/8/00	358	90	8	12007	4	
7/10/00	359	90	8	12000	4	
7/11/00	360	90	8	12003	4	
7/12/00	361	90	8	12000	4	
7/13/00	362	90	8	12000	4	
7/14/00	363	90	8	11999	4	
7/14/00	364	90	8	12000	4	
7/15/00	365	90	8	12005	4	
7/16/00	366	90	8	12007	4	
7/17/00	367	90	8	12,002	4	

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Batch Number	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
5/8/00	302	90	8	12000	4	
5/9/00	303	90	8	12000	4	
5/10/00	304	90	8	12000	4	
5/11/00	305	90	8	12000	4	
5/12/00	306	90	8	12005	4	
5/12/00	307	90	8	12000	4	
5/15/00	308	90	8	12000	4	
5-15-00	309	90	8	12007	4	
5-16-00	310	90	8	12000	4	
5-18-00	311	90	8	12000	4	
5-19-00	312	90	8	12003	4	
5/20/00	313	90	8	12000	4	
5/21/00	314	90	8	12000	4	
5/21/00	315	90	8	12000	4	
5/24/00	316	90	8	12000	4	
5/24/00	317	90	8	12000	4	
5/25/00	318	90	8	12000	4	
5/26/00	319	90	8	11994	4	
5/27/00	320	90	8	12007	4	
5/28/00	321	90	8	12003	4	
5/30/00	322	90	8	11998	4	
5/30/00	323	90	8	12003	4	
6/1/00	324	90	8	12000	4	
6/2/00	325	90	8	12000	4	
6/4/00	326	90	8	11999	4	
6/4/00	327	90	8	12000	4	
6/7/00	328	90	8	12000	4	
6/7/00	329	90	8	12000	4	
6/8/00	330	90	8	12,004	4	
6/9/00	331	90	8	12,005	4	
6/10/00	332	90	8	12,005	4	
6/10/00	333	90	8	12,005	4	
6-10-00	334	90	8	12007	4	
6-11-00	335	90	8	12005	4	
6-13-00	336	90	8	12000	4	
6-14-00	337	90	8	12000	4	
6/15/00	338	90	8	12,000	4	
6/17/00	339	90	8	12,000	4	
6/19/00	340	90	8	12,005	4	
6/20/00	341	90	8	12,005	4	
6/20/00	342	90	8	12,000	4	
6/21/00	343	90	8	12,000	4	
6/22/00	344	90	8	12,000	4	
6/23/00	345	90	8	11999	4	
6-26-00	346	90	8	12000	4	
6-27-00	347	90	8	12003	4	
6-28-00	348	90	8	12003	4	
6/28/00	349	90	8	12008	4	

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
4-25-00	90	8	12000	4	
4/26/00	90	8	12000	4	
4/26/00	90	8	12002	4	
4-26-00	90	8	12003	4	
4/27/00	90	8	12000	4	
4-29-00	90	8	12000	4	
4-30-00	90	8	12000	4	
5-2-00	90	8	12000	4	
5-3-00	90	8	12000	4	
5/8/00	90	8	12007	4	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
3/10/00	90	8	12,000	4	
3/10/00	90	8	12,000	4	
3/11/00	90	8	12,000	4	
3/11/00	90	8	12,000	4	
3/12/00	90	8	12,000	4	
3/12/00	90	8	12,000	4	
3/14/00	90	8	12,000	4	
3/15/00	90	8	12,000	4	
3/16/00	90	8	12,000	4	
3/17/00	90	8	12,000	4	
3/18/00	90	8	12,000	4	
3/20/00	90	8	12,000	4	
3/23/00	90	8	12,000	4	
3/24/00	90	8	12,000	4	
3/24/00	90	8	12,000	4	
3/27/00	90	8	12,000	4	
3/27/00	90	8	12,000	4	
3/28/00	90	8	12,000	4	
3/28/00	90	8	12,000	4	
3/29/00	90	8	12,000	4	
3/30/00	90	8	12,000	4	
3/31/00	90	8	12,000	4	
4/3/00	90	8	12,000	4	
4/3/00	90	8	12,000	4	
4/4/00	90	8	12,000	4	
4/5/00	90	8	12,000	4	
4/6/00	90	8	12000	4	
4/7/00	90	8	12,000	4	
4/7/00	90	8	11994	4	
4/8/00	90	8	12,000	4	
4/9/00	90	8	11996	4	
4/11/00	90	8	11999	4	
4/12/00	90	8	12004	4	
4/12/00	90	8	12000	4	
4/13/00	90	8	12000	4	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
4-14-00	90	8	12005	4	
4-15-00	90	8	12000	4	
4-18-00	90	8	12000	4	
4-19-00	90	8	12000	4	
4/20/00	90	8	12000	4	
4/20/00	90	8	12000	4	
4-21-00	90	8	12000	4	
4-24-00	90	8	12002	4	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
1-13-2000	90	8	12000	4	Raise Adipic Add 20 Lbs
1-14-2000	90	8	12000	4	
1-15-00	90	8	12000	4	
1-11-00	90	8	12000	4	
1-17-00	90	8	12000	4	
1/18/2000	90	8	12000	4	
1/20/2000	90	8	12,000	4,0	
1/21/2000	90	8	12,000	4	
1/22/2000	90	8	12,000	4	
1/25/2000	90	8	12,000	4	
1/27/2000	90	8	12000	4	
1/27/2000	90	8	12000	4	
1/29/2000	90	8	12000	4	
1/29/2000	90	8	12000	4	
2/1/2000	90	8	12,000	4	
2/2/00	90	8	12,000	4	
2/2/00	90	8	12,000	4	
2/2/00	90	8	12,000	4	
2/5/00	90	8	12,000	4	
2/6/00	90	8	12,000	4	
2/7/00	90	8	12,000	4	
2/9/00	90	8	12,000	4	
2/11/00	90	8	12,000	4	
2/15/00	90	8	12,000	4	
2/16/00	90	8	12,000	4	
2/17/00	90	8	12,000	4	
2/19/00	90	8	12,000	4	
2/21/00	90	8	12,000	4	
2/22/00	90	8	12,000	4	
2/23/00	90	8	12,000	4	
2/23/00	90	8	12,000	4	
2/23/00	90	8	12,000	4	
2/24/00	90	8	12,000	4	
2/25/00	90	8	12,000	4	
2/26/00	90	8	12,000	4	
2/27/00	90	8	12,000	4	
2/27/00	90	8	12,000	4	
2/29/00	90	8	12,000	4	
3/1/00	90	8	12,000	4	
3/2/00	90	8	12,000	4	
3/2/00	90	8	12,000	4	
3/3/00	90	8	12,000	4	
3/4/00	90	8	12,000	4	
3/5/00	90	8	12,000	4	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
10-25-99	90	8	11960	4.0	
11-3-99	90	8	11960	4.0	
11-6-99	90	8	11960	4.0	
11-7-99	90	8	11960	4.0	
11/08/99	90	8	11960	4.0	0150 B=
11/12/99	90	8	11960	4.0	
11/13/99	90	8	11960	4.0	
11/15/99	90	8	11960	4.0	
11/16/99	90	8	11960	4.0	
11/16/99	90	8	11960	4.0	
11/17/99	90	8	11960	4.0	
11/18/99	90	8	11980	4.0	Raise Adipic Acid
11/19/99	90	8	11980	4.0	
11/19/99	90	8	11980	4.0	
11/20/99	90	8	11980	4.0	
11/21/99	90	8	11980	4.0	
11/22/99	90	8	11980	4.0	
11/23/99	90	8	11980	4.0	
11/24/99	180	16	23960	~~4~~ 8.0	Jm 1-19-00
11/26/99	90	8	11980	4.0	
11/27/99	180	16	23960	~~4~~ 8.0	Jm 1-19-00
11/28/99	90	8	11980	4.0	
11/30/99	90	8	11980	4.0	
12/1/99	180	16	23980	~~4~~ 8.0	Jm 1-19-00
12/2/99	180	16	2398	4 8.0	Jm 1-19-00
12-8-99	180	8	11980	~~4~~ 8.0	
12/9/99	90	8	~~2398~~ 11980	~~4~~ 8.0	
12-14-99	90	8	11980	4.0	
12-14-99	90	8	11980	4.0	
12-21-99	90	8	11980	4.0	
12-22	90	8	11980	4.0	
12-26	90	8	11980	4.0	
12-27	90	8	11980	4.0	
12-27	90	8	11980	4.0	
12-31	90	8	11980	4.0	
1-3-2000	90	8	11980	4.0	
1-4-2000	90	8	11980	4.0	
1-5-00	90	8	11980	4.0	
1-6-00	90	8	11980	4.0	
1-7-00	90	8	11980	4.0	
1-8-00	90	8	11980	4.0	
1-11-00	180	16	23960	~~4~~ 8.0	Jm 1-19-00
1/9/2000	90	8	11980	4.0	

(EPAA002b.WK4)

AKD Process Area

AKD PROCESS AREA REPORT SUMMARY

Paracol Water Scrubber (AB-001)

As required by 5.B.14, weekly operator maintenance checks were performed on the Paracol Water Scrubber (AB-001). No problems were noted during the weekly operator visual inspections.

As required by 5.B.9, water flowrate through the scrubber was recorded on a weekly basis.

Silica Furnace Dust Collector (AL-002)

As required by 5.B.14, weekly maintenance checks were to be performed on the Silica Furnace Dust Collector (AL-002); however, due to the Defoamer Process Area being shut down, the dust collector did not operate during this semi-annual reporting period.

As required by 5.B.11, the silica processed and the hours operated were not recorded because the process was not in operation.

Title V -- Maintenance Log
AKD Area

Date	Initials	Paracol Vent Scrubber, AB001					Silica Furnace Dust Collector, AL002							
		Melter Operating		Water flow, gpm	Leaks		Furnace Running		Blower OK		Dust Collector OK		Leaks	
		Yes	No		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
6-5	BA		✓	5.3		✓	NOT OPERATING →				NOT OPERATING →			
6-11	ume		✓	5.6		✓	NOT OPERATING →				NOT OPERATING →			
6-19	JL		✓	5.2		✓	not operating →				not operating →			
6-26	BA		✓	5.6		✓	NOT OPERATING →				NOT OPERATING →			
7-3	ume		✓	5.5		✓	NOT OPERATING →				NOT OPERATING →			
7-10	JL		✓	5.5		✓	NOT Operating →				not operating →			
7-17	BA		✓	5.7		✓	NOT OPERATING →				NOT OPERATING →			

Title V -- Maintenance Log
AKD Area

Date	Initials	Paracol Vent Scrubber, AB001					Silica Furnace Dust Collector, AL002							
		Melter Operating		Water flow, gpm	Leaks		Furnace Running		Blower OK		Dust Collector OK		Leaks	
		Yes	No		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
3-13-00	EM		✓	5.5		✓	Not operating →				Not operating			→
3-20-00	EM		✓	5.7		✓	Not operating →				Not operating			→
3-27-00	EM		✓	5.5		✓	Not operating →				not operating			→
4-3-00	EM		✓	5.8		✓	Not operation →				Not operation			→
4-10-00	EM		✓	5.8		✓	Not operating →				Not operating			→
4-17	JL		✓	5.7		✓	not operating →				not operating			→
4-24	EM		✓	5.6		✓	not operating →				not operating			→
5-1-00	EM		✓	5.7		✓	Not operating →				Not operating			→
5-8-00	EM		✓	5.8		✓	not operating →				Not operating			→
5-15-00	EM		✓	5.8		✓	Not operating →				Not operating			→
5-22	JL		✓	5.8		✓	not operating →				not operating			→
5-29	EM		✓	5.8		✓	Not operating →				Not operating			→

Title V -- Maintenance Log
AKD Area

Date	Initials	Paracol Vent Scrubber, AB001					Silica Furnace Dust Collector, AL002							
		Melter Operating		Water flow, gpm	Leaks		Furnace Running		Blower OK		Dust Collector OK		Leaks	
		Yes	No		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1-17-00	EM	1-19-2000 AMM EM	✓	5689	1-19-2000 AMM EM	✓	Not operating ←							
		MARK ONLY IN ONE COLUMN. CHECKS & DASHES CAN LOOK ALIKE. GAS 1-18-a												
		UNDER COLUMN (WATER FLOW) YOUR PERIODS ARE GETTING SLOPPY												
		SOME LOOK LIKE COMMAS. A FLOW OF 5,000 GPM IS PHYSICALLY												
		IMPOSSIBLE. GAS 1-18-00												
1-24-00	LMC		✓	5.50		✓	NOT OPERATING				NOT OPERATING			
1-31-a	EM		✓	6.0		✓	NOT OPERATING				NOT OPERATING			
2-7-00	EM		✓	6.0		✓	Not operating				Not operating			
2-14-00	EM		✓	6.0		✓	Not operating				Not operating			
2-21-00	LMC		✓	5.79		✓	Not operating				Not operating			
2-28-00	EM		✓	5.6		✓	Not operating				Not operating			
3-7-2000	EM		✓	5.7		✓	Not operating				Not operating			

Title V -- Maintenance Log
AKD Area

THE SILICA FURNACE & DUST COLL DO NOT OPERA[illegible] WHAT COULD THIS MEAN GS

Date	Initials	Paracol Vent Scrubber, AB001					Silica Furnace Dust Collector, AL002							
		Melter Operating		Water flow, gpm	Leaks		Furnace Running		Blower OK		Dust Collector OK		Leaks	
		Yes	No		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
11-1-99	EM	✓	1-19-2000 Em	5,615	1-19-2000 EM	✓	1-19-2000 EM	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Not operating Em
11-8-99	EM	✓	1-19-2000 Em	5,788	1-19-2000 EM	✓	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 operating Em
11-15-99	EM	✓	1-19-2000 Em	5,646	1-19-2000 EM	✓	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 Em	1-19-2000 operating Em
		MARK ONLY ONE COLUMN W/ A CHECK GS												
		IT'S CONFUSING TO PUT A DASH IN A COLUMN.												
11-22-99	Em	1-19-2000 Em	✓	5.807	1-19-2000 Em	✓	NOT Operating							
11-29-99	Em	1-19-2000 Em	✓	5,797	1-19-2000 Em	✓	not operating							
12-6-99	Em	1-19-2000 Em	✓	5,644	1-19-2000 Em	✓	not operating							
12-20-99	JL		✓	5,491	1-19-2000 JL	✓	not operating							
12-27-99	JL		✓	5,887	1-19-2000 JL	✓	not operating							
1-3-00	BA		✓	5,568	BA Em	✓	NOT "							
1-10-00	EM		✓	5,263	Em 1-12-2000	✓	not operation							

HRA Process Area

HRA PROCESS AREA REPORT SUMMARY

HRA Water Scrubber (AG-003)

As required by 5.B.14, weekly operator maintenance checks were performed on the HRA Water Scrubber (AG-003). No problems were noted during the operator visual inspections, which are performed weekly (or more frequent). On 5/31/00 no water flowrate to the scrubber was observed during the 11 to 7 shift and appropriate actions were taken.

HRA Flaking Belt Dust Collector (AG-005)

As required by 5.B.14, weekly maintenance checks were performed on the HRA Flaking Belt Dust Collector (AG-005). No problems were noted during the operator visual inspections, which are performed weekly (or more frequent). Filter bags were replaced on 5/24/00.

As required by 5.B.10, the pressure drop across the baghouse is recorded weekly (or more frequent).

Hydrogen Generation Process (AK-000)

As required by 5.B.14, weekly maintenance checks were to be performed on the Hydrogen Generation Process (AK-000); however, due to this process area being shut down, the area did not operate during the semi-annual reporting period.

Poly-Pale Process Area

POLY-PALE PROCESS AREA REPORT SUMMARY

Poly-Pale Water Scrubber #1 (AC-002)

As required by 5.B.14, weekly maintenance checks were performed on the Poly-Pale Water Scrubber #1 (AC-002). No problems were noted during the weekly operator visual inspections.

Poly-Pale Water Scrubber #2 (AC-003)

As required by 5.B.14, weekly maintenance checks were performed on the Poly-Pale Water Scrubber #2 (AC-003). No problems were noted during the weekly operator visual inspections.

Poly-Pale Process Meltor (AC-004)

As required by 5.B.13, the amount of raw material processed and hours operated were recorded daily, and the records are included in this section.

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan. - June, 2000

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
02/03/2000	8	20	9921	0.620
02/07/2000	8	60	29762	1.860
02/08/2000	8	40	19841	1.240
02/09/2000	8	20	9921	0.620
02/18/2000	16	120	59524	1.860
02/19/2000	16	80	39683	1.240
02/20/2000	16	120	59524	1.860
02/21/2000	16	100	49604	1.550
02/22/2000	16	100	49604	1.550
02/23/2000	16	94	46627	1.457
02/24/2000	16	120	59524	1.860
02/25/2000	8	20	9921	0.620
02/26/2000	16	120	59524	1.860
02/27/2000	16	100	49604	1.550
02/28/2000	16	120	59524	1.860
02/29/2000	16	92	45635	1.426
03/01/2000	8	60	29762	1.860
03/03/2000	8	60	29762	1.860
03/04/2000	16	120	59524	1.860
03/05/2000	16	100	49604	1.550
03/06/2000	16	100	49604	1.550
03/07/2000	16	88	43651	1.364
03/08/2000	16	98	48611	1.519
03/10/2000	16	100	49604	1.550
03/11/2000	16	67	33234	1.039

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan. - June, 2000

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
03/12/2000	16	120	59524	1.860
03/14/2000	16	82	40675	1.271
03/16/2000	8	40	19841	1.240
03/19/2000	16	102	50596	1.581
03/20/2000	16	78	38691	1.209
03/21/2000	16	78	38691	1.209
03/22/2000	16	78	38691	1.209
03/23/2000	16	50	24802	0.775
03/24/2000	16	80	39683	1.240
03/25/2000	16	50	24802	0.775
03/26/2000	16	62	30754	0.961
03/27/2000	8	48	23810	1.488
03/28/2000	16	72	35715	1.116
03/29/2000	16	88	43651	1.364
04/04/2000	16	120	59524	1.860
04/05/2000	16	100	49604	1.550
04/06/2000	16	110	54564	1.705
04/07/2000	8	22	10913	0.682
04/10/2000	16	100	49604	1.550
04/11/2000	8	3	1488	0.093
05/11/2000	8	42	20833	1.302
05/15/2000	8	20	9921	0.620

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan. - June, 2000

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
05/16/2000	8	40	19841	1.240
05/17/2000	16	100	49604	1.550
05/18/2000	8	24	11905	0.744
05/19/2000	8	40	19841	1.240
05/20/2000	16	120	59524	1.860
05/21/2000	16	120	59524	1.860
05/22/2000	8	60	29762	1.860
05/24/2000	16	60	29762	0.930
05/25/2000	8	60	29762	1.860
05/26/2000	16	80	39683	1.240
05/27/2000	16	120	59524	1.860
05/28/2000	16	120	59524	1.860
05/29/2000	16	140	69445	2.170
05/30/2000	16	120	59524	1.860
05/31/2000	16	120	59524	1.860
06/01/2000	16	44	21826	0.682
06/02/2000	16	60	29762	0.930
06/03/2000	16	120	59524	1.860
06/04/2000	16	26	12897	0.403
06/05/2000	8	15	7441	0.465
06/06/2000	16	150	74405	2.325
06/08/2000	16	100	49604	1.550
06/10/2000	16	120	59524	1.860
06/11/2000	16	120	59524	1.860
06/12/2000	16	80	39683	1.240
06/13/2000	16	120	59524	1.860

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan. - June, 2000

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
06/14/2000	16	108	53572	1.674
06/15/2000	8	6	2976	0.186

RAD Process Area

RAD PROCESS AREA REPORT SUMMARY

Ammonia Packed Bed Scrubber (AF-002)

As required by 5.B.14, weekly maintenance checks were performed on the Ammonia Packed Bed Scrubber (AF-002). No problems were noted during the weekly operator visual inspections. The water filter was changed and the spray nozzle cleaned on 1/11/00 and 4/22/00.

EO Packed Bed Scrubber (AF-004)

As required by 5.B.14, weekly maintenance checks were performed on the EO Packed Bed Scrubber (AF-004). Several minor repairs were made to the scrubber between 1/12/00 and 2/9/00. More minor repairs were made to the scrubber on 5/9/00.

Neuphor Process Area

NEUPHOR PROCESS AREA REPORT SUMMARY

Adduct Reactor Scrubber (AD-001)

As required by 5.B.14, weekly operator maintenance checks were performed on the Adduct Reactor Scrubber (AD-001). No problems were noted during the weekly operator visual inspections.

Hercules Incorporated began a more thorough inspection of the Adduct Reactor Carbon Adsorption Scrubber on 3/17/00, which included a mechanic opening the scrubber drawers on a weekly basis and performing a visual inspection of the carbon bed. The carbon was changed on 6/19/00. The mechanic inspection of the scrubber was not recorded on the weeks of 4/17 and 5/15/00.

Dresinol Water Eductor (AD-002)

As required by 5.B.14, weekly operator maintenance checks were performed on the Dresinol Water Eductor (AD-002). No problems were noted during the weekly operator visual inspections.

Kymene LDAR Monitoring

7. **Number of affected *connectors* in HAP service for which leaks were detected as described in § 63.174(a), the percent leaking, and the total number monitored:**

   - 1 affected connector was discovered leaking during the referenced reporting period (>500 ppm, monitored at 608 ppm);
   - 0.30% of total affected connectors were leaking; and
   - 334 total affected connectors are in the Kymene process.

8. **Number of *connectors* for which leaks were not repaired per § 63.174(d), identifying the number of those that are determined non-repairable:**

   - The connector leak was repaired in accordance with § 63.174(d); and
   - No leaks were determined non-repairable.

9. **Explain any *delay of repairs*:**

   - All applicable repairs were made in a timely fashion.

10. ***Monitoring results* recorded during the semi-annual reporting period:**

    - Summary results are attached from the referenced semi-annual reporting period for the Kymene process.

PERIODIC LEAK MONITORING REPORT

January 1, 2000 through June 30, 2000

Hercules Incorporated
Hattiesburg, Mississippi

KYMENE PROCESS AREA (AA-000)

1. **Number of affected *valves* in HAP service for which leaks were detected as described in § 63.168(b), the percent leakers, and the total number monitored:**

   - No affected valves were discovered leaking during the referenced reporting period (>500 ppm);
   - 0.00% of total affected valves were leaking; and
   - 61 total affected valves are in the Kymene process.

2. **Number of *valves* for which leaks were not repaired per § 63.168(f), identifying the number of those that are determined non-repairable:**

   - No affected valves were discovered leaking.

3. **Number of affected *pumps* in HAP service for which leaks were detected as described in § 63.163(b), the percent leakers, and the total number monitored:**

   - No affected pumps were discovered leaking during the referenced reporting period (>5,000 ppm or visible leak);
   - 0.00% of total affected pumps were leaking; and
   - 3 total affected pumps are in the Kymene process.

4. **Number of *pumps* for which leaks were not repaired per § 63.163(c):**

   - No affected pumps were discovered leaking.

5. **Number of affected *agitators* in HAP service for which leaks were detected as described in § 63.173(a) & (b):**

   - No affected agitators were discovered leaking during the referenced reporting period (>10,000 ppm or visible leak);
   - 0.00% of total affected agitators were leaking; and
   - 1 affected agitator is in the Kymene process.

6. **Number of *agitators* for which leaks were not repaired per § 63.173(c):**

   - No affected agitators were discovered leaking.

KYMENE LDAR MONITORING

In Accordance with 40 CFR 63, Subpart W, Subpart H, and Permit Conditions 5.B.1, 5.B.2, 5.B.3, 5.B.4, and 5.C.1, Hercules Incorporated has provided in Attachment A the following required information:

- Report required by 40 CFR 63.182(d)(2);
- Summary report of actual monitoring data; and
- Recordkeeping and reporting of Startup, Shutdown, and Malfunctions per SSM Plan.
  - Form A: SSM Plan Conformance
  - Form B: Nonconformance to SSM Plan

No problems or deviations were noted during the weekly visual inspections.

During the annual and monthly Kymene LDAR monitoring required by 5.B.3(b) [ref.: 40 CFR 63.180(b)] and conducted on January 28, February 3, and March 2, 2000, the monitoring device was only calibrated using 0, 500, 1000, 2000, and 10,000 ppm methane gas. Since three (3) Phase II pumps were checked for leaks on each occasion, the monitoring equipment should have also been calibrated using a 5,000 ppm methane gas. This error is reported as a deviation from a permitted requirement in this submittal.

ATTACHMENT A

Results of Leak Monitoring
KYMENE PROCESS
January 1, 2000 through June 30, 2000

SEMIANNUAL REPORT WORKSHEET

UNIT: KYMENE
REPORTING PERIOD: 1/1/2000 - 6/30/2000

Specify Month ---------->	MONTH 1 JAN	MONTH 2 FEB	MONTH 3 MARCH	MONTH 4 APRIL	MONTH 5 MAY	MONTH 6 JUNE
Total valves monitored**	58	2	3	1	1	56
Number valves leaking	0	0	0	0	0	0
Number valves not repaired in 15 days	0	0	0	0	0	0
Total PRV monitored	1	0	0	0	0	5
Number PRV's leaking	0	0	0	0	0	0
Number PRV's not repaired in 15 days	0	0	0	0	0	0
Total agitator monitored	1	1	1	1	1	1
Number agitators leaking	0	0	0	0	0	0
Number agitators not repaired in 15 days	0	0	0	0	0	0
Total pump monitored	3	3	3	3	3	3
Number pumps leaking	0	0	0	0	0	0
Number pumps not repaired in 15 days	0	0	0	0	0	0
Total compressor monitored	0	0	0	0	0	0
Number compressors leaking	0	0	0	0	0	0
Number compressors not repaired in 15 days	0	0	0	0	0	0
Total connector monitored	332	5	10	10	10	0
Number connectors leaking	1	0	0	0	0	0
Number connectors not repaired in 15 days	0	0	0	0	0	0
Number components on DOR	0	0	0	0	0	0

* - Only one regulation per worksheet unless otherwise instructed by client.

** - Total count of valves monitored includes light monitoring unless otherwise instructed by client.

Startup, Shutdown, and Malfuntion Plan Checklist - Form A

Date	Startup, Shutdown, Malfunction Plan Properly Followed?		Kymene Scrubber	Was Form B Completed?		Was there a Malfunction?		Action Taken for - Section 6.2,6.3,6.4
	Yes	No	gpm	Yes	No	Yes	No	
3/4/00	✓		12		✓	✓		Power failure
3/5/00	✓		12		✓	✓		Power failure - fire in [illegible] Open ~~[illegible]~~ KPI line and
3/13/00	✓				✓	✓		unplug spout in R-401.
3/13/00	✓				✓	✓		leaking water line on scrubber water line. Repaired.
4/12/00	✓		13.32		✓	✓		Mix Cooler leaking Repaired By tightening.
4/[illegible]/00	✓		13.00		✓	✓		Mix Cooler leaking again. repaired + new [illegible]
4/17/00	✓		12.00		✓	✓		Mix Cooler leaking & repaired
5/12/00	✓		13.45		✓	✓		Open KPI line and Unplug spout in R-401.

(SSMForm.WK4)

Startup, Shutdown, and Malfun n Plan Checklist - Form A

Date	Startup, Shutdown, Malfunction Plan Properly Followed?		Kymene Scrubber	Was Form B Completed?		Was there a Malfunction?		Action Taken for - Section 6.2,6.3,6.4
	Yes	No	gpm	Yes	No	Yes	No	
1/29/99	X		10		X	X		Mix cooler plugged due to power failure. Cooler repaired
4/25/99	X		10		X	X		Line above Epi pump leaking. (LDAR) inspection, replace line
9/27/99	✓		16.4		✓	✓		Pin Hole leak on Scrubber Water line & Repaired
~~9/14/99~~	✓		~~16.7~~	—	✓	✓		No S/D occurred GS
10/1/99	✓		12.21		✓	✓		Shut down to repair Mix Cooler Repair OK
10/6/99	✓		12.23		✓	✓		Repaired made to Mix cooler
10/11/99	✓		12.25		✓	✓		open up Epi line & unplugged - Repair
~~10/[illegible]~~	~~[illegible]~~		13.36		~~✓~~		~~✓~~	~~No malfunction~~ (J.S.)
11/24/99	✓		13.26	X		X		tighten lug on flange on auto valve (0097) manual valve (0088) sniffed with calibrated sniffer TR
	Note: Both leaks were below legal limit							
	Req'd for official reporting. However,							
	I made decision to repair both. GS 12/13/99							
	"Calibrated sniffer" referred to was not an LDAR inst							
	and was only used for gross determination. GS 12/13/99							
03/02/2000	✓		0.0		X		X	Water line & valve was leaking going to scrubber. Both [illegible] was down during this process. Fix H2O line & replace A/valve.
2/12/2000	✓		14		✓	✓		Repair LDAR leak @ T/T station - Had to empty K110.

(SSMForm.WK4)

RAD LDAR Monitoring

RAD LDAR MONITORING

In Accordance with 40 CFR 63, Subpart PPP, Subpart H, and future Permit Conditions, Hercules Incorporated has provided in Attachment B the following required information:

- Report required by 40 CFR 63.182(d)(2);
- Summary report of actual monitoring data; and
- Recordkeeping and reporting of Startup, Shutdown, and Malfunctions per SSM Plan.
  - Form A: SSM Plan Conformance
  - Form B: Nonconformance to SSM Plan

No problems or deviations were noted during the monthly RAD LDAR monitoring required by 40 CFR 63.1434(a) and 63.180(b).

The RAD LDAR visual inspection was not performed on April 3, 2000. This was reported to MDEQ as a deviation by certified letter dated April 7, 2000, because the Hercules Startup, Shutdown, and Malfunction Plan requested daily inspections. This procedure has since been revised to coincide with the weekly visual inspections required by 40 CFR 63, Subpart H (ref.: 63.163(b)(3)).

ATTACHMENT B

Results of Leak Monitoring
POLYRAD PROCESS
January 1, 2000 through June 30, 2000

PERIODIC LEAK MONITORING REPORT

January 1, 2000 through June 30, 2000

Hercules Incorporated
Hattiesburg, Mississippi

POLYRAD PROCESS AREA (AF-000)

1. **Number of affected *valves* in HAP service for which leaks were detected as described in § 63.168(b), the percent leakers, and the total number monitored:**

   - No affected valves were discovered leaking during the referenced reporting period (>10,000 ppm);
   - 0.00% of total affected valves were leaking; and
   - 103 total affected valves are in the PolyRAD process.

2. **Number of *valves* for which leaks were not repaired per § 63.168(f), identifying the number of those that are determined non-repairable:**

   - No affected valves were discovered leaking.

3. **Number of affected *pressure relief valves* in HAP service for which leaks were detected as described in § 63.168(b), the percent leakers, and the total number monitored:**

   - No affected valves were discovered leaking during the referenced reporting period (>500 ppm);
   - 0.00% of total affected valves were leaking; and
   - 19 total affected valves are in the PolyRAD process.

4. **Number of *pressure relief valves* for which leaks were not repaired per § 63.168(f), identifying the number of those that are determined non-repairable:**

   - No affected valves were discovered leaking.

5. **Number of affected *pumps* in HAP service for which leaks were detected as described in § 63.163(b), the percent leakers, and the total number monitored:**

   - No affected pumps were discovered leaking during the referenced reporting period (>10,000 ppm or visible leak);
   - 0.00% of total affected pumps were leaking; and
   - 3 total affected pumps are in the PolyRAD process.

6. **Number of *pumps* for which leaks were not repaired per § 63.163(c):**

   - No affected pumps were discovered leaking.

7. **Number of affected *connectors* in HAP service for which leaks were detected as described in § 63.174(a), the percent leaking, and the total number monitored:**

   - No affected connectors were discovered leaking during the referenced reporting period (>500 ppm);
   - 0.00% of total affected connectors were leaking; and
   - 752 total affected connectors are in the PolyRAD process.

8. **Number of *connectors* for which leaks were not repaired per § 63.174(d), identifying the number of those that are determined non-repairable:**

   - No affected connectors were discovered leaking.

9. **Explain any *delay of repairs*:**

   - All applicable repairs were made in a timely fashion.

10. ***Monitoring results* recorded during the semi-annual reporting period:**

    - Summary results are attached from the referenced semi-annual reporting period for the PolyRAD process.

SEMIANNUAL REPORT WORKSHEET

UNIT: RAD
REPORTING PERIOD: 1/1/2000 - 6/30/2000

Specify Month ---------->	MONTH 1 JAN	MONTH 2 FEB	MONTH 3 MARCH	MONTH 4 APRIL	MONTH 5 MAY	MONTH 6 JUNE
Total valves monitored**	0	8	93	0	0	107
Number valves leaking	0	0	0	0	0	0
Number valves not repaired in 15 days	0	0	0	0	0	0
Total PRV monitored	0	18	1	0	0	14
Number PRV's leaking	0	0	0	0	0	0
Number PRV's not repaired in 15 days	0	0	0	0	0	0
Total agitator monitored	0	0	0	0	0	0
Number agitators leaking	0	0	0	0	0	0
Number agitators not repaired in 15 days	0	0	0	0	0	0
Total pump monitored	3	3	3	3	3	3
Number pumps leaking	0	0	0	0	0	0
Number pumps not repaired in 15 days	0	0	0	0	0	0
Total compressor monitored	0	0	0	0	0	0
Number compressors leaking	0	0	0	0	0	0
Number compressors not repaired in 15 days	0	0	0	0	0	0
Total connector monitored	0	53	0	0	0	0
Number connectors leaking	0	0	0	0	0	0
Number connectors not repaired in 15 days	0	0	0	0	0	0
Number components on DOR	0	0	0	0	0	0

* - Only one regulation per worksheet unless otherwise instructed by client.

** - Total count of valves monitored includes light monitoring unless otherwise instructed by client.

Startup, Shutdown, and Malfu[illegible]ion Plan Checklist - Form A
--PolyRAD/Surfactant Unit--

Date	Startup, Shutdown, Malfunction Plan Properly Followed?		Was Form B Completed?		Was there a Malfunction?		Action Taken for - Section 6.2, 6.3, 6.4
	Yes	No: See Fm. B	Yes	No	Yes	No	
5/9/00	✓			✓	✓		(see page 185 log book) Shut down Polyrad unit & E.O. Scrubber
7/9/00	✓			✓		✓	Started up E.O. scrubber.
7/12/00	✓			✓		✓	Started up the Polyrad unit.
7/16/00	✓			✓		✓	Shut Polyrad unit down.
[redacted]							
				[redacted]			

(SSMForm.WK4)

Startup, Shutdown, and Malfu[illegible]on Plan Checklist - Form A
--PolyRAD/Surfactant Unit--

Date	Startup, Shutdown, Malfunction Plan Properly Followed?		Was Form B Completed?		Was there a Malfunction?		Action Taken for - Section 6.2, 6.3, 6.4
	Yes	No: See Fm. B	Yes	No	Yes	No	
1-30-00	✓			✓		✓	Shut down Polyrad unit at 4:15Pm
1-30-2000	✓			✓	✓		Shut down E.O Scrubber 3:15 PM
1-30-2000	✓			✓		✓ PMH	Started up E.O. Scrubber at 9:30 Pm
1-31-00	✓			✓		✓	at 2Am started up polyrad unit, Scrubber OK
2-1-00	✓			✓	✓		Shut Scrubber down at 12N (H2O Leaks)
1-1-2000	✓			✓		✓	at 6 PM started up E.O. Scrubber running OK
2-3-00	✓			✓		✓	No E.O. Venting Shut down E.O. Scrubber at 11:30pm
2-8-00	✓			✓		✓	Started E.O Scrubber at 11:[illegible]pm. AR-150 P12:[illegible]
2-9-00	✓			✓	✓		Shut down Polyrad unit Shut down E.O Scrubber water 11:30 PM Pump on
2-9-00	✓			✓		✓	Started up E.O. Scrubber at 6:55pm, AR-150 at 7½
2-12-00	✓			✓		✓	Shut down E.O. Scrubber and Polyrad unit 7:00 P.m. out E.O.
3-1-00	✓			✓		✓	Started up E.O. Scrubber, unloading T/C E.O
3-1-00	✓			✓		✓	Shut E.O Scrubber down.
fmH 4-10-00 4-3-00		✓	✓			✓	Visual inspection not performed. (1) State verbally informed on 4-5-00. (2) Follow-up letter sent to state on 4-7-00 (Cert. No. Z 570 544 186).
		Next Page					

(SSMForm.WK4)

Startup, Shutdown, and Malfunction Plan Checklist - Form A
--PolyRAD/Surfactant Unit--

Date	Startup, Shutdown, Malfunction Plan Properly Followed?		Was Form B Completed?		Was there a Malfunction?		Action Taken for - Section 6.2, 6.3, 6.4
	Yes	No: See Fm. B	Yes	No	Yes	No	
1-19-00	✓			✓		✓	Started up the E.O. Scrubber during OK (7-3 shift)
1-19-00	✓			✓		✓	Started up the Polyrad unit (7-3 & 3-11 shift)
1-19-00	✓			✓	✓		Shut down Scrubber and Polyrad, (11-7 shift) see log page 112 11-7 shift.
1-19-00	✓			✓		✓	Started Scrubber, see log page 112 (11-7 shift.)
1-20-00	✓			✓		✓	Bleeding ethylene Oxide to Scrubber, see log Page 113 (7-3 & 3-11 shifts)
1-20-00	✓			✓	✓		Scrubber down, see log page 113 (3-11 shift
1-21-00	✓			✓		✓	Started up Scrubber, see log page 115 (3-11 shift.
1-21-00	✓			✓		✓	Started up the Polyrad unit (11-7 shift)
1-23-00	✓			✓	✓		Scrubber and Polyrad down see log page 118 (7-3 shift)
1-26-00	✓			✓	SMH	✓	Scrubber polyrad down
1-27-00	✓			✓	SMH	✓	Scrubber Polyrad down
1-28-00	✓			✓		✓	Started E.O. scrubber back up.
1-28-00	✓			✓	SMH ✓	SMH	Shut down E.O. Scrubber (no acid) on 3-11 shift. SMH
1-29-00	✓			✓		✓	Started E.O. scrubber back up.

(SSMForm.WK4)

Nonconformance to Startup, Shutdown, and Malfunction Plan - Form B

Startup, Shutdown, Malfunction Occurence	Starting Date	Starting Time	Ending Date	Ending Time	Action Taken
Visual inspection not performed on 4/3/00	4-3-00	0700 hrs.	4-3-00	1500 hrs.	(1) State verbally informed on 4-5-00. (2) Follow-up letter sent to state on 4-7-00 (Cert. No. Z570 544 188).

MH 4-10-00

(NSSMform.WK3)

Deviations from Permit Requirements

DEVIATIONS FROM PERMIT REQUIREMENTS

January 1, 2000 through June 30, 2000

Hercules Incorporated
Hattiesburg, Mississippi

As required by 5.A.4 of the Title V Operating Permit, deviations from permit requirements must be clearly identified and reported. The deviations from any emission point or process specific monitoring required in the permit are detailed below:

1. During the annual and monthly Kymene Process LDAR monitoring required by 5.B.3(b) [ref.: 40 CFR 63.180(b)] and conducted on January 28, February 3, and March 2, 2000, the monitoring device was only calibrated using 0, 500, 1000, 2000, and 10,000 ppm methane gas. Since three (3) Phase II pumps were checked for leaks on each occasion, the monitoring equipment should have also been calibrated using a 5,000 ppm methane gas.

2. The Kymene Process Area (AA-001 and AA-002) weekly maintenance check required by 5.B.14 was not recorded on the week of January 3, 2000.

3. The RAD LDAR visual inspection was not performed on April 3, 2000. This was reported to MDEQ as a deviation by certified letter dated April 7, 2000, because the Hercules Startup, Shutdown, and Malfunction Plan requested daily inspections. This procedure has since been revised to coincide with the weekly visual inspections required by 40 CFR 63, Subpart H (ref.: 63.163(b)(3)).

0800- 00001
Forrest

HERCULES

Hercules Incorporated
613 West 7th Street
P.O. Box 1937
Hattiesburg, MS 39403-1937
(601) 545-3450
FAX: (601) 584-3226
http://www.herc.com

July 23, 1999

Earl Mahaffey
Environmental Compliance and Enforcement Division
Office of Pollution Control
101 West Capitol Street
Jackson, MS 39201

RE: Hercules Incorporated – Permit # 0800-00001
Semi-Annual Reporting

Dear Mr. Mahaffey:

As required by Title V Conditions 5.A.4.(ref: APC-S-6, Section III. A. 3.c. (1)), and 5.C.1, (b), 40CFR 63.182, (ref: 40CFR 63.528(b)), and conditions 5.B.6, 5.B.7, 5.B.8, 5.B.11, and 5.B.13, attached is the required monitoring data for the period ending June 30, 1999. As Responsible Official for Hercules Incorporated, I certify that based on information and belief formed after reasonable inquiry, the statements and information in the attached document are true, accurate, and complete.

Please contact Mr. Charles Jordan at (601) 584-3360 should you have any questions or need any further information.

Sincerely,
HERCULES INCORPORATED

Walter D. Langhans
Plant Manager

WDL/vrf

Attachment:

Cc: Scott Hodges – Bureau of Pollution Control
Evan Tullos – ECO Systems

MONITORING, RECORDKEEPING & REPORTING REQUIREMENT **5.A.4**

YEAR 1999

GAS USAGE - MCF

EMISSION POINT	DESCRIPTION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AC001	Poly-pale nat. gas Dowtherm boiler	2042	0	1560	1200	3240	1320						
AF001	RAD nat. gas Dowtherm boiler	360	2661	0	0	0	1800						
AG001	HRA nat. gas Dowtherm boiler	1332	1235	3040	9110	8260	1368						
AG002	HRA nat. gas Dowtherm boiler	0	0	0	0	0	0						
AJ001	Rosin dist. nat. gas Dowtherm boiler	948	133	2230	4790	7440	297						
AK001	Hydrogen nat. gas Dowtherm boiler	0	0	0	0	0	0						
AL001	Silica nat. gas Dowtherm boiler	0	0	0	0	0	0						
AM001	No. 5 package boiler	38437	43307	43392	34194	31661	29911						
AM002	No. 6 package boiler	0	0	0	0	0	0						
AN001	Reg. furnace nat. gas boiler	1300	1200	2200	1100	2000	0						

T5ngas

0

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 06/99

07/08/99 19:17:54
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Lisla
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
06/01/99	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(A)	Dth
1	2	1	18	24.0	61.9	112.5	2.9	0.6017	1323	1016.3000	1345
2	3	2	17	24.0	63.1	112.8	2.6	0.6017	1260	1016.3000	1281
3	4	3	17	24.0	63.7	112.8	2.7	0.6017	1275	1016.3000	1296
4	5	4	16	24.0	64.8	112.9	2.3	0.6017	1164	1016.3000	1183
5	6	5	15	24.0	65.2	112.9	2.0	0.6017	1101	1016.3000	1119
6	7	6	16	24.0	63.6	112.7	2.4	0.6017	1216	1016.3000	1236
7	8	7	18	24.0	62.8	112.7	3.0	0.6017	1347	1016.3000	1369
8	9	8	18	24.0	62.5	112.4	3.0	0.6017	1349	1016.3000	1371
9	10	9	18	24.0	63.9	112.4	3.1	0.6017	1366	1016.3000	1388
10	11	10	19	24.0	63.3	112.4	3.3	0.6017	1408	1016.3000	1431
11	12	11	18	24.0	62.1	112.4	3.1	0.6017	1374	1016.3000	1396
12	13	12	17	24.0	63.1	112.5	2.7	0.6017	1282	1016.3000	1303
13	14	13	17	24.0	63.4	112.4	2.8	0.6017	1295	1016.3000	1316
14	15	14	19	24.0	63.6	112.4	3.3	0.6017	1413	1016.3000	1436
15	16	15	19	24.0	62.4	112.3	3.4	0.6017	1430	1016.3000	1453
16	17	16	19	24.0	62.2	112.2	3.5	0.6017	1451	1016.3000	1475
17	18	17	20	24.0	61.5	112.3	3.8	0.6017	1522	1016.3000	1547
18	19	18	20	24.0	60.6	112.3	3.5	0.6017	1472	1016.3000	1496
19	20	19	18	24.0	61.7	112.3	2.9	0.6017	1332	1016.3000	1354
20	21	20	18	24.0	62.3	112.4	2.9	0.6017	1313	1016.3000	1334
21	22	21	19	24.0	65.1	112.4	3.2	0.6017	1403	1016.3000	1426
22	23	22	20	24.0	64.2	112.2	3.6	0.6017	1469	1016.3000	1493
23	24	23	19	24.0	65.5	112.3	3.1	0.6017	1384	1016.3000	1407
24	25	24	18	24.0	66.5	112.3	3.0	0.6017	1338	1016.3000	1360
25	26	25	18	24.0	65.0	112.2	3.1	0.6017	1370	1016.3000	1392
26	27	26	17	24.0	65.8	112.2	2.8	0.6017	1302	1016.3000	1323
27	28	27	16	24.0	68.6	112.4	2.3	0.6017	1169	1016.3000	1188
28	29	28	17	24.0	69.3	112.2	2.7	0.6017	1255	1016.3000	1275
29	30	29	17	24.0	67.7	112.2	3.0	0.6017	1266	1016.3000	1287
30	1	30	15	24.0	69.3	112.4	2.2	0.6017	1132	1016.3000	1150
Total									39781		40430

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
06/01/99	C	9.6	1.1550	2.0400	0.0000	94.7810	1.0770	0.3020	0.0940	0.1240	0.0630	0.0700	0.2940

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
12/29/98	16	87	43155	1.349
1/5/99	8	42	20833	1.302
1/6/99	16	130	64485	2.015
1/7/99	16	120	59524	1.860
1/8/99	16	116	57540	1.798
1/9/99	16	100	49604	1.550
1/11/99	16	112	55556	1.736
1/12/99	16	58	28770	0.899
1/13/99	16	93	46131	1.442
1/14/99	16	80	39683	1.240
1/19/99	8	40	19841	1.240
1/20/99	8	30	14881	0.930
1/22/99	8	50	24802	1.550
3/16/99	16	102	50596	1.581
3/17/99	16	125	62004	1.938
3/18/99	16	120	59524	1.860
3/19/99	16	120	59524	1.860
3/20/99	16	120	59524	1.860

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
3/21/99	16	100	49604	1.550
3/23/99	16	122	60516	1.891
3/24/99	8	40	19841	1.240
3/25/99	16	120	59524	1.860
3/27/99	16	100	49604	1.550
3/28/99	8	30	14881	0.930
3/29/99	16	66	32738	1.023
3/31/99	16	50	24802	0.775
4/1/99	16	94	46627	1.457
4/2/99	16	100	49604	1.550
4/3/99	16	102	50596	1.581
4/5/99	8	32	15873	0.992
4/6/99	8	60	29762	1.860
4/7/99	16	120	59524	1.860
4/8/99	16	120	59524	1.860
4/9/99	16	120	59524	1.860
4/10/99	16	89	44147	1.380

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
4/11/99	16	104	51588	1.612
4/12/99	16	96	47619	1.488
4/17/99	16	90	44643	1.395
4/26/99	16	124	61508	1.922
4/28/99	8	40	19841	1.240
5/3/99	8	60	29762	1.860
5/4/99	16	80	39683	1.240
5/5/99	16	98	48611	1.519
5/6/99	16	110	54564	1.705
5/7/99	16	120	59524	1.860
5/8/99	16	120	59524	1.860
5/9/99	16	120	59524	1.860
5/10/99	16	120	59524	1.860
5/11/99	16	120	59524	1.860
5/12/99	16	124	61508	1.922
5/13/99	16	100	49604	1.550
5/14/99	16	70	34722	1.085

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
5/15/99	16	80	39683	1.240
5/16/99	16	100	49604	1.550
5/17/99	16	100	49604	1.550
5/18/99	16	40	19841	0.620
5/19/99	16	120	59524	1.860
5/20/99	16	120	59524	1.860
5/21/99	16	100	49604	1.550
5/22/99	8	20	9921	0.620
5/23/99	8	40	19841	1.240
5/24/99	16	120	59524	1.860
5/25/99	8	36	17857	1.116
5/26/99	16	100	49604	1.550
5/27/99	8	26	12897	0.806

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
12/31/98	180	16	23900	4.0	
12/31/98	90	8	11966	4.0	
1/2/99	90	8	11960	4.0	
1/4/99	180	16	23920	4.0	
1/5/99	90	8	11960	4.0	
1/6/99	90	8	11960	4.0	
1/7/99	180	16	23920	4.0	
1/8/99	90	8	11960	4.0	
1/9/99	90	8	11960	4.0	
1/10/99	90	8	11960	4.0	
1/12/99	90	8	11960	4.0	
1/13/99	90	8	11960	4.0	
1/15/99	180	~~8~~ 16	23920	4.0	
1/17/99	90	8	11960	4.0	
1/18/99	90	8	11960	4.0	
1/19/99	90	8	11960	4.0	
1/21/99	90	8	11960	4.0	
1/23/99	180	16	23920	4.0	
1/24/99	180	16	23920	4.0	
1/25/99	90	8	11960	4.0	
1/26/99	90	8	11960	4.0	
1/28/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
1/29/99	90	8	11960	4.0	
1/31/99	180	16	23920	4.0	
2/1/99	90	8	11960	4.0	
2/2/99	96	8	11960	4.0	
2/3/99	96	8	11960	4.0	
2/4/99	90	8	11960	4.0	
2/5/99	90	8	11960	4.0	
2/7/99	180	16	23920	4.0	
2/9/99	96	8	11960	4.0	
2/10/99	90	8	11960	4.0	
2/11/99	90	8	11960	4.0	
2/12/99	90	8	11960	4.0	
2/13/99	96	8	11960	4.0	
2/14/99	180	16	23920	4.0	
2/16/99	90	8	11960	4.0	
2/17/99	90	8	11960	4.0	
2/18/99	90	8	11960	4.0	
2/19/99	90	8	11960	4.0	
2/20/99	90	8	11960	4.0	
2/22/99	90	8	11960	4.0	
2/23/99	96	8	11960	4.0	
2/24/99	96	8	11960	4.0	
2/25/99	90	8	11960	4.0	
2/26/99	90	8	11960	4.0	
2/27/99	96	8	11960	4.0	
2/28/99	180	16	23920	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
3/1/99	90	8	11960	4.0	
3/2/99	90	8	11960	4.0	
3/3/99	90	8	11960	4.0	
3/4/99	90	8	11960	4.0	
3/6/99	90	8	11960	4.0	
3/7/99	180	16	23920	4.0	
3/8/99	90	8	11920	4.0	
3/9/99	90	8	11960	4.0	
3/11/99	90	8	11960	4.0	
3/12/99	90	8	11960	4.0	
3/15/99	180	16	23920	4.0	
3/16/99	90	8	11960	4.0	
3/17/99	90	8	11960	4.0	
3/18/99	180	16	23920	4.0	
3/19/99	90	8	11960	4.0	
3/20/99	90	8	11960	4.0	
3/25/99	90	8	11960	4.0	
3/26/99	180	16	23920	4.0	
3/28/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
3/29/99	90	8	11960	4.0	
3/30/99	90	8	11960	4.0	
3/31/99	90	8	11960	4.0	
4/1/99	90	8	11960	4.0	
4/2/99	90	8	11960	4.0	
4/4/99	180	16	23920	4.0	
4/6/99	180	16	23920	4.0	
4/7/99	90	8	11960	4.0	
4/8/99	180	16	23920	4.0	
4/9/99	180	16	23920	4.0	
4/11/99	180	16	23920	4.0	
4/13/99	90	8	11960	4.0	
4/14/99	90	8	11960	4.0	
4/15/99	90	8	11960	4.0	
4/19/99	90	8	11960	4.0	
4/20/99	90	8	11960	4.0	
4/23/99	90	8	11960	4.0	
4/24/99	90	8	11960	4.0	
4/25/99	180	16	23920	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
4/29/99	180	16	23920	4.0	
5/1/99	180	16	23920	4.0	
5/2/99	90	8	11960	4.0	
5/7/99	90	8	11960	4.0	
5/9/99	180	16	23920	4.0	
5/11/99	90	8	11960	4.0	
5/12/99	90	8	11960	4.0	
5/13/99	180	16	23920	4.0	
5/14/99	90	8	11960	4.0	
5/16/99	90	8	11960	4.0	
5/17/99	90	8	11960	4.0	
5/20/99	90	8	11960	4.0	
5/21/99	90	8	11960	4.0	
5/23/99	90	8	11960	4.0	
5/25/99	90	8	11960	4.0	
5/27/99	90	8	11960	4.0	
5/28/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Enamy Batch

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
5/28/99	90	8	11960	4.0	
5/29/99	180	16	23920	4.0	
5/30/99	180	16	23920	4.0	
5/31/99	90	8	11960	4.0	
6/4/99	90	8	11960	4.0	
6/7/99	180	16	23920	4.0	
6/8/99	90	8	11960	4.0	
6/9/99	90	8	11960	4.0	
6/10/99	180	16	23920	4.0	
6/12/99	90	8	11960	4.0	
6/13/99	90	8	11960	4.0	
6/17/99	90	8	11960	4.0	
6/20/99	90	8	11960	4.0	
6/21/99	90	8	11960	4.0	
6/22/99	90	8	11960	4.0	
6/23/99	90	8	11960	4.0	
6/24/99	90	8	11960	4.0	
6-27-99	90	8	11960	4.0	
6-29-99	90	8	11960	4.0	
6-30-99	90	8	11960	4.0	
7-1-99	90	8	11960	4.0	
7-5-99	90	8	11960	4.0	
7-6-99	90	8	11960	4.0	
7-6-99	90	8	11960	4.0	
7/7/99	90	8	11960	4.0	
7/14/99	90	8	11960	4.0	
7-15-99	90	8	11960	4.0	
7/16/99	90	8	11960	4.0	
7/18/99	90	8	11960	4.0	
7/20/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AL002
Defoamer Process Silica Furnance Dust Collector

Date (M-D-Y)	Silica Addition Time minutes	Silica Total Charge bages	Silica Total Charge pounds	Silica Total Charge ton/hr	Comments
12/31/98	NO Operation of silica drying process in December 1998				
1/31/99	NO Operation of Silica dryer process in January 1999				
2/28/99	No operation of Silica dryer process in the month of February 1999				
3/31/99	No operation of Silica dryer process in the month of March 1999				
4/26/99	No operation of Silica dryer process in the month of April 1999				
5/24/99	No operation of the Silica dryer process in the month of May 1999				
6/27/99	No operation of the Silica dryer process in the month of June 1999. See Operation sheet data log for subsequent to 6/99. [illegible]				

(EPAL002.WK4)

ESI

PERIODIC LEAK MONITORING REPORT

January, 1999 To June, 1999

KYMENE PROCESS

for

HERCULES, INCORPORATED
CHEMICAL SPECIALTIES
Hattiesburg, Mississippi

Forrest County

prepared by:

ECO·SYSTEMS, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS
Jackson, Mississippi

June, 1999

Hercules, Inc.
Hatteisburg, Mississippi
June, 1999

ESI

PERIODIC LEAK MONITORING REPORT - KYMENE PROCESS
For Compliance Period - January, 1999 through June, 1999

Hercules, Incorporated
Hattiesburg, Mississippi

1. ***Number of affected valves for which leaks were detected; percent leakers; total number of valves:***

   - No affected valves were discovered leaking during compliance period (greater than 500 ppm and/or a visible leak);
   - 0.00% of total affected valves were leaking;
   - 60 total affected valves are in the Kymene process.

2. ***Number of valves which were not repaired during this period:***

   - No affected valves were discovered leaking.

3. ***Number of pumps for which leaks were detected; percent leakers; total number of pumps:***

   - No affected pumps were discovered leaking during the compliance period (greater than 5,000 ppm or a visible leak);
   - 0.00% of affected pumps were leaking;
   - 3 total affected pumps are in the Kymene process.

4. ***Number of pumps which were not repaired during this period:***

   - No affected pumps were discovered leaking during this compliance period.

5. ***Number of agitators for which leaks were detected; percent leakers; total number of agitators:***

   - No affected agitators were discovered leaking during compliance period (greater than 10,000 ppm or a visible leak);
   - 0.00% of affected agitators were leaking;
   - 1 total affected agitator is in the Kymene process.

6. ***Number of agitators which were not repaired during this period:***

   - No affected agitators required repair.

7. ***Number of connectors (flanges, screwed fittings and others) for which leaks were detected; percent leakers; total number of connectors:***

- 1 affected connector (flange) was discovered leaking during compliance period (greater than 500 ppm);
- 0.33% of total affected connectors were leaking;
- 302 total affected connectors are in the Kymene process.

8. ***Number of connectors which were not repaired during this period:***

- Leaking connector was sucessfully repaired.

9. ***Provide explanation of any repairs that were unable to be made:***

- Repairs of all affected leaking components were successful.

10. ***Provide results of all monitoring conducted during compliance period:***

- All results for the specified reporting period may be found in Attachment A to this report.

ATTACHMENT A

Results Of Leak Monitoring
Kymene Process
January, 1999 - June, 1999

FUGITIVE EMISSIONS SCREENING REPORT FOR LEAK DETECTION AND REPAIR (LDAR) PROGRAM

prepared for

Hercules, Inc.
Specialty Chemicals
Hattiesburg, Mississippi

prepared by

Eco·Systems, Inc.
Environmental Engineers and Scientists

Jackson, MS · Little Rock, AR · Houston, TX

January, 1999

1.0 INTRODUCTION

Hercules, Inc.(Hercules) owns and operates a specialty chemicals facility in Hattiesburg, Mississippi. The facility is located on West Seventh Street in Hattiesburg, Forrest County, Mississippi on approximately 200 acres of land. More specifically, the Site is located in Township 4 North, Range 13 West, within sections 4 and 5 just north of Hattiesburg, Mississippi. The facility has been in operation since 1923 and is surrounded by both industrial and residential properties.

The facility's operations consist of extraction, fractionation, refining, distillation, and processing of rosin to produce various products. Over 250 products are produced from the above-referenced operations and include: modified resins, polyamides, ketene dimer, crude tall oil wax emulsions, and synthetic rubber. Structures at the facility include offices, laboratories, powerhouses, wastewater treatment plant, settling ponds, landfills, and central loading and packaging areas.

The facility is classified as a major source as defined in section 112(a) of the Clean Air Act based on emissions of Hazardous Air Pollutants (HAPs), and is, therefore, subject to regulation under 40 CFR 63 Subpart W (National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamides Production). Specifically, Hercules stores and uses Epichlorohydrin (a HAP) in the Kymene process. Therefore, in accordance with 40 CFR 63 Subpart W, all process equipment that is in organic HAP service must be monitored for leaks and repaired as defined in Subpart W and Subpart H of 40 CFR 63.524 through 63.528 and 63.160 through 63.182. Process equipment is considered to be in organic HAP service if that equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of the designated organic HAP (i.e., Epichlorohydrin).

Hercules is utilizing the services of *Eco·Systems, Inc.* (*Eco·Systems*) to assist in implementing the Leak Detection and Repair (LDAR) program for the Epichlorohydrin process. *Eco·Systems*, utilizing tags previously placed on affected components, screened each applicable piece of equipment on January 14, 1999 (see Table 1). This report contains information on the scope of work, methodology, results (Section 2.0), and conclusions (Section 3.0).

2.0 SCOPE OF WORK, METHODOLOGY, AND RESULTS

2.1 Leak Criteria

Prior to initiating screening activities, *Eco·Systems* identified the "leak criteria" for each type of equipment potentially screened. At Hercules' request, each source was screened for leaks based on Phase II criteria outlined in 40 CFR 63. In accordance with 40 CFR 63.162, sources in the Kymene process that met the following criteria were not screened:

- Equipment not in organic HAP service;
- Equipment in vacuum service; and
- Equipment that is in organic HAP service less than 300 hours per calendar year;

2.2 Equipment Used and Testing Methodology

After identifying each source to be screened, Method 21 was followed to screen equipment for leaks in accordance with the regulations. A Thermo-Environmental 680 flame ionization detector (FID) was used to screen a total of 370 sources. Attachment I presents information and specifications for the FID which meets the criteria for Method 21 specified in 40 CFR 60 Appendix A and has the following specifications:

- Response time of approximately 2 seconds for 90% of final reading;
- Response factor of 2.1 for Epichlorohydrin; and
- Calibration accuracy of ± 10%, for a range of 1-10,000 ppm.

Prior to beginning screening activities, the FID was assembled, started and calibrated with a 10 ppmv and a 10,000 ppmv methane in air mixture. Screening of individual components were conducted in accordance with 40 CFR 60 Appendix A, Method 21, Section 4.3 Individual Source Surveys. Background readings were noted for each area and subtracted from the FID reading for each applicable source screened.

2.3 Monitoring Results

Screening results along with other pertinent information are presented in Table 1. One source (a connector) was identified as leaking:

- Tag # 0022.00 - Located in the Epichlorohydrin loading area near Pump 0001.00.

The leaking source was identified with a weatherproof and readily visible tag indicating that the component was leaking and required repair. Hercules personnel were notified of the leaking component so that repair activities could be initiated.

During screening activities, the presence of visual leaks (i.e., liquid visibly dripping from a connection or seal) was noted for each component. No visual leaks were identified for the components screened.

To satisfy the requirements of 40 CFR 63.162(c) and as part of this scope of work, *Eco-Systems* has identified all sources subject to 40 CFR 63 and has distinguished those sources from sources that are not subject to 40 CFR 63.

3.0 CONCLUSION

Based on the screening results, one (1) leaking unit (a connector) was identified: component # 0022.00. During the next scheduled monitoring event (mid-February, 1999) and upon repair of the leaking component, *Eco·Systems* will perform follow-up monitoring in accordance with the regulations to confirm successful repair of the leaking unit.

ESI

TABLE 1

LDAR Screening Results

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	> 500.0
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0

Table 1a
Epichlorohydrin Screening Results - Agitators
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
Percent Leakers					**0%**

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	**> 500.0**
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
Percent Leakers					**0.33%**

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
Percent Leakers					**0%**

Table 1d
Epichlorohydrin Screening Results - Pumps
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
Percent Leakers					**0%**

ESI

ATTACHMENT I

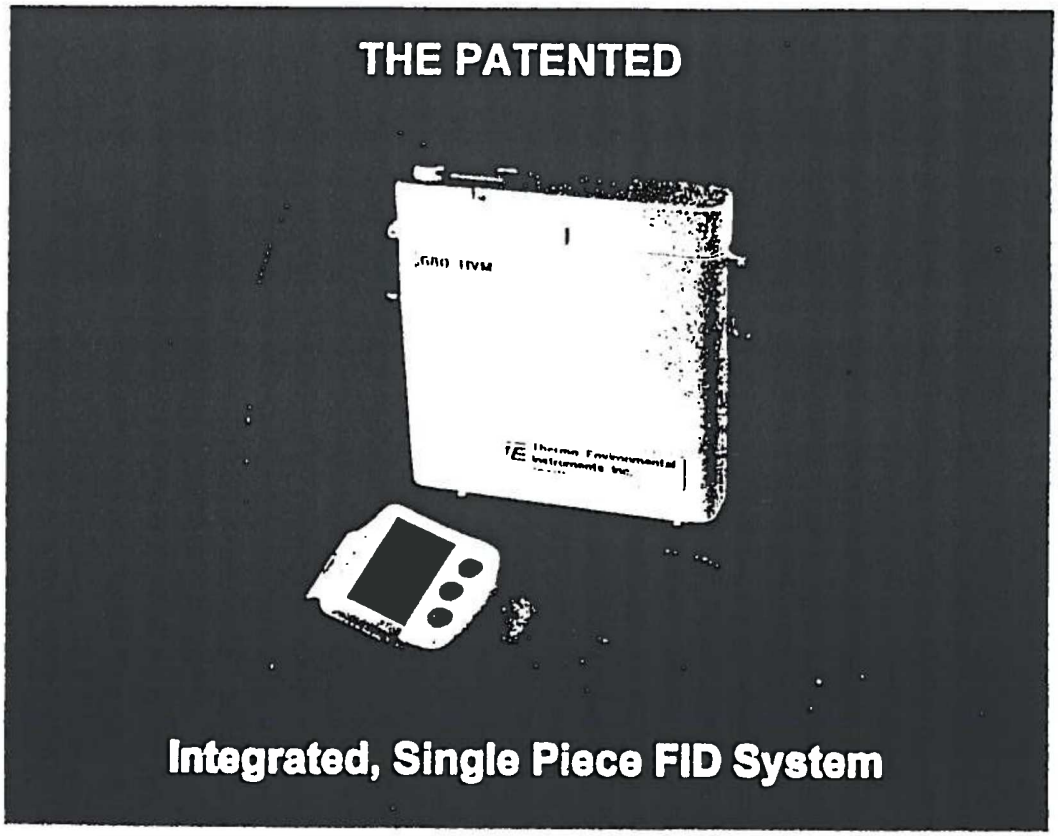
Foxboro 108 Flame Ionization Detector
Information and Specifications

Thermo Environmental Instruments Inc.

BOCAGE SPECIALTY COMPANY
P.O. Box 740382
NEW ORLEANS, LA 70174-0382
(504) 366-0006

MODEL 680

PORTABLE HYDROCARBON VAPOR METER



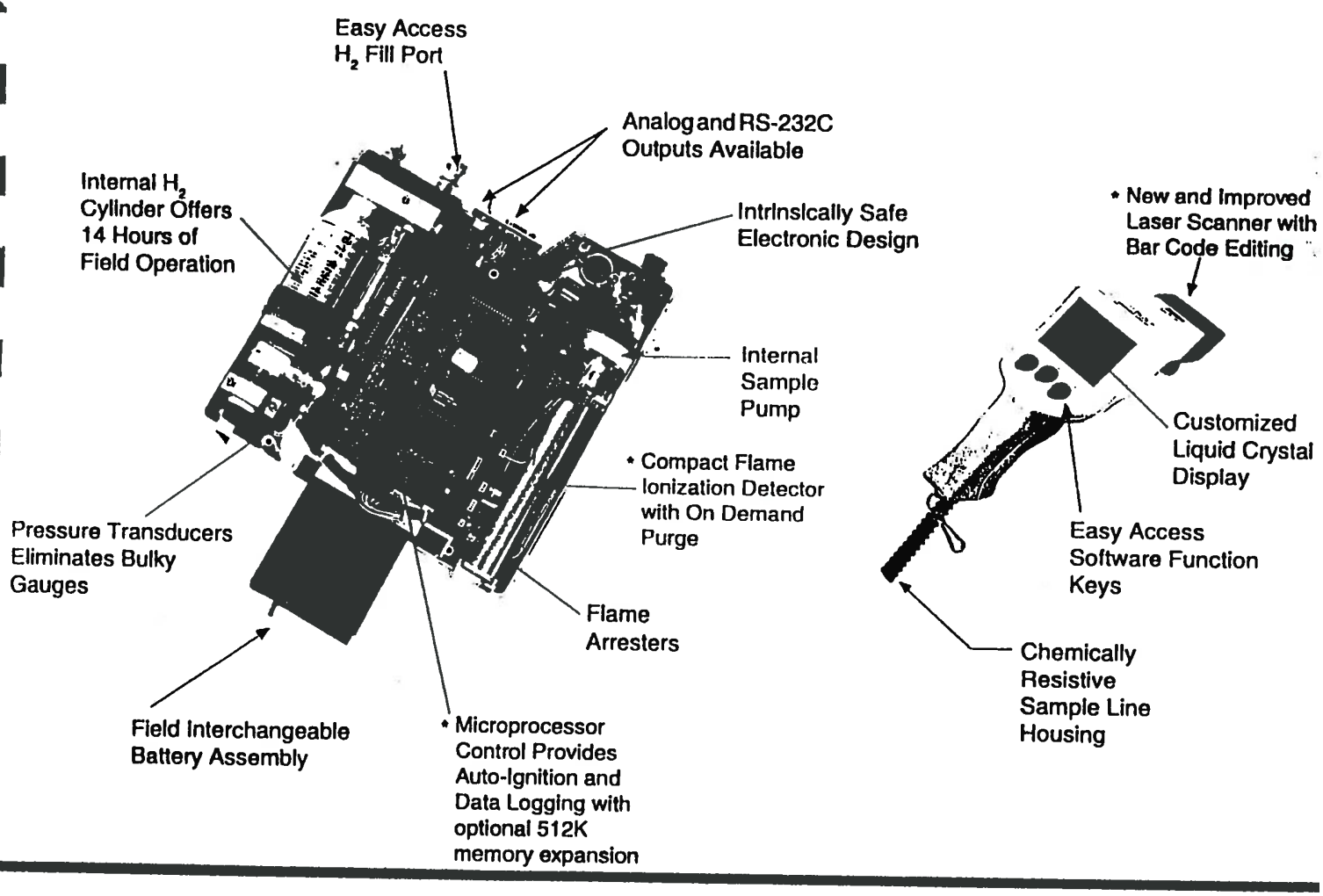
Advanced Technology For Applications In:

- EPA Method 21 Compliance Testing
- Fugitive Emissions Monitoring
- Detection of Soil and Water Contaminants
- Leaking Underground Storage Tank Monitoring
- Industrial Hygiene Monitoring

*New Features for 1995:

- New and Improved Laser Scanner
- Bar Code Editing
- Optional 512K Memory Expansion
- Additional Database Interfaces
- On Demand Detector Purge

KEY DESIGN FEATURES



* New and Improved for 199

ADVANCED TECHNOLOGY

The Model 680 Hydrocarbon Vapor Meter (HVM) microprocessor based design offers capabilities previously unavailable with portable flame ionization instrumentation, including, system diagnostics (check-out) upon power-up, bidirectional RS-232 communications, maximum concentration hold, Time Weighted Averaging (TWA) report capability and auto-ranging over the entire 0-20,000 ppm concentration range.

However, the technological advances within this state-of-the-art design does not end here. Thermo Environmental Instruments engineers implemented an interchangeable battery assembly resulting in extended field operation and pressure transducer technology for monitoring hydrogen flow status and operating time indication.

The user programmable software capabilities entail response factor settability, self-calibration adjustment, storage of up to 10 calibrations in memory, and automatic data logging of up to 4000 sample readings by time, date, concentration value, location code.

Additionally, the Model 680 HVM is an ergonomic success with its pistol grip display gun and light-weight sidepack layout. This will result in increased field comfort for all types of operators.

A Truly Portable, Truly Integrated, Intrinsically Safe

FUGITIVE EMISSIONS MONITORING SYSTEM

The regulations to be promulgated by the Environmental Protection Agency in support of the Clean Air Act Amendments of 1990 impose stringent demands on process component leak measurement and management.

Existing Fugitive Emissions Monitoring technologies are labor intensive, suffer from erroneous interpretation of data, utilize manual reporting techniques, or require one to be an octopus to operate the system components effectively.

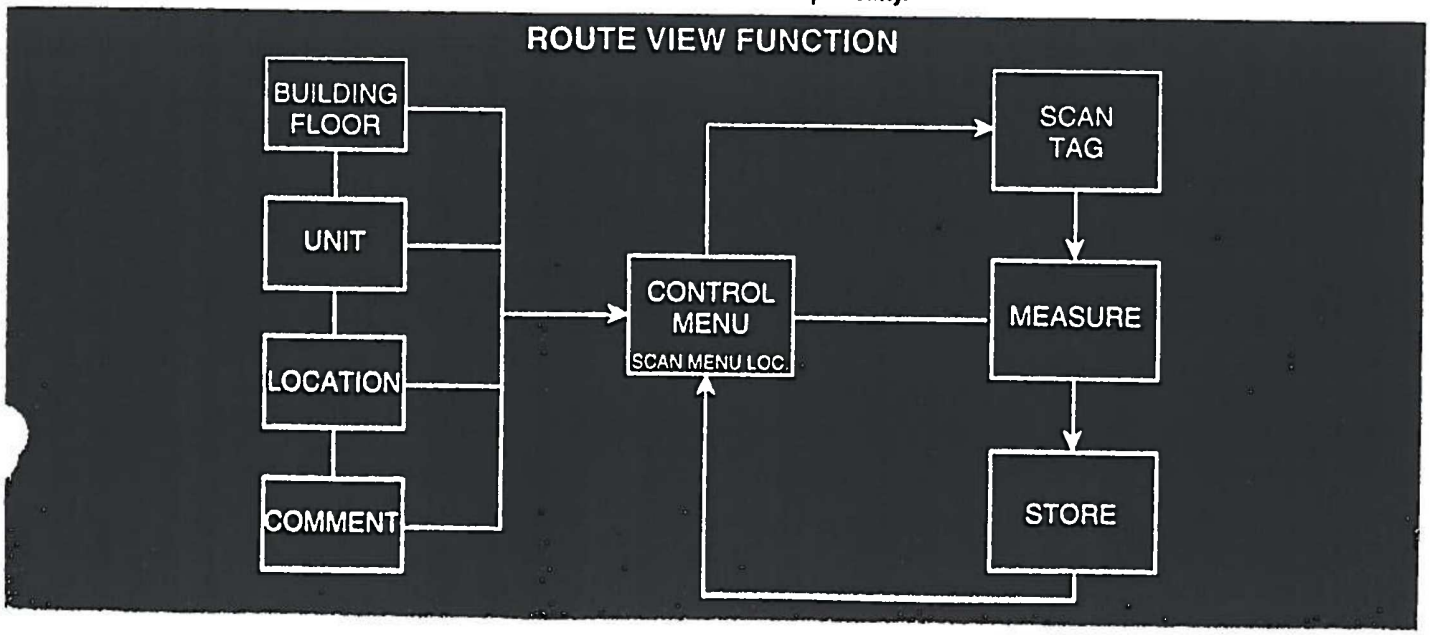
The Model 680 HVM utilizes and integrated system approach which incorporates the flame-ionization detector assembly, data logger, and bar code scanning device into a single sidepack/hand-held gun package. This integrated system addresses the shortcomings of past technologies while providing fugitive emissions monitoring personnel with enhanced capabilities including:

- Integral manual or automatic logging of up to 4000 individual data points by location code, time, date and sample concentration.
- Lock-in of maximum concentration reading. This is useful in isolating or pin-pointing the source of a gaseous chemical leak.
- Increased operator safety via an intrinsically safe design which includes the laser based bar code reading device. The Model 680 HVM is Factory Mutual (FM) certified for use in Class I, Division 1 Groups A, B, C, D hazardous locations.

Leak Detection and Repair (LDAR) programs require extensive documentation and follow-up. The Model 680 HVM addresses LDAR requirements via its ROUTE VIEW function which is illustrated in the flow diagram below. As a self-contained fugitive emissions monitoring system, the Model 680 HVM improves LDAR management efficiency by offering:

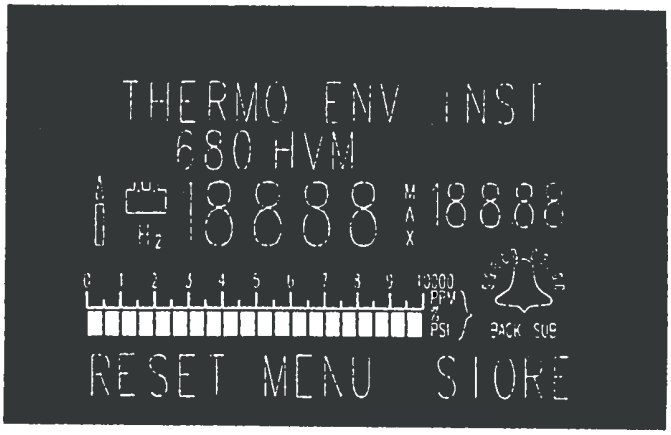
- Reread capability for situations in which an exceedance (violation) measurement is encountered and subsequent repair attempted.
- Report identification of any missed component tags.
- Ability to measure and record a background measurement which can subsequently be automatically subtracted from the fugitive emission measurement.
- Ability to generate process component leak reports.

Additionally, via bidirectional RS-232 communications, the Model 680 HVM interfaces directly with several commercially available fugitive emission data base computer software systems. This combination results in the ultimate utilization of the Model 680 HVM microprocessor capabilities by allowing LDAR personnel to download a pre-programmed survey route from a personal computer to the 680. Subsequently, the Model 680 will guide the operator through the designated leak survey route. Please contact us for database software compatibility.



Customized Liquid Crystal Display

- Digital & Graphical Sample Concentration Level
- Maximum Concentration Signal Hold
- Alarm Exceedance Indication
- Low Battery Warning
- Low Hydrogen Warning
- Flame Status



Specifications

Measurement:

Technique: Flame Ionization Detection (FID) of most organic vapors. Note that sample also serves as source of combustion air.

Ranges: Liquid Crystal Display (LCD) - Auto ranging over entire 0-20,000ppm concentration range. Displayed concentration reading resolution as follows:
0-100ppm (resolution to 0.1ppm)
0-20,000ppm (resolution to 1.0ppm)

Minimum Detectable: 0.5ppm methane in air matrix

Sensitivity: 0.1ppm methane

System Time Constant: 4.0 seconds at 800ml/min sample flow (10.0% to 90.0% of final reading)

Sampling Rate: 800ml/min

Sample Conditioning: Changeable Teflon filter which also functions as water trap

Power Requirements:

Battery: Internally rechargeable (external charger provided with unit.)

Service Life: Ten hours per internal battery charge, operates from charger indefinitely. Battery is interchangeable. Therefore, battery based operation can be extended indefinitely.

Charger Requirements: 115/220 VAC, 50Hz

Controls, Panel:

Readout: Highly visible (0.4"H x 0.2"W) seven (7) segment concentration readout; 2 line by 17 character message display; 1 line by 17 character key function display; calibrated bar graph; symbolic status messages including flame out/lit, low battery charge, low H_2 pressure and concentration level exceedance. Current time and date also available for display.

Keypad: Three keys control instrument software functions. Keys offer tactile feedback with current function displayed at all times.

Gases:

Combustion Air: Provided by sample at a flow rate of 800 ml/min.

Hydrogen: Provided by refillable internal cylinder. 1800 psig capacity offers 14 hours operation. H_2 flow is 13 ml/min.

Physical Dimensions:

Case Size: HWD 12.5 x 11.5 x 2.6 Inches

Weight: Side Pack - 10.5 lbs; Gun - 12 oz.

Communication:
- 9 Pin RS-232 Port
- 0 - 1V Analog Signal

Approvals: Factory Mutual (FM) Class I, Division 1, Groups A, B, C, D
CENELEC EEx ib d IIC T4

Patents: Covered by U.S. Patent 5,356,594

For Price and Delivery Information, Contact:

Thermo Environmental Instruments Inc.

Thermo Electron Ltd., 910 Birchwood Blvd., Warrington, Cheshire, WA3 7QN, ENGLAND / Telephone: 0925 / 813600

Thermo Instrument Systems, GMBH, Martenerstrasse 539, 4600 Dortmund 70, WEST GERMANY / Telephone :231 / 6170 78

ThIS Analytical B.V., Heerbaan 220, 4817 Breda, HOLLAND / Telephone: 76 / 713717

Thermo Instrument Systems, Spinnerslaan 2A, Lokeren, BELGIUM / Telephone: 93/485841

8 West Forge Parkway
Franklin, MA 02038

(508) 520-0430

FAX: (508) 520-1460

Eco•Systems, Inc.
Consultants, Engineers and Scientists

March 8, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on February 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable pumps were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the First Quarter, 1999 section. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Jeffrey L. Allen, P.E.
Senior Engineer

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Table 1
Epichlorohydrin Screening Results - Pumps
February, 1999
Hercules. Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	2/25/99	0.0
Percent Leakers					**0%**

Table 2
Epichlorohydrin Screening Results - Agitators
February, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	2/25/99	0.0
Percent Leakers					**0%**

Eco•Systems, Inc.
Consultants, Engineers and Scientists

April 19, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on March 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable components were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the First Quarter, 1999 section. The next monitoring event is tentatively scheduled for mid-April, 1999.

Eco·Systems appreciates providing environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan M. Tullos
Project Scientist

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	3/25/99	0.0
Percent Leakers					**0%**

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	3/25/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	1.4	0.06
95 ppmv	98.2	94.7
980 ppmv	932	978

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.2	100%

Eco•Systems, Inc.
Consultants, Engineers and Scientists

May 6, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on April 14, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable components were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the Second Quarter, 1999 section. The next monitoring event is tentatively scheduled for mid-May, 1999.

Eco·Systems appreciates providing environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan M. Tullos
Project Scientist

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
April, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	4/14/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	3.5	-1.5
95 ppmv	100	95.2
980 ppmv	958	972

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.9	101%

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
April, 1999
Hercules. Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	4/14/99	0.0
Percent Leakers					**0%**

Eco•Systems, Inc.
Consultants, Engineers and Scientists

June 11, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on May 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable components were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the Second Quarter, 1999 section. The next monitoring event is tentatively scheduled for mid-June 1999.

Eco·Systems appreciates providing environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Jeffrey L. Allen FOR

Wade Steinriede
Staff Scientist

Evan M. Tullos
Project Scientist

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
May, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	5/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	5/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	5/25/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	2.7	0
95 ppmv	108	96
980 ppmv	1150	980

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95	100%

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
May, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	5/25/99	0.0
Percent Leakers					**0%**

Eco•Systems, Inc.
Consultants, Engineers and Scientists

July 1, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

COPY

Re: ***Environmental Engineering/Consulting Services***
Quarterly Leak Detection Monitoring for Valves,
and Monthly for Pumps, Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed quarterly leak detection services on the affected valves in the Kymene process and monthly monitoring on the pumps in the Kymene process on June 28, 1999. A total of 60 valves, three (3) pumps, and one (1) agitator were identified during the initial event in January, 1999. A leaking valve in this case is one which has an organic vapor emission of greater than 500 parts per million (ppm) and/or a visible leak. A leaking pump or agitator is one which has an organic vapor emission of greater than 5,000 ppm or 10,000 ppm, respectively. All applicable components were tested by *Eco·Systems* using a Thermo Environmental Model 680 organic vapor meter and no leaking units were discovered. Results of these tests are shown on the attached tables.

Eco·Systems will contact Hercules concerning timing of the next monitoring event tentatively scheduled for mid-July, 1999. *Eco·Systems* appreciates the opportunity to provide environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan Tullos
Project Scientist

Attachment

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Table 1a
Epichlorohydrin Screening Results for June, 1999 - Valves
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0004.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0020.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0023.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0037.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	6/28/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	6/28/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0

Table 1a
Epichlorohydrin Screening Results for June, 1999 - Valves

Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0172.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	6/28/99	0.0
Percent Leakers					**0%**

Table 1b
Epichlorohydrin Screening Results for June, 1999 - Agitators

Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	6/28/99	0.0
Percent Leakers					**0%**

Table 1c
Epichlorohydrin Screening Results for June, 1999 - Pumps
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	6/28/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	6/28/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	3.2	0
95 ppmv	101	95.4
980 ppmv	1122	1002

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	97.2	102.3%

Eco•Systems, Inc.
Consultants, Engineers and Scientists

July 1, 1999

Mr. Charlie Jordan
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: Equipment Leak Monitoring for January and February

Dear Mr. Jordan:

On January 15, 1999, Wade Steinrede of *Eco·Systems* visited the Hercules facility to perform equipment leak monitoring as required by 40 CFR 63, Subpart H. During this monitoring, it was discovered that a connector was leaking. According to your office, the leak was physically repaired within 15 days as required by Subpart H. *Eco·Systems* re-tested the connector on February 25, 1999 and determined that it was in compliance as specified by the standard. We are currently gathering field records that document the February monitoring event and will provide them to Hercules, Inc. as soon as possible.

Sincerely,
Eco·Systems, Inc.

Wade Steinrede
Staff Scientist

Evan Tullos
Project Scientist

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Eco•Systems, Inc.
Consultants, Engineers and Scientists

July 13, 1999

Mr. Charlie Jordan
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: Equipment Re-Testing Certification for January and February of 1999

Dear Mr. Jordan:

This letter is provided as a follow-up to the letter dated July 1, 1999 regarding the leak monitoring performed during January and February of 1999. On January 15, 1999, Wade Steinrede of *Eco·Systems* visited the Hercules facility to perform equipment leak monitoring as required by 40 CFR 63, Subpart H. During this monitoring, it was discovered that a connector was leaking. *Eco·Systems* re-tested the connector on February 25, 1999 and determined that it was in compliance as specified by the standard.

We have been unsuccessful at locating the field records pertaining to the re-testing of the repaired component. However, we wish to reiterate in this communication our certification that the connector was re-tested on February 25 and determined in compliance, and that the instrument was calibrated prior to measurement as is our standard practice.

Sincerely,
Eco·Systems, Inc.

Wade Steinrede
Staff Scientist

Evan Tullos
Project Scientist

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Hercules

Master Equipment List

Rad Unit

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5101	Rail car E/O unloading line top	VLV	0.750	No	
RAD	RXR Load	5101.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5101.2	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5102	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5102.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5103	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5103.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5104	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5104.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5105	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5105.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5106	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5106.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5107	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5107.1	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5107.2	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5108	Rail car E/O unloading line top	CON	0.750	No	
RAD	RXR Load	5109	Rail car E/O unloading line top	VLV	2.000	No	
RAD	RXR Load	5109X	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5109Y	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5110	Rail car E/O unloading line top	VLV	0.750	No	
RAD	RXR Load	5110X	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5110Y	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5111	Rail car E/O unloading line top	VLV	2.000	No	
RAD	RXR Load	5111X	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5111Y	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5112	Rail car E/O unloading line top	VLV	1.000	No	
RAD	RXR Load	5112X	Rail car E/O unloading line top	VLV	1.000	No	
RAD	RXR Load	5112Y	Rail car E/O unloading line top	FLG	1.000	No	
RAD	RXR Load	5112.1	Rail car E/O unloading line top	CON	1.000	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5113	Rail car E/O unloading line top	VLV	1.000	No	
RAD	RXR Load	5113X	Rail car E/O unloading line top	FLG	1.000	No	
RAD	RXR Load	5113Y	Rail car E/O unloading line top	FLG	1.000	No	
RAD	RXR Load	5114	Rail car E/O unloading line top	CHV	1.000	No	
RAD	RXR Load	5114X	Rail car E/O unloading line top	FLG	1.000	No	
RAD	RXR Load	5114Y	Rail car E/O unloading line top	FLG	1.000	No	
RAD	RXR Load	5115	Rail car E/O unloading line	CON	1.000	No	
RAD	RXR Load	5115X	Rail car E/O unloading line sight glass	FLG	1.000	No	
RAD	RXR Load	5115Y	Rail car E/O unloading line sight glass	FLG	1.000	No	
RAD	RXR Load	5116	Rail car E/O unloading line	VLV	1.000	No	
RAD	RXR Load	5116.1	Rail car E/O unloading line top	CON	1.000	No	
RAD	RXR Load	5116.2	Rail car E/O unloading line top	CON	1.000	No	
RAD	RXR Load	5116.3	Rail car E/O unloading line	CON	1.000	No	
RAD	RXR Load	5116.4	Rail car E/O unloading line	CON	1.000	No	
RAD	RXR Load	5117	Rail car E/O unloading line top	FLG	0.500	No	
RAD	RXR Load	5118	Rail car E/O unloading line top	CON	0.500	No	
RAD	RXR Load	5118.1	Rail car E/O unloading line top	CON	0.500	No	
RAD	RXR Load	5119	Rail car E/O unloading line top	CON	0.500	No	
RAD	RXR Load	5120	Rail car E/O unloading line top	CON	1.000	No	
RAD	RXR Load	5120.1	Rail car E/O unloading line top	CON	1.000	No	
RAD	RXR Load	5121	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5122	Rail car E/O unloading line top	CON	2.000	No	
RAD	RXR Load	5122.1	Rail car E/O unloading line top	CON	2.000	No	
RAD	RXR Load	5123	Rail car E/O unloading line top	VLV	0.500	No	
RAD	RXR Load	5123X	Rail car E/O unloading line top	FLG	0.500	No	
RAD	RXR Load	5123Y	Rail car E/O unloading line top	FLG	0.500	No	
RAD	RXR Load	5124	Rail car E/O unloading line top	VLV	0.500	No	
RAD	RXR Load	5124.1	Rail car E/O unloading line top	CON	0.500	No	
RAD	RXR Load	5124.2	Rail car E/O unloading line top	CON	0.500	No	
RAD	RXR Load	5125	Rail car E/O unloading line top	FLG	0.500	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5126	Rail car E/O unloading line top	VLV	0.750	No	
RAD	RXR Load	5126X	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5126Y	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5127	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5128	Rail car E/O unloading line top	CHV	0.750	No	
RAD	RXR Load	5128X	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5128Y	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5129	Rail car E/O unloading line top	FLG	0.750	No	
RAD	RXR Load	5130	Rail car E/O unloading line top	FLG	2.000	No	
RAD	RXR Load	5131	Rail car E/O unloading Pump	FLG	1.500	No	
RAD	RXR Load	5132	Rail car E/O unloading Pump	FLG	1.500	No	
RAD	RXR Load	5133	Rail car E/O unloading Pump	PMP	1.500	No	
RAD	RXR Load	5134	Rail car E/O unloading Pump disc. Line	FLG	1.000	No	
RAD	RXR Load	5135	Rail car E/O unloading Pump disc. Line	FLG	0.500	No	
RAD	RXR Load	5136	Rail car E/O unloading Pump disc. Line	FLG	0.500	No	
RAD	RXR Load	5137	Rail car E/O unloading Pump	VLV	2.000	No	
RAD	RXR Load	5137X	Rail car E/O unloading Pump	FLG	2.000	No	
RAD	RXR Load	5137Y	Rail car E/O unloading Pump	FLG	2.000	No	
RAD	RXR Load	5138	Rail car E/O unloading Pump drain	VLV	0.500	No	
RAD	RXR Load	5138.1	Rail car E/O unloading Pump drain	CON	0.500	No	
RAD	RXR Load	5138.2	Rail car E/O unloading Pump drain	CON	0.500	No	
RAD	RXR Load	5139	Rail car E/O unloading Pump OH	FLG	1.000	No	
RAD	RXR Load	5140	Rail car E/O unloading Pump OH	PRV	1.000	No	
RAD	RXR Load	5140X	Rail car E/O unloading Pump OH	FLG	1.000	No	
RAD	RXR Load	5140Y	Rail car E/O unloading Pump OH	FLG	1.000	No	
RAD	RXR Load	5141	Rail car E/O unloading Pump filter	FLG	2.000	No	
RAD	RXR Load	5142	Rail car E/O unloading Pump filter	VLV	2.000	No	
RAD	RXR Load	5142X	Rail car E/O unloading Pump filter	FLG	2.000	No	
RAD	RXR Load	5142Y	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5143	Rail car E/O unloading Pump-filter	VLV	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5143X	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5143Y	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5144	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5145	Rail car E/O unloading Pump-filter	VLV	0.750	No	
RAD	RXR Load	5145X	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5145Y	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5146	Rail car E/O unloading Pump-filter	VLV	0.750	No	
RAD	RXR Load	5146X	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5146Y	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5147	Rail car E/O unloading Pump-filter	VLV	0.750	No	
RAD	Load RXR	5147X	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5147Y	Rail car E/O unloading Pump-filter	FLG	0.750	No	
RAD	RXR Load	5148	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5149	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5150	Rail car E/O unloading Pump-filter	VLV	2.000	No	
RAD	RXR Load	5150X	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5150Y	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5151	Rail car E/O unloading Pump-filter	VLV	2.000	No	
RAD	RXR Load	5151X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5151Y	Rail car E/O unloading Pump-filter	CON	1.000	No	
RAD	RXR Load	5152	Rail car E/O unloading Pump-filter	VLV	1.000	No	
RAD	RXR Load	5152X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5152Y	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5153	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5154	Rail car E/O unloading Pump-filter	VLV	1.000	No	
RAD	RXR Load	5154X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5154Y	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5155	Rail car E/O unloading Pump-filter	CON	8.000	No	
RAD	RXR Load	5156	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5157	Rail car E/O unloading Pump-filter	FLG	2.000	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5158	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5159	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5160	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5161	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5162	Rail car E/O unloading Pump-filter	VLV	1.000	No	
RAD	RXR Load	5162X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5162Y	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5163	Rail car E/O unloading Pump-filter	PRV	1.000	No	
RAD	RXR Load	5163X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5164	Rail car E/O unloading Pump-filter	VLV	1.000	No	
RAD	RXR Load	5164X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5164Y	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5165	Rail car E/O unloading Pump-filter	VLV	1.000	No	
RAD	RXR Load	5165.1	Rail car E/O unloading Pump-filter	CON	1.000	No	
RAD	RXR Load	5165.2	Rail car E/O unloading Pump-filter	CON	1.000	No	
RAD	RXR Load	5166	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5167	Rail car E/O unloading Pump-filter	VLV	2.000	No	
RAD	RXR Load	5167X	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5167Y	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5168	Rail car E/O unloading Pump-filter	VLV	2.000	No	
RAD	RXR Load	5168X	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5168Y	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5169	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5170	Rail car E/O unloading Pump-filter	PRV	1.000	No	
RAD	RXR Load	5170X	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5170Y	Rail car E/O unloading Pump-filter	FLG	1.000	No	
RAD	RXR Load	5171	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5172	Rail car E/O unloading Pump-filter	FLG	2.000	No	
RAD	RXR Load	5173	Rail car E/O unloading Top under tool box	FLG	1.000	No	
RAD	RXR Load	5174	Rail car E/O unloading Top under tool box	FLG	1.000	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	RXR Load	5175	Rail car E/O unloading Top under tool box	FLG	1.000	No	
RAD	RXR Load	5176	Rail car E/O unloading Top under tool box	FLG	4.000	No	
RAD	RXR Load	5177	Rail car E/O unloading Top under tool box	FLG	1.000	No	
RAD	RXR Load	5178	Rail car E/O unloading Top catwalk	FLG	1.000	No	
RAD	RXR Load	5179	Rail car E/O unloading Top catwalk	FLG	4.000	No	
RAD	RXR Load	5180	Rail car E/O unloading Top catwalk	FLG	4.000	No	
RAD	RXR Load	5181	Rail car E/O unloading Top catwalk	FLG	4.000	No	
RAD	RXR Load	5182	Rail car E/O unloading	FLG	2.000	No	
RAD	RXR Load	5183	Rail car E/O unloading east end OH	FLG	2.000	Yes	GRT 6FT OH
RAD	RXR Load	5184	Rail car E/O unloading east end OH	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5185	E/O line east end N.of sulfuric acid tank OH	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5186	Vent line E. end S.of sulfuric acid tank OH	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5188	Vent line east end S.of sulfuric acid tank OH	FLG	4.000	No	
RAD	P/R	5189	Vent line S.of sulfuric acid tank OH	FLG	4.000	No	
RAD	P/R	5190	Vent line top of scrubber	VLV	4.000	Yes	GRT 6FT OH
RAD	P/R	5190X	Vent line top of scrubber	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5190Z	Vent line top of scrubber	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5190Y	Vent line top of scrubber	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5191	Vent line top of scrubber	VLV	0.500	Yes	GRT 6FT OH
RAD	P/R	5191X	Vent line top of scrubber	FLG	0.500	Yes	GRT 6FT OH
RAD	P/R	5191Y	Vent line top of scrubber	FLG	0.500	Yes	GRT 6FT OH
RAD	P/R	5192	Vent line top of scrubber	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5193	Vent line top of scrubber	PRV	1.000	Yes	GRT 6FT OH
RAD	P/R	5194	Vent line top of scrubber Man lift	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5195	Vent line top of scrubber Man lift	FLG	1.000	Yes	GRT 6FT OH
RAD	Scrubber	5196	Scrubber west side N. Side of Sulfuric acid tnk	FLG	4.000	No	
RAD	Scrubber	5197	Scrubber west side N. Side of Sulfuric acid tnk	VLV	1.000	No	
RAD	Scrubber	5197X	Scrubber west side N. Side of Sulfuric acid tnk	FLG	1.000	No	
RAD	Scrubber	5197Y	Scrubber west side N. Side of Sulfuric acid tnk	FLG	1.000	No	
RAD	Scrubber	5197.1	Scrubber west side N. Side of Sulfuric acid tnk	CON	0.250	No	

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RAD	Scrubber	5197.2	Scrubber west side N. Side of Sulfuric acid tnk	CON	0.250	No	
RAD	Scrubber	5198	Scrubber west side N. Side of Sulfuric acid tnk	FLG	1.500	No	
RAD	Scrubber	5199	Scrubber west side N. Side of Sulfuric acid tnk	FLG	1.000	No	
RAD	Scrubber	5200	Scrubber west side N. Side of Sulfuric acid tnk	VLV	2.000	No	
RAD	P/R	5203	N. west side Sulfuric acid tnk below platform	FLG	1.500	Yes	
RAD	Scrubber	5200X	Scrubber west side N. Side of Sulfuric acid tnk	FLG	2.000	No	
RAD	Scrubber	5200Y	Scrubber west side N. Side of Sulfuric acid tnk	FLG	2.000	No	
RAD	Scrubber	5201	Scrubber west side N. Side of Sulfuric acid tnk	FLG	3.000	No	
RAD	Scrubber	5202	Scrubber west side N. Side of Sulfuric acid tnk	CON	1.000	No	
RAD	P/R	5205	N.E. Of RA-30 acetic acid tank OH manlift	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5206	N.W. Of RA-28 platfrom o	FLG	1.000	Yes	GRT 6FT OH
RAD	RXR Load	5207	E/O unloading East side	CHV	1.000	No	
RAD	RXR Load	5207Y		FLG	1.000	No	
RAD	RXR Load	5207X	E/O unloading vent line	FLG	1.000	No	
RAD	RXR Load	5208	E/O unloading vent line	VLV	1.000	No	
RAD	RXR Load	5208.1	E/O unloading vent line	CON	1.000	No	
RAD	RXR Load	5208.2	E/O unloading vent line	CON	1.000	No	
RAD	RXR Load	5208.3	E/O unloading vent line..	CON	1.000	No	
RAD	RXR Load	5208.4	E/O unloading vent line...	CON	1.000	No	
RAD	RXR Load	5209	E/O unloading vent line	FLG	1.000	No	
RAD	RXR Load	5210	E/O unloading vent line OH	FLG	1.000	Yes	GRT 6FT OH
RAD	RXR Load	5211	E/O unloading vent line OH	FLG	1.000	Yes	GRT 6FT OH
RAD	RXR Load	5212	E/O unloading vent line OH	FLG	1.000	Yes	GRT 6FT OH
RAD	RXR Load	5213	E/O unloading vent line OH	FLG	2.000	No	
RAD	RXR Load	5214	E/O unloading vent line	VLV	0.500	No	
RAD	RXR Load	5214.1	E/O unloading vent line	CON	0.500	No	
RAD	RXR Load	5214.2	E/O unloading vent line	CON	0.500	No	
RAD	RXR Load	5215	E/O unloading vent line	FLG	0.750	No	
RAD	RXR Load	5216	E/O unloading vent line	FLG	0.750	No	
RAD	RXR Load	5217	E/O unloading vent line	FLG	2.000	No	

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RAD	RXR Load	5218	E/O unloading vent line	FLG	0.750	No	
RAD	RXR Load	5219	E/O unloading vent line	FLG	2.000	No	
RAD	RXR Load	5220	E/O unloading vent line	FLG	2.000	No	
RAD	RXR Load	5221	E/O unloading vent line	FLG	2.000	No	
RAD	RXR Load	5222	E/O unloading vent line OH	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5223	N. Of E/O unloading vent line OH	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5224	W. Of Sulfuric Acid Tank OH Vent line	FLG	2.000	No	
RAD	P/R	5225	N. Of Sulfuric Acid Tank OH Vent line platform	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5226	N. Of Sulfuric Acid Tank OH Vent line platform	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5227	N. Of Sulfuric Acid Tank OH Vent line platform	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5228	S. Of RA-41 M-844 Tank OH Vent line manlift	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5229	S.W. of RA-40 M-843 Tank OH Vent line manlift	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5230	N. of RA-29 M-720 Tank OH Vent line manlift	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5231	Platform N.of M-718 OH Vent line manlift	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5232	S.of LD station 13 Vent line OH manlift	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5233	W.of LD station 13 bldg.Vent line OH TF to RX	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5234	W.of LD station 13 bldg OH TF to RX line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5235	W.of LD station 13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5236	W.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5237	W.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5238	W.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5239	W.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5242	N.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5243	W.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5240	N.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5241	N.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5244	N.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5245	N.of LD station #13 bldg OH E/O line	VLV	2.000	Yes	GRT 6FT OH
RAD	P/R	5245X	N.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5245Y	N.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH

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RAD	P/R	5246	N.of LD station #13 bldg OH E/O line	PRV	2.000	Yes	GRT 6FT OH
RAD	P/R	5247	N.of LD station #13 bldg OH E/O line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5248	N.of LD station #13 bldg OH Vent line	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5393	N.of LD station #13 bldg OH Vent line		2.000	No	
RAD	E/O Tank	5393	E. Side E/O tank @ Ref. Unit	FLG	2.000	No	
RAD	E/O Tank	5394	E. Side E/O tank @ Ref. Unit	FLG	2.000	No	
RAD	E/O Tank	5395	E. Side E/O tank @ Ref. Unit	FLG	2.000	No	
RAD	E/O Tank	5396	E. Side E/O tank @ Ref. Unit	FLG	2.000	No	
RAD	E/O Tank	5397	E. Side E/O tank @ Ref. Unit	FLG	2.000	No	
RAD	E/O Tank	5398	E. Side E/O tank RA-50 M-741	PMP	0.000	No	
RAD	E/O Tank	5399	E. Side E/O tank @ Pump	FLG	0.000	No	
RAD	E/O Tank	5400	E. Side E/O tank @ Pump	FLG	2.000	No	
RAD	E/O Tank	5401	N. Side E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5402	N. Side E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5402X	N. Side E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5402Y	N. Side E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5403	N. Side E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5403X	N. Side E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5403Y	N. Side E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5404	N. Side E/O tank RA-50 M-741	VLV	2.000	No	
RAD	E/O Tank	5404X	N. Side E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5404Y	N. Side E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5405	Top E/O tank RA-50 M-741	PRV	6.000	No	
RAD	E/O Tank	5405X	Top E/O tank RA-50 M-741	FLG	6.000	No	
RAD	E/O Tank	5405Y	Top E/O tank RA-50 M-741	FLG	6.000	No	
RAD	E/O Tank	5406	Top E/O tank RA-50 M-741	VLV	0.250	No	
RAD	E/O Tank	5406.1	Top E/O tank RA-50 M-741	CON	0.250	No	
RAD	E/O Tank	5406.2	Top E/O tank RA-50 M-741	CON	0.250	No	
RAD	E/O Tank	5406.3	Top E/O tank RA-50 M-741	CON	0.250	No	
RAD	E/O Tank	5407	Top E/O tank RA-50 M-741	VLV	0.250	No	

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RAD	E/O Tank	5408	Top E/O tank RA-50 M-741	VLV	0.250	No	
RAD	E/O Tank	5409	Top E/O tank RA-50 M-741	PRV	4.000	No	
RAD	E/O Tank	5409X	Top E/O tank RA-50 M-741	FLG	4.000	No	
RAD	E/O Tank	5409Y	Top E/O tank RA-50 M-741	FLG	4.000	No	
RAD	E/O Tank	5410	Top E/O tank RA-50 M-741	FLG	4.000	No	
RAD	E/O Tank	5411	Top E/O tank RA-50 M-741	VLV	4.000	No	
RAD	E/O Tank	5411X	Top E/O tank RA-50 M-741	FLG	4.000	No	
RAD	E/O Tank	5411Y	Top E/O tank RA-50 M-741	FLG	4.000	No	
RAD	E/O Tank	5412	Top E/O tank RA-50 M-741	PRV	4.000	No	
RAD	E/O Tank	5412X	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5413	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5414	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5437	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5415	Top E/O tank RA-50 M-741	PRV	1.000	No	
RAD	E/O Tank	5415X	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5415Y	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5416	Top E/O tank RA-50 M-741	PRV	1.000	No	
RAD	E/O Tank	5416X	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5416Y	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5417	Top E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5417.1	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5417.2	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5417.3	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5418	Top E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5418.1	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5418.2	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5418.3	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5419	Top E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5419.3	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5419.1	Top E/O tank RA-50 M-741	CON	1.000	No	

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	E/O Tank	5419.2	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5420	Top E/O tank RA-50 M-741	PRV	1.000	No	
RAD	E/O Tank	5420.1	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5420.2	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5421	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5422	Top E/O tank RA-50 M-741	VLV	1.500	No	
RAD	E/O Tank	5422X	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5422Y	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5423	Top E/O tank RA-50 M-741	VLV	1.500	No	
RAD	E/O Tank	5423X	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5423Y	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5424	Top E/O tank RA-50 M-741	VLV	1.500	No	
RAD	E/O Tank	5424X	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5424Y	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5425	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5426	Top E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5426.1	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5426.2	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5427	Top E/O tank RA-50 M-741	CHV	1.000	No	
RAD	E/O Tank	5427X	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5428	Top E/O tank RA-50 M-741	VLV	2.000	No	
RAD	E/O Tank	5428X	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5428Y	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5429	Top E/O tank RA-50 M-741	PRV	1.000	No	
RAD	E/O Tank	5429X	Top E/O tank RA-50 M-741	FLG	1.000	No	
RAD	E/O Tank	5430	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5431	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5432	Top E/O tank RA-50 M-741	VLV	1.000	No	
RAD	E/O Tank	5432.1	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5432.2	Top E/O tank RA-50 M-741	CON	1.000	No	

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RAD	E/O Tank	5432.3	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5432.4	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5432.5	Top E/O tank RA-50 M-741	CON	1.000	No	
RAD	E/O Tank	5433	Top E/O tank RA-50 M-741	FLG	1.500	No	
RAD	E/O Tank	5434	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5435	Top E/O tank RA-50 M-741	VLV	2.000	No	
RAD	E/O Tank	5435X	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5435Y	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5436	Top E/O tank RA-50 M-741	VLV	2.000	No	
RAD	E/O Tank	5436X	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	E/O Tank	5436Y	Top E/O tank RA-50 M-741	FLG	2.000	No	
RAD	P/R	5249	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5250	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5251	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5252	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5253	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5254	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5255	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5256	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5257	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5258	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5259	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5260	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5261	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5262	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5263	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5264	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5265	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5266	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5267	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	1.500	Yes	GRT 6FT OH

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RAD	P/R	5268	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5269	Pipe rack N. Of loading station #13 Bldg. OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5270	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5271	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5272	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5273	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5274	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5275	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5276	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5277	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5278	Pipe rack N. E. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5279	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5280	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5281	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5282	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5283	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5284	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5285	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5286	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5287	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5289	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5288	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5290	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5291	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5292	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5293	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5294	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5295	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5296	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5297	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	P/R	5298	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5299	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5300	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5301	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5302	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5303	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5304	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5306	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5307	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5308	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5309	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5310	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5311	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5312	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5313	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5314	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5315	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5316	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5317	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5318	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5319	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5320	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5321	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5322	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5323	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5324	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5325	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5326	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5327	Pipe rack N. Of Hydrogen Unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5328	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	P/R	5329	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5330	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5331	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5332	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5333	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5334	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5335	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5336	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5337	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5338	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5339	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5340	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5341	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5342	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5343	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5344	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5345	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5346	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5347	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5348	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5349	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5350	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5351	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5352	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5353	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5354	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5355	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5356	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5357	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5358	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	P/R	5359	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5360	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5361	Pipe rack S.E Of E/O tank OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5362	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5363	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5364	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5365	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5366	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5367	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5368	Pipe rack S.E Of E/O tank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5369	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5370	P/R above Refrigeration unit OH JLG	PRV	1.000	Yes	GRT 6FT OH
RAD	P/R	5370X	P/R above Refrigeration unit OH JLG	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5371	P/R above Refrigeration unit OH JLG	VLV	1.000	Yes	GRT 6FT OH
RAD	P/R	5371X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5371Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5372	P/R above Refrigeration unit OH JLG	VLV	2.000	Yes	GRT 6FT OH
RAD	P/R	5372X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5372Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5373	P/R above Refrigeration unit OH JLG	CHV	2.000	Yes	GRT 6FT OH
RAD	P/R	5373X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5373Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5374	P/R above Refrigeration unit OH JLG	VLV	2.000	Yes	GRT 6FT OH
RAD	P/R	5374X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5374Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5375	P/R above Refrigeration unit OH JLG	CHV	2.000	Yes	GRT 6FT OH
RAD	P/R	5375X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5375Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5376	P/R above Refrigeration unit OH JLG	VLV	2.000	Yes	GRT 6FT OH
RAD	P/R	5376X	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	P/R	5376Y	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5377	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5378	P/R above Refrigeration unit OH JLG	PRV	1.000	Yes	GRT 6FT OH
RAD	P/R	5378X	P/R above Refrigeration unit OH JLG	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5379	P/R above Refrigeration unit OH JLG	PRV	1.000	Yes	GRT 6FT OH
RAD	P/R	5379X	P/R above Refrigeration unit OH JLG	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5380	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5381	P/R above Refrigeration unit OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5382	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5383	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5384	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5385	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5386	P/R above Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5387	P/R W.Of Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5388	P/R W.Of Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5389	P/R W.Of Refrigeration unit OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5390	P/R E.Of E/OTank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5391	P/R E.Of E/OTank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5392	P/R E.Of E/OTank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5438	P/R E.Of E/OTank OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5439	East side RA-25 off platform OH	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5440	N.E side RA-17 M-735 tank off platform	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5441	N. side RA-16 M-737 tank OH	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5442	N. side RA-16 M-737 tank OH	CON	1.000	Yes	GRT 6FT OH
RAD	P/R	5443	N. side RA-16 M-737 tank OH	VLV	1.500	Yes	GRT 6FT OH
RAD	P/R	5443X	N. side RA-16 M-737 tank OH	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5443Y	N. side RA-16 M-737 tank OH	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5444	Top of CCR E.side Roof	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5445	Top of CCR E.side Roof	FLG	1.500	No	
RAD	P/R	5446	Sencondary RX west side OH	FLG	1.500	Yes	GRT 6FT OH

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5447	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5448	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5448.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5448.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5448.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5448.4	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5449	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5449.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5449.2	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5450	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5450X	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5450Y	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5451	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5451.1	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5452	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5452.1	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5453	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5454	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5454X	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5454Y	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5455	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5455X	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5455Y	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5456	Sencondary RX south side	VLV	0.500	No	
RAD	Reactor	5456.1	Sencondary RX south side	CON	0.500	No	
RAD	Reactor	5456.2	Sencondary RX south side	CON	0.500	No	
RAD	Reactor	5456.3	Sencondary RX south side	CON	0.500	No	
RAD	Reactor	5456.4	Sencondary RX south side	CON	0.500	No	
RAD	Reactor	5457	Sencondary RX south side	CON	0.500	No	
RAD	Reactor	5457.1	Sencondary RX south side	CON	0.750	No	

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5458	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5458.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5459	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5459.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5460	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5460.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5460.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5461	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5461.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5462	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5462.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5463	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5463.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5464	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5464.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5465	Sencondary RX south side	VLV	0.250	No	
RAD	Reactor	5465.1	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5465.2	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5465.3	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5466	Sencondary RX south side	VLV	0.250	No	
RAD	Reactor	5466.1	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5466.2	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5466.3	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5467	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5467X	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5467Y	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5468	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5468X	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5468Y	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5469	Sencondary RX south side	FLG	1.500	No	

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5470	Sencondary RX south side	VLV	0.250	No	
RAD	Reactor	5470.1	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5470.2	Sencondary RX south side	CON	0.250	No	
RAD	Reactor	5471	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5472	Sencondary RX south side	FLG	1.500	No	
RAD	Reactor	5473	Sencondary RX south side	VLV	1.500	No	
RAD	Reactor	5473.1	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5473.2	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5473.3	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5474	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5474.1	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5475	Sencondary RX south side	CON	1.500	No	
RAD	Reactor	5475.1	Sencondary RX south side	CON	1.000	No	
RAD	Reactor	5476	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5476.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5476.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5477	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5477.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5478	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5479	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5480	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5480.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5481	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5481.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5482	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5483	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5484	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5484.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5484.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5485	Sencondary RX south side	VLV	0.750	No	

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Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5485.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5485.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5485.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5486	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5486.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5486.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5487	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5488	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5489	Sencondary RX south side	CHV	0.750	No	
RAD	Reactor	5490	Sencondary RX south side	CHV	0.750	No	
RAD	Reactor	5491	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5492	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5492.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5492.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5492. 3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5493	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5493.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5494	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5495	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5496	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5497	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5498	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5499	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5499.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5499.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5499.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5500	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5500.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5500.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5500.3	Sencondary RX south side	CON	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5601	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5601.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5601.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5601.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5602	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5602.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5602.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5603	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5603.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5604	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5604.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5605	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5605.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5605.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5606	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5606.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5610	Sencondary RX south side	CHV	0.750	No	
RAD	Reactor	5610.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5610.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5611	Sencondary RX south side	CHV	0.750	No	
RAD	Reactor	5612	Sencondary RX south side	CHV	0.750	No	
RAD	Reactor	5613	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5614	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5614.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5614.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5615	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5616	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5616.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5616.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5617	Sencondary RX south side	CON	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5617.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5619	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5619.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5619.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5619.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5619.4	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5620	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5620.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5620.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5620.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5620.4	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5620.5	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5621	Sencondary RX south side	FLG	0.750	No	
RAD	Reactor	5622	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5622.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5622.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5623	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5623.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5623.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5624	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5624.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5625	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5625.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5626	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5626.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5626.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5627	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5628	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5628.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5629	Sencondary RX south side	CON	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5629.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5630	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5630.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5631	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5631.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5631.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5632	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5633	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5634	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5634.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5634.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5635	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5635.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5636	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5636.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5636.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5636.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5637	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5637.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5637.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5637.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5638	Sencondary RX south side	PRV	0.750	No	
RAD	Reactor	5638.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5638.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5638.3	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5638.4	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5639	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5640	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5640.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5641	Sencondary RX south side	CON	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5641.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5642	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5642.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5643	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5643.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5643.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5644	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5644.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5645	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5645.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5646	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5646.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5646.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5647	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5647.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5647.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5648	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5648.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5648.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5649	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5649.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5650	Sencondary RX south side	PMP	0.750	No	
RAD	Reactor	5651	Sencondary RX south side	VLV	0.750	No	
RAD	Reactor	5651.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5651.2	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5652	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5652.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5653	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5653.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5654	Sencondary RX south side	CON	0.750	No	

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	Reactor	5654.1	Sencondary RX south side	CON	0.750	No	
RAD	Reactor	5655	Sencondary RX south side	VLV	1.000	No	
RAD	Reactor	5655.1	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5655.2	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5656	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5657	Sencondary RX south side	VLV	1.000	No	
RAD	Reactor	5657.1	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5657.2	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5658	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5659	Sencondary RX south side	VLV	1.000	No	
RAD	Reactor	5659.1	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5659.2	Sencondary RX south side	FLG	1.000	No	
RAD	Reactor	5660	ToP Sencondary RX	FLG	1.500	No	
RAD	Reactor	5661	ToP Sencondary RX	FLG	1.500	No	
RAD	Reactor	5662	ToP Sencondary RX	FLG	1.500	Yes	GRT 6FT OH
RAD	Reactor	5663	ToP Sencondary RX	FLG	1.500	No	
RAD	Reactor	5664	ToP Sencondary RX	FLG	1.000	No	
RAD	Reactor	5665	ToP Sencondary RX	VLV	1.000	No	
RAD	Reactor	5665.1	ToP Sencondary RX	CON	1.000	No	
RAD	Reactor	5665.2	ToP Sencondary RX	CON	1.000	No	
RAD	Reactor	5666	ToP Sencondary RX	FLG	1.000	No	
RAD	Reactor	5667	ToP Sencondary RX	CON	1.000	No	
RAD	Reactor	5667.1	ToP Sencondary RX	CON	1.000	No	
RAD	Reactor	5668	ToP Sencondary RX	FLG	1.500	No	
RAD	Reactor	5669	ToP Sencondary RX off rail	FLG	1.000	Yes	GRT 6FT OH
RAD	Reactor	5670	S.of Sencondary RX OH	FLG	1.000	Yes	GRT 6FT OH
RAD	Reactor	5671	S.of Sencondary RX OH	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5672	S.of Sencondary RX OH	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5673	S.of Sencondary RX OH	FLG	1.000	No	
RAD	P/R	5674	S.of Sencondary RX OH	FLG	1.000	Yes	GRT 6FT OH

Master Equipment List 1999
Hercules RAD FACILITY

Area	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Difficult to Monitor	Difficult Why
RAD	P/R	5675	S.of Sencondary RX OH	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5676	S.of Sencondary RX OH JLG	FLG	6.000	Yes	GRT 6FT OH
RAD	P/R	5677	S.of Sencondary RX OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5678	S.of Sencondary RX OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5679	S.of Sencondary RX OH JLG	FLG	2.000	Yes	GRT 6FT OH
RAD	P/R	5680	S.of Sencondary RX OH JLG	FLG	1.000	Yes	GRT 6FT OH
RAD	P/R	5681	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5682	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5683	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5684	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5685	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5686	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5686X	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5687	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5688	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5689	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5690	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5690X	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5691	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5692	S.of Sencondary RX OH JLG	FLG	1.500	Yes	GRT 6FT OH
RAD	P/R	5693	S.E. of Sencondary RX OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5694	S. of RA-18 M-736 tank OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5695	S. of RA-5 M-714 tank OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5696	S. of RA-5 M-714 tank OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5697	S. of RA-5 M-714 tank OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5698	S. of RA-5 M-714 tank OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5699	W. of RXR UnLoad Vent header OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5700	W. of RXR UnLoad Vent header OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5501	W. of RXR UnLoad Vent header OH JLG	FLG	4.000	Yes	GRT 6FT OH
RAD	P/R	5502		FLG	1.500	Yes	GRT 6FT OH


810

Hercules

Fourth Quarter Monitoring And Difficult To Monitor

Rad Unit

Leak Summary Report

Monitor Run ID: 1199

All Regulations

Area: ALL Sub Area: ALL

Area	Subarea	Number Tested	Number Left To Test	Number not Leaking	Number of Repair Delays	Number Repaired	Number Still Leaking
RAD	E/O Tank	97	0	97	0	0	0
	Load RXR	1	0	1	0	0	0
	P/R	249	0	249	0	0	0
	RXR Load	183	0	183	0	0	0
	Reactor	267	0	267	0	0	0
	Scrubber	13	0	13	0	0	0
Subtotal for:	RAD	810	0	810	0	0	0
TOTALS		**810**	**0**	**810**	**0**	**0**	**0**

All Regulations

Percent Leaker Report

Monitor Run ID: 1199

Area: ALL Sub Area: ALL

Equip Type	Chemical State	Total Monitored	Total Left to Monitor	Percent Monitored	Number of Leaks	Percent Leaking	Delay of Repair	Leak Def. (ppm)
	Vapor	1	0	100.00%	0	0.00%	0	1000
CHV	Light Liquid	8	0	100.00%	0	0.00%	0	1000
CHV	Vapor	3	0	100.00%	0	0.00%	0	1000
CON	Light Liquid	218	0	100.00%	0	0.00%	0	1000
CON	Vapor	40	0	100.00%	0	0.00%	0	1000
FLG	Light Liquid	281	0	100.00%	0	0.00%	0	1000
FLG	Vapor	157	0	100.00%	0	0.00%	0	1000
PMP	Light Liquid	3	0	100.00%	0	0.00%	0	1000
PRV	Light Liquid	13	0	100.00%	0	0.00%	0	1000
PRV	Vapor	3	0	100.00%	0	0.00%	0	1000
VLV	Light Liquid	65	0	100.00%	0	0.00%	0	1000
VLV	Vapor	18	0	100.00%	0	0.00%	0	1000
	TOTALS	810	0	100.00%	0	0.00%	0	

FUGITIVE COMPLIANCE CORPORATION

TASK: monitor / DTM FACILITY/UNIT: Hercules - Red unit

CALIBRATION LOG

DATE	TIME	INSTRUMENT ID#	TECHNICIAN	CAL. MARK
	7:00			
	7:15			

GAS COMPOSITION

COMPONENTS	CONCENTRATION (Mole %)	EXPIRATION DATE
Methane	10,010 PPM	12 - 29 - 2002
Methane	2000 PPM	8 - 4 - 2000
Methane	1000 PPM	4 - 28 - 2002
Methane	506 PPM	6 - 27 - 2004
Zero Air	Balance Air Ø	6 - 22 - 2000

(certified to be plus or minus 2%)

Signature of Technician

FUGITIVE COMPLIANCE CORPORATION
CALIBRATION CERTIFICATE
(EPA METHOD 21)

Company: FUGITIVE COMPLIANCE CORPORATION **Date:** 10-1-99

Instrument Model: TVA - 1000. **Due Date:** 01-1-2000

Serial Number: 1157 6812

Calibration Gas Data: Zero Air 0 ppm. **Methane in Air** 10.010 ppm.

Isobutylene in Air N/A ppm.

	DATE	TIME	ZERO READING	ZERO DRIFT	(FID) METHANE READING	(FID) METHANE DRIFT	(PID) ISO READING	(PID) ISO DRIFT
1.	10-1-99	10:00	0	0	10,008	1	—	—
2.	10-1-99	10:03	0	0	10,009	1	—	—
3.	10-1-99	10:09	0	0	10,009	1	—	—

Mean Value:

Drift: 0 ppm, (zero) Drift: 10,008 ppm (methane) Drift: N/A ppm (iso)

Calibration Precision = Mean Cal Drift / Cal Gas Concentration x 100 =

10,008 / 10,010 x 100 = 100 % (methane)

— x 100 = — % (iso)

Response Time Determination: (90% of stable reading)	**FID**	**PID**
Mean Response Time:	1. 4 sec.	— sec.
FID 4 **seconds**	2. 4 sec.	— sec.
PID — **seconds**	3. 4 sec.	— sec.

CERTIFIED BY

FUGITIVE COMPLIANCE COR RATION
CALIBRATION CERTIFICATE
(EPA METHOD 21)

Company: FUGITIVE COMPLIANCE CORPORATION **Date:** 10-1-99

Instrument Model: TVA - 1000 **Due Date:** 01-1-2000

Serial Number: 11576812

Calibration Gas Data: Zero Air 0 ppm. **Methane in Air** 2000 ppm.

Isobutylene in Air N/A ppm.

	DATE	TIME	ZERO READING	ZERO DRIFT	(FID) METHANE READING	(FID) METHANE DRIFT	(PID) ISO READING	(PID) ISO DRIFT
1.	10-1-99	9:45	Ø	Ø	1999	1	—	—
2.	10-1-99	9:49	Ø	Ø	2000	Ø	—	—
3.	10-1-99	9:53	Ø	Ø	2000	Ø	—	—

Mean Value:

Drift: Ø ppm, (zero) Drift: 1999 ppm (methane) Drift: — ppm (iso)

Calibration Precision = Mean Cal Drift / Cal Gas Concentration x 100 =

1999 / 2000 x 100 = 100 % (methane)

— x 100 = — % (iso)

Response Time Determination: (90% of stable reading)

Mean Response Time:

FID 4 seconds

PID — seconds

	FID	PID
1.	4 sec.	— sec.
2.	4 sec.	— sec.
3.	4 sec.	— sec.

CERTIFIED BY

FUGITIVE COMPLIANCE COR RATION
CALIBRATION CERTIFICATE
(EPA METHOD 21)

Company: FUGITIVE COMPLIANCE CORPORATION **Date:** 10-1-99

Instrument Model: TVA-1000 **Due Date:** 01-1-2000

Serial Number: 11576812

Calibration Gas Data: Zero Air 0 ppm. **Methane in Air** 1000 ppm.

Isobutylene in Air N/A ppm.

	DATE	TIME	ZERO READING	ZERO DRIFT	(FID) METHANE READING	(FID) METHANE DRIFT	(PID) ISO READING	(PID) ISO DRIFT
1.	10-1-99	9:30	0	.0	.1001	1	—	—
2.	10-1-99	9:33	.0	0	1001	1	—	—
3.	10-1-99	9:35	0	0	999	1	—	—

Mean Value:

Drift: 0 ppm, (zero) Drift: 1000 ppm (methane) Drift: N/A ppm (iso)

Calibration Precision = Mean Cal Drift / Cal Gas Concentration x 100 =

1000/1000 x 100 = 100 % (methane)

N/A x 100 = — % (iso)

Response Time Determination: (90% of stable reading)

Mean Response Time:

FID 4 seconds

PID — seconds

	FID	PID
1.	4 sec.	— sec.
2.	4 sec.	— sec.
3.	4 sec.	— sec.

CERTIFIED BY

FUGITIVE COMPLIANCE COR RATION
CALIBRATION CERTIFICATE
(EPA METHOD 21)

Company: FUGITIVE COMPLIANCE CORPORATION **Date:** 10-1-99

Instrument Model: TVA - 1000. **Due Date:** 01-1-2000

Serial Number: 11576812

Calibration Gas Data: Zero Air 0 ppm. **Methane in Air** 506 **ppm.**

Isobutylene in Air — **ppm.**

	DATE	TIME	ZERO READING	ZERO DRIFT	(FID) METHANE READING	(FID) METHANE DRIFT	(PID) ISO READING	(PID) ISO DRIFT
1.	10-1-99	9:15	0	0	508	2	—	—
2.	10-1-99	9:20	0	0	506	0	—	—
3.	10-1-99	9:23	0	0	506	0	—	—

Mean Value:

Drift: 0 **ppm, (zero)** **Drift:** 506 **ppm (methane)** **Drift:** N/A **ppm (iso)**

Calibration Precision = **Mean Cal Drift** x 100 = **Cal Gas Concentration**

506/506 x 100 = 100 % (methane)

N/A x 100 = N/A % (iso)

Response Time Determination: (90% of stable reading)	**FID**	**PID**
Mean Response Time:	1. 4 sec.	— sec.
FID 4 **seconds**	2. 4 sec.	— sec.
PID — **seconds**	3. 4 sec.	— sec.

Dwight A. Clark

CERTIFIED BY

AIR LIQUIDE™
11426 Fairmont Pkwy
LaPorte, TX 77571
Phone (281) 474-8400 Fax (281) 474-8419
USA (800) 248-1427

CERTIFICATION OF CYLINDER #
K-087414

Customer : FUGITIVE COMPLIANCE
Date Made : 12/30/97
Mix # : LPX7120
P.O. Number : 460758
AGZ Doc. # : 1889239-1A
Item Number :
Cyl. Size : 44 **Valve:** CGA 590
Blend Type : GAS CERTIFIED
Volume : 211 SCF **Pres.:** 2000 psia

Mole	Components	Equipment Used Scale	Instr.	Standard
Balance	ULTRA ZERO AIR	1941		
10,010 PPM	METHANE	4867		

Valid Until: 29 December, 2002

Requested Notes	Accuracy of Standard		
	Certified* and Certified Plus		Weight Tracable
	Non-React.	React.	
	1 % - 50 % ± 1% (*±2%)	± 2%	20 ppm - 50 % ± 1%
	100 ppm - <1 % ± 2%	± 3%	2 ppm - <20 ppm ± 2%
	10 ppm - <100 ppm ± 3%	± 5%	
	1 ppm - <10 ppm ± 10%	± 10%	
	Improper storage or use may affect the accuracy of this standard.		

ISO 9002 CERTIFIED SINCE APRIL 1994

This mixture was prepared and certified by weight using one or more scales certified against weights traceable to N.I.S.T. #822/254143-94.

Prepared by _____

****
CERTIFICATE OF ANALYSIS
****

DATE : August 5, 1999
P.O.#: 10579

MANUFACTURED FOR: 19.0012
Attn.Dwight Celestin
Fugitive Compliance Corp.
2300 Hywy 365 - Suite 330
Nederland , TX 77029

CYLINDER SIZE : 103DS
CYLINDER CONTENTS: 3.6 CU. FT., 103 L @ 70 F & 1000 PSIG
CYLINDER LOT # : 900361
MANUFACTURE DATE : 8/05/1999
EXPIRATION DATE : 8/04/2000
CERTIFICATION : Minor Component Certified to be +/-2%

COMPOSITION	CONCENTRATION
METHANE	2000 PPM (vol)
AIR	BALANCE

PREPARATION METHOD : GRAVIMETRIC BALANCES CALIBRATED TO N.I.S.T. WEIGHTS.
N.I.S.T. TEST NUMBER 822/254480

DAVID SUN (800) 548 2268
QUALITY ASSURANCE MANAGER PORTAGAS 6717-B POLK STREET, HOUSTON, TX 77011

AIR LIQUIDE™

11426 Fairmont Pkwy
LaPorte, TX 77571
Phone (281) 474-8400 **Fax** (281) 474-8419
USA (800) 248-1427

CERTIFICATION OF CYLINDER #

KX3001

Customer : Fugitive Comp.
Date Made : 4/29/97
Mix # : LAPX23186
P.O. Number : 112376320
AGZ Doc. # : 1713585-1A
Item Number :
Valve Type : CGA 590
Blend Type : GAS CERTIFIED
Cyl. Size : 44, 211 SCF

Mole	Components	Equipment Used Scale	Instr.	Standard
Balance	ULTRA ZERO AIR	0007		
1000 PPM	METHANE	0080		

Valid Until: 28 April, 2002

Requested Notes	Accuracy of Standard			
	Certified* and Certified Plus		Weight Tracable	
		Non-React.	React.	
	1 % - 50 %	± 1% (*±2%)	± 2%	20 ppm - 50 % ± 1%
	100 ppm - <1 %	± 2%	± 3%	2 ppm - <20 ppm ± 2%
	10 ppm - <100 ppm	± 3%	± 5%	
	1 ppm - <10 ppm	± 10%	± 10%	
	Improper storage or use may affect the accuracy of this standard.			

ISO 9002 CERTIFIED SINCE APRIL 1994

This mixture was prepared and certified by weight using one or more scales certified against weights traceable to N.I.S.T. #822/254480.

Prepared by _____

AIR LIQUIDE™
11426 Fairmont Pkwy
LaPorte, TX 77571
Phone (281) 474-8400 **Fax** (281) 474-8419
USA (800) 248-1427

CERTIFICATION OF CYLINDER #
CC52311

Customer : Fugitive Compliance
Date Made : 6/29/99
Mix # : LPX28930
P.O. Number : 3453706
AGZ Doc. # : 3455456-1A
Item Number :
Cyl. Size : 30AL **Valve** : CGA 590
Blend Type : GAS CERTIFIED
Volume : 144 SCF **Pres.**: 2000 psia

Mole	Components	Equipment Used Scale	Instr.	Standard
Balance	AIR	1399		
506 PPM	METHANE	3992	4008	NTRM7

Valid Until: 27 June, 2004

Requested Notes
FUGITIVE COMPLIANCE PO # 33334

Accuracy of Standard

Certified* and Certified Plus	Non-React.	React.	Weight Tracable	
1 % - 50 %	± 1% (*±2%)	± 2%	20 ppm - 50 %	± 1
100 ppm - <1 %	± 2%	± 3%	2 ppm - <20 ppm	± 2
10 ppm - <100 ppm	± 3%	± 5%		
1 ppm - <10 ppm	± 10%	± 10%		

Improper storage or use may affect the accuracy of this standard.

ISO 9002 CERTIFIED SINCE APRIL 1994

This mixture was certified by analysis using one or more calibration standards prepared with scales certified against weights traceable to N.I.S.T. #822/254143-94.

Prepared by

AIR LIQUIDE™

11426 Fairmont Pkwy.
La Porte Texas 77571
Phone (281) 474-8400
Fax (281) 474-8419
USA (800) 248-1427

Customer : FUGITIVE COMPLIANCE
Date Made : 22 June, 1999
P.O. Number : 3466808
Doc. # : 3469096
Lot # : 011299B
Item Number :
Valve Type : CGA 590
Cyl. Size : 44

MAJOR COMPONENT	PURITY
Air, Zero	N. A.

IMPURITIES	Mole %
Oxygen	19.5-23.5%
T. H. C.	< 2.0 PPM
Water	< 3.0 PPM

Prepared by

Remarks CERTIFICATION OF CYLINDER #'S:
5843

ISO 9002
CERTIFIED
SINCE
APRIL 1994

Arial NarrowAri **FUGITIVE COMPLIANCE CORPORATION**

TASK: Monitoring FACILITY/UNIT: Hercules /RAA

[redacted]

[redacted]				CAL. MARK
[redacted]				∅ - 495

GAS COMPOSITION

COMPONENTS	CONCENTRATION (Mole %)	EXPIRATION DATE
Methane	495 PPM	11/09/2000
Methane	1000 PPM	4/28/2002
Zero Air	Balance Air ∅	

(certified to be plus or minus 2%)

[signature]

Signature of Technician

Instrument Read .000

HERCULES RAD FACILITY

rea	Sub Area	Tag ID	Description	Equip Type	Equip. Size	Monitor Date	Adjusted Reading (ppm)
AD	RXR Load	5133	Rail car E/O unloading Pump	PMP	1.500	12/30/1999	3
AD	E/O Tank	5398	E. Side E/O tank RA-50 M-741	PMP	0.000	12/30/1999	3
AD	Reactor	5650	Sencondary RX south side	PMP	0.750	12/30/1999	3

Leak Summary Report

Monitor Run ID: 1299

All Regulations

Area: ALL Sub Area: ALL

Area	Subarea	Number Tested	Number Left To Test	Number not Leaking	Number of Repair Delays	Number Repaired	Number Still Leaking
RAD	E/O Tank	1	0	1	0	0	0
	RXR Load	1	0	1	0	0	0
	Reactor	1	0	1	0	0	0
Subtotal for:	RAD	3	0	3	0	0	0
TOTALS		**3**	**0**	**3**	**0**	**0**	**0**

All Regulations

Percent Leaker Report

Monitor Run ID: 1299

Area: ALL Sub Area: ALL

Equip Type	Chemical State	Total Monitored	Total Left to Monitor	Percent Monitored	Number of Leaks	Percent Leaking	Delay of Repair	Leak Def. (ppm)
PMP	Light Liquid	3	0	100.00%	0	0.00%	0	1000
	TOTALS	3	0	100.00%	0	0.00%	0	

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI – TITLE V PERMIT #0800-00001
ANNUAL TITLE V COMPLIANCE CERTIFICATION

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
General Conditions - Conditions 1.1 through 1.25	Facility-Wide	IN	Continuous	Process knowledge and engineering judgement	These are general conditions such as paying the annual Title V fees, allowing DEQ on-site, permit duration, etc.
Facility-Wide Emissions Limitations (FWEL) - Condition 3.A.1	Facility-Wide	IN	Continuous	Visual observation	Smoke opacity, startup opacity, and soot blowing opacity limitations
FWEL - Condition 3.A.2	Facility-Wide	IN	Continuous	Visual observation	Opacity ≤ 40% from any air contaminant
Emission Point Specific Limitations & Standards (EPSL&S) - Condition 3.B.1	AA-000, AA-001, AN-000	IN	Continuous	Affected equipment is monitored for leaks and repaired properly.	Limit total emissions of HAPs from all process vents, storage tanks, and wastewater systems to 10 lb/MMlb of resins produced or control emissions from equipment leaks
EPSL&S - Condition 3.B.2	AA-002, AB-001, AC-004, AG-005, and AL-002	IN	Continuous	Process knowledge and engineering judgement via calculations performed at time of application submittal	APC-S-1, Sect. 3.6.a - process weight equation
EPSL&S - Condition 3.B.3	AC-001, AF-001, AG-001, AG-002, AJ-001, AL-001, and AN-001	IN	Continuous	Process knowledge and engineering judgement via calculations performed at time of application submittal	Fuel Burning sources < 10mmBTU/hr not to exceed 0.6 lb/mmBTU

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
EPSL&S - Condition 3.B.4	AC-001, AF-001, AG-001, AG-002, AJ-001, AK-001, AL-001, AM-001, AM-002, and AN-001	IN	Continuous	Process knowledge, sulfur content of fuel, and engineering judgement via calculations performed at time of application submittal	SO_2 not to exceed 4.8 lbs/mmBTU
EPSL&S - Condition 3.B.5	AK-001 and AM-001	IN	Continuous	Process knowledge, and engineering judgement via calculations performed at time of application submittal	PM emissions not to exceed $E = 0.8808 * I^{-0.667}$
EPSL&S - Condition 3.B.6	AF-001, AG-001, AJ-001, AK-001, AL-001, and AN-001	IN	Continuous	Recordkeeping of fuel use	Burn only natural gas or propane.
EPSL&S - Condition 3.B.7	AA-003, AA-004, AC-005, AE-002, AE-004, and AE-004	IN	Continuous	Recordkeeping of tank size and product stored	Comply with 40 CFR 60.110(b) of Subpart Kb
Insignificant and Trivial Activity Emission Limitations & Standards (ITAEL&S) - Condtion 3.C.1	Facility-Wide	IN	Continuous	Process knowledge and engineering judgement via calculations performed at time of application submittal	Fuel Burning sources < 10mmBTU/hr not to exceed 0.6 lb/mmBTU

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
ITAEL&S - Condition 3.C.2	Facility-Wide	IN	Continuous	Process knowledge, sulfur content of fuel, and engineering judgement via calculations performed at time of application submittal	SO_2 not to exceed 4.8 lbs/mmBTU
ITAEL&S - Condition 3.C.3	Facility-Wide	IN	Continuous	Process knowledge and engineering judgement via calculations performed at time of application submittal	APC-S-1, Sect. 3.6.a - process weight equation
Operation and Maintenance Requirements (O&M) 3.D.1	AA-000, AA-001, and AN-000	IN	Continuous	Best management practices and process knowledge regarding pollution control	Maintain emission points in manner consistent with good air pollution control practices.
O&M 3.D.2	AA-000 and AA-001	IN	Continuous	Maintain plan and follow provisions	Maintain a startup, shutdown, and malfunction plan and a corrective action program
O&M 3.D.3	AA-000, AA-001, and AN-001	IN	Continuous	NA	Identify all applicable routine and otherwise predictable emissions related CMS malfunctions.
Compliance Schedule (CS) - Condition 4.1	Facility-wide	IN	Continuous	Process knowledge, engineering judgement, and records retention	Permittee must be in compliance with all applicable requirements upon issuance of the Title V permit.
CS - Condition 4.2	All Title V permit conditions	IN	Continuous	Submittal of this report and certification	Submit annual certification of compliance status.
CS - Condition 4.3	AA-000, AA-001, and AN-000	IN	Continuous	Hercules has complied with these MACT requirements by the compliance date specified.	Comply with 40 CFR Part 63, Subparts A and W no later than March 8, 1998

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
Monitoring, Recordkeeping & Reporting Requirements (MR&RR) - Condition 5.A.1	Facility-Wide	IN	Continuous	Process knowledge, engineering judgement and recordkeeping	Install, maintain and operate equipment and/or institute procedures as necessary to perform recordkeeping and monitoring as specified in Section 5.
MR&RR - Condition 5.A.2	Facility-Wide	IN	Continuous	Process knowledge and records retention	List of required monitoring information to be maintained with required records, where applicable.
MR&RR - Condition 5.A.3	Facility-Wide	IN	Continuous	Process knowledge and records retention	Maintain required records for 5 years from the date of the record.
MR&RR - Condition 5.A.4	Facility-Wide	IN	Continuous	Prompt reporting	Submittal of required semi-annual reports by July 31st and January 31st.
MR&RR - Condition 5.A.5	Facility-Wide	IN	Continuous	Report any deviations. However, no deviations occurred during this reporting period.	Prompt reporting of deviations from permit requirements.
MR&RR - Condition 5.A.6	Facility-Wide	IN	Continuous	Use of EPA approved Test Methods when required to test.	Permittee shall use the EPA Reference Test Methods when performing required testing.
MR&RR - Condition 5.B.1	AA-000, AA-001, and AN-000	IN	Continuous	Testing using approved EPA test methods. Calculating emissions for storage tanks, wastewater systems, and production based emission rate.	Initial Compliance and PerformanceTesting
MR&RR - Condition 5.B.2	AA-000, AA-001, and AN-000	IN	Continuous	Leak detection monitoring of affected components and repair promptly	Equipment leak requirements

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
MR&RR - Condition 5.B.3	AA-000, AA-001, and AN-000	IN	Continuous	Leak detection monitoring of affected components and repair promptly	Perform monitoring per methods specified.
MR&RR - Condition 5.B.4	AA-000, AA-001, and AN-000	IN	Continuous	Recordkeeping of average values of equipment operating parameters to be monitored and equipment leak inspections.	Perform recordkeeping as specified.
MR&RR - Condition 5.B.5	AA-000, AA-001, and AN-000	N/A	N/A	N/A due to method of compliance demonstration chosen (i.e. 3.B.1(b) applies)	If demonstrated that certain process vents are below the de minimis cutoff for CMS, records of the HAP emission rate being less than 1 lb/yr must be kept.
MR&RR - Condition 5.B.6	AC-001, AF-001, AG-001, AG-002, AJ-001, AK-001, AL-001, AN-001	IN	Continuous	Recordkeeping and reporting of fuel operating records.	Monthly operating records report: type and quantity of fuel combusted, and semi-annual analysis of fuel quality and heating value.
MR&RR - Condition 5.B.7	AA-001 and AA-002	IN	Continuous	Recordkeeping and reporting of fuel operating records.	Monthly operating records report: type, quantity, quality (sulfur content), and heating value of fuel(s) combusted.
MR&RR - Condition 5.B.8	AA-002	IN	Continuous	Recordkeeping and reporting of Kymene adipic acid process.	Daily operating records report: number of boxes (in lbs) of solid raw material processed and hours of operation.
MR&RR - Condition 5.B.9	AB-001	N/A during reporting period	N/A during reporting period	N/A	Weekly operating records report: water flowrate through the scrubber by December 31, 1998.

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
MR&RR - Condition 5.B.10	AG-005	N/A during reporting period	N/A during reporting period	N/A	Weekly operating records report: pressure drop across the baghouse by December 31, 1998.
MR&RR - Condition 5.B.11	AL-002	IN	Continuous	Recordkeeping and reporting of number of bags of silica processed and hours of operation.	Daily operating records report: number of bags of silica processed (in lbs) and hours of operation.
MR&RR - Condition 5.B.12	AM-001 and AM-002	IN	Continuous	EPA Reference Methods 1-5 and Method 6	Stack testing for PM and SO2 within 60 days of burning No. 6 fuel oil for 5 consecutive days. Submit test protocol at least 30 days prior to test date.
MR&RR - Condition 5.B.13	AC-004	IN	Continuous	Recordkeeping and reporting raw material input and hours of operation.	Daily operating records of raw material input (in lbs) and hours of operation.
MR&RR - Condition 5.B.14	AA-001, AA-002, AB-001, AC-001, AC-003, AD-001, AD-002, AD-003, AF-004, AG-003, AG-005, AK-000, AL-002, AN-001	IN	Continuous	Recordkeeping of maintenance inspections.	Perform weekly maintenance checks to ensure proper operation and maintain sufficient replacement parts.
MR&RR - Condition 5.B.15	AA-003, AA-004, AC-005, AE-002, and AE-003	IN	Continuous	Recordkeeping of dimensions and capacity of storage vessels.	Keep records of dimensions and capacity of storage vessels.
MR&RR - Condition 5.C.1	AA-000, AA-001, and AN-000	IN	Continuous	Prompt reporting.	Meet reporting requirements of 40 CFR 63.10 (Subpart W)
MR&RR - Condition 5.C.2	AA-000, AA-001, AN-000, AM-001, and AM-002	IN	Continuous	Prompt reporting of stack test data. No stack test required during reporting period.	Submit written report of stack test results to MDEQ within 45 days of stack test.

TERM OR CONDITION OF TITLE V PERMIT	EMISSION POINT(S)	COMPLIANCE STATUS	CONTINUOUS OR INTERMITTENT	METHOD FOR DETERMINING COMPLIANCE	SUMMARY OF REQUIREMENT & NOTES
MR&RR - Condition 5.C.3	AA-001, AA-002, AC-001, AF-001, AG-001, AG-002, AJ-001, AK-001, AL-001, AN-001	IN	Continuous	Prompt reporting.	Submit written report summarizing the type, quality, and quantity of fuel burned in all fuel burning equipment.
Alternative Operating Scenarios Section 6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable. No alternative operating scenarios are permitted.
Title VI Requirements - Section 7 - Conditions 7.1 through 7.5.	Facility-wide use of ozone depleting substances	IN	Continuous	Process Knowledge and record retention, as well as ensuring that employees or contractors employed for these services are properly certified and use approved equipment.	This section applies to repair and maintenance on motor vehicle air conditioning units, plant refrigeration, and plant appliances that contain ozone depleting substances (i.e. freon).

HERCULES

Hercules Incorporated
613 West 7th Street
P.O. Box 1937
Hattiesburg, MS 39403-1937
(601) 545-3450
Fax: (601) 584-3226

January 28, 1999

Earl Mahaffey
Environmental Compliance and Enforcement Division
Office of Pollution Control
101 West Capitol Street
Jackson, Mississippi 39201

Re: Hercules, Incorporated - Permit # 0800-00001
Semi-Annual Reporting

Dear Mr. Mahaffey:

As required by Title V Conditions 5.B.6, 5.B.7, 5.B.8, 5.B.11, and 5.B.13, attached is the required monitoring data for the period ending December 31, 1998. As Responsible Official for Hercules, Incorporated, I certify that based on information and belief formed after reasonable inquiry, the statements and information in the attached document are true, accurate, and complete.

Please contact Mr. Charles Jordan at (601) 584-3360 should you have any questions or need any further information.

Sincerely,

Walter D. Langhans
Plant Manager

Attachment

cc: Mr. Ken Faulkner, P.E. (w/ attachment)

MONITORING, RECORDKEEPING & REPORTING REQUIREMENT **5.A.4**

YEAR 1998

GAS USAGE - MCF

EMISSION POINT	DESCRIPTION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AC001	Poly-pale nat. gas Dowtherm boiler											0	2,400
AF001	RAD nat. gas Dowtherm boiler											0	0
AG001	HRA nat. gas Dowtherm boiler											808	926
AG002	HRA nat. gas Dowtherm boiler											0	0
AJ001	Rosin dist. nat. gas Dowtherm boiler											4500	2250
AK001	Hydrogen nat. gas Dowtherm boiler											0	0
AL001	Silica nat. gas Dowtherm boiler											0	0
AM001	No. 5 package boiler											847	10603
AM002	No. 6 package boiler											32267	25908
AN001	Reg. furnace nat. gas boiler											1700	1200

T5ngas

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 11.98

12/07/98 20:27:11
PAGE 4

METER ID: 002620-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007 Mississippi
SUBSYSTEM: 014 Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Viola
PHONE #: 5041695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
11/01/98	1	500	100	8.072	3.250	F	U	1	1.0000	11

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(D)	Dth
1	2	1							3527	1015.5000	3582
2	3	1							4512	1015.5000	4582
3	4	1							5109	1015.5000	5188
4	5	1							5175	1015.5000	5255
5	6	1							8287	1015.5000	8415
6	7	1							7607	1015.5000	7725
7	8	1							5908	1015.5000	6000
8	9	1							3867	1015.5000	3927
9	10	1							2901	1015.5000	2946
10	11	1							4419	1015.5000	4487
11	12	1							6069	1015.5000	6159
12	13	1							5646	1015.5000	5734
13	14	1							5103	1015.5000	5182
14	15	1							4277	1015.5000	4343
15	16	1							4383	1015.5000	4451
16	17	1							4624	1015.5000	4696
17	18	1							5231	1015.5000	5312
18	19	1							4431	1015.5000	4500
19	20	1							4303	1015.5000	4370
20	21	1							5195	1015.5000	5276
21	22	1							5975	1015.5000	6068
22	23	1							4248	1015.5000	4314
23	24	1							4229	1015.5000	4295
24	25	1							4647	1015.5000	4719
25	26	1							4780	1015.5000	4854
26	27	1							4414	1015.5000	4482
27	28	1							4720	1015.5000	4793
28	29	1							5046	1015.5000	5124
29	30	1							4825	1015.5000	4900
30	1	1							4112	1015.5000	4176
Total									147566		149855

148202

GAS QUALITY INFORMATION

	EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
*	11/01/98	C	6.1	1.3020	2.6620	0.0000	93.5250	1.2730	0.4600	0.1480	0.1830	0.0890	0.0850	0.2730

PLN. GAS

Heat value = 1051 BTU/MCF

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
11/30/98	90	8	11960	4.0	
12/2/98	90	8	11950	4.0	
12/3/98	180	16	23900	4.0	
12/4/98	180	16	23900	4.0	
12/5/98	90	8	11950	4.0	
12/6/98	90	8	11950	4.0	
12/9/98	180	16	23900	4.0	
12/10/98	180	16	23920	4.0	
12/11/98	90	8	11960	4.0	
12/12/98	90	8	11960	4.0	
12/14/98	180	16	23920	4.0	
12/15/98	180	16	23920	4.0	
12/18/98	90	8	11960	4.0	
12/20/98	90	8	11960	4.0	
12/21/98	90	8	11960	4.0	
12/23/98	180	16	23920	4.0	
12/27/98	180	16	23920	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
10/29/98	90	8	11980	4.0	
10/30/98	90	8	11980	4.0	
10/31/98	90	8	11980	4.0	
11/3/98	90	8	11980	4.0	
11/4/98	90	8	11980	4.0	
11/5/98	90	8	11980	4.0	
11/6/98	90	8	11980	4.0	
11/7/98	90	8	11980	4.0	
11/8/98	90	8	11980	4.0	
11/11/98	90	8	11980	4.0	
11/12/98	90	8	11980	4.0	
11/13/98	90	8	11980	4.0	
~~11/14/98~~	~~180~~	~~8~~	~~11980~~	~~4.0~~	JBC
11/14/98	180	16	23960	4.0	
11/16/98	90	8	11980	4.0	
~~11/17/98~~	~~90~~	~~8~~	~~11988~~	~~4.0~~	JAS
11/17/98	180	16	23968	4.0	
11/18/98	90	8	11980	4.0	
11/19/98	180	16	23960	4.0	
11/20/98	90	8	11980	4.0	
11/21/98	90	8	11980	4.0	
11/23/98	90	8	11980	4.0	
11/26/98	180	16	23960	4.0	
11/27/98	90	8	11980	4.0	
11/28/98	90	8	11980	4.0	

Emission Point - AL002
Defoamer Process Silica Furnance Dust Collector

Date (M-D-Y)	Silica Addition Time minutes	Silica Total Charge bages	Silica Total Charge pounds	Silica Total Charge ton/hr	Comments
11/30/98	No operation of Silica drying process in November 1998				

(EPAL002.WK4)

Emission Point - AL002
Defoamer Process Silica Furnance Dust Collector

Date (M-D-Y)	Silica Addition Time minutes	Silica Total Charge bages	Silica Total Charge pounds	Silica Total Charge ton/hr	Comments
12/31/98	No Operation of silica drying process in December 1998				

(EPAL002.WK4)

Emission Point - AC004
Poly-Pale Process Melter

Date	7-3 Hrs	7-3 Drs	3-11 Hrs	3-11 Drs	Total Drs	Tons/hr	Comments
11/1/98							No Production
11/2/98							
11/3/98							
11/4/98							
11/5/98							
11/6/98							
11/7/98							
11/8/98							
11/9/98							
11/10/98							
11/11/98							
11/12/98							
11/13/98							
11/14/98							
11/15/98							
11/16/98							
11/17/98							
11/18/98							
11/19/98							
11/20/98							
11/21/98							
11/22/98							
11/23/98							
11/24/98							
11/25/98							
11/26/98							
11/27/98							
11/28/98							
11/29/98							
11/30/98							

Emission Point - AC004
Poly-Pale Process Melter

Date	7-3 Hrs	7-3 Drs	3-11 Hrs	3-11 Drs	Total Drs	Tons/hr	Comments
12/1/98							No Production
12/2/98							↓
12/3/98							
12/4/98							
12/5/98							
12/6/98							
12/7/98							
12/8/98	8	50	8	60	110	1.7	-
12/9/98	8	40	8	60	100	1.6	
12/10/98	—	—	8	42	42	1.3	
12/11/98	8	40	8	44	84	1.3	
12/12/98	8	60	8	60	120	1.9	
12/13/98	8	80	8	40	120	1.9	
12/14/98	8	60	—	—	60	1.9	
12/15/98	8	61	8	44	105	1.6	
12/16/98	8	20	—	—	20	0.6	
12/17/98	8	40	8	50	90	1.4	
12/18/98	8	60	—	—	60	1.9	
12/19/98	—	—	—	—	—	—	
12/20/98	8	70	8	50	120	1.9	
12/21/98	—	—	—	—	—		
12/22/98	—	—	—	—	—		
12/23/98	8	60	8	40	100	1.6	
12/24/98	8	60	—	—	60	1.9	
12/25/98	8	60	—	—	60	1.9	
12/26/98	8	60	—	—	60	1.9	
12/27/98	—	—	—	-	—		
12/28/98	8	80	8	60	140	2.2	
12/29/98					—		No Production
12/30/98					—		
12/31/98					—		↓

FUGITIVE EMISSIONS SCREENING REPORT FOR LEAK DETECTION AND REPAIR (LDAR) PROGRAM

prepared for

Hercules, Inc.
Specialty Chemicals
Hattiesburg, Mississippi

prepared by

Eco·Systems, Inc.
Environmental Engineers and Scientists

Jackson, MS · Little Rock, AR · Houston, TX

January, 1999

1.0 INTRODUCTION

Hercules, Inc.(Hercules) owns and operates a specialty chemicals facility in Hattiesburg, Mississippi. The facility is located on West Seventh Street in Hattiesburg, Forrest County, Mississippi on approximately 200 acres of land. More specifically, the Site is located in Township 4 North, Range 13 West, within sections 4 and 5 just north of Hattiesburg, Mississippi. The facility has been in operation since 1923 and is surrounded by both industrial and residential properties.

The facility's operations consist of extraction, fractionation, refining, distillation, and processing of rosin to produce various products. Over 250 products are produced from the above-referenced operations and include: modified resins, polyamides, ketene dimer, crude tall oil wax emulsions, and synthetic rubber. Structures at the facility include offices, laboratories, powerhouses, wastewater treatment plant, settling ponds, landfills, and central loading and packaging areas.

The facility is classified as a major source as defined in section 112(a) of the Clean Air Act based on emissions of Hazardous Air Pollutants (HAPs), and is, therefore, subject to regulation under 40 CFR 63 Subpart W (National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamides Production). Specifically, Hercules stores and uses Epichlorohydrin (a HAP) in the Kymene process. Therefore, in accordance with 40 CFR 63 Subpart W, all process equipment that is in organic HAP service must be monitored for leaks and repaired as defined in Subpart W and Subpart H of 40 CFR 63.524 through 63.528 and 63.160 through 63.182. Process equipment is considered to be in organic HAP service if that equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of the designated organic HAP (i.e., Epichlorohydrin).

Hercules is utilizing the services of *Eco·Systems, Inc.* (*Eco·Systems*) to assist in implementing the Leak Detection and Repair (LDAR) program for the Epichlorohydrin process. *Eco·Systems,* utilizing tags previously placed on affected components, screened each applicable piece of equipment on January 14, 1999 (see Table 1). This report contains information on the scope of work, methodology, results (Section 2.0), and conclusions (Section 3.0).

2.0 SCOPE OF WORK, METHODOLOGY, AND RESULTS

2.1 Leak Criteria

Prior to initiating screening activities, *Eco·Systems* identified the "leak criteria" for each type of equipment potentially screened. At Hercules' request, each source was screened for leaks based on Phase II criteria outlined in 40 CFR 63. In accordance with 40 CFR 63.162, sources in the Kymene process that met the following criteria were not screened:

- Equipment not in organic HAP service;
- Equipment in vacuum service; and
- Equipment that is in organic HAP service less than 300 hours per calendar year;

2.2 Equipment Used and Testing Methodology

After identifying each source to be screened, Method 21 was followed to screen equipment for leaks in accordance with the regulations. A Thermo-Environmental 680 flame ionization detector (FID) was used to screen a total of 370 sources. Attachment I presents information and specifications for the FID which meets the criteria for Method 21 specified in 40 CFR 60 Appendix A and has the following specifications:

- Response time of approximately 2 seconds for 90% of final reading;
- Response factor of 2.1 for Epichlorohydrin; and
- Calibration accuracy of ± 10%, for a range of 1-10,000 ppm.

Prior to beginning screening activities, the FID was assembled, started and calibrated with a 10 ppmv and a 10,000 ppmv methane in air mixture. Screening of individual components were conducted in accordance with 40 CFR 60 Appendix A, Method 21, Section 4.3 Individual Source Surveys. Background readings were noted for each area and subtracted from the FID reading for each applicable source screened.

2.3 Monitoring Results

Screening results along with other pertinent information are presented in Table 1. One source (a connector) was identified as leaking:

- Tag # 0022.00 - Located in the Epichlorohydrin loading area near Pump 0001.00.

The leaking source was identified with a weatherproof and readily visible tag indicating that the component was leaking and required repair. Hercules personnel were notified of the leaking component so that repair activities could be initiated.

During screening activities, the presence of visual leaks (i.e., liquid visibly dripping from a connection or seal) was noted for each component. No visual leaks were identified for the components screened.

To satisfy the requirements of 40 CFR 63.162(c) and as part of this scope of work, *Eco·Systems* has identified all sources subject to 40 CFR 63 and has distinguished those sources from sources that are not subject to 40 CFR 63.

3.0 CONCLUSION

Based on the screening results, one (1) leaking unit (a connector) was identified: component # 0022.00. During the next scheduled monitoring event (mid-February, 1999) and upon repair of the leaking component, *Eco·Systems* will perform follow-up monitoring in accordance with the regulations to confirm successful repair of the leaking unit.

ESI

TABLE 1

LDAR Screening Results

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	**> 500.0**
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0

Table 1a
Epichlorohydrin Screening Results - Agitators
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
Percent Leakers					**0%**

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	**> 500.0**
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
Percent Leakers					**0.33%**

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
Percent Leakers					**0%**

Table 1d
Epichlorohydrin Screening Results - Pumps
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
Percent Leakers					**0%**

ESI

ATTACHMENT I

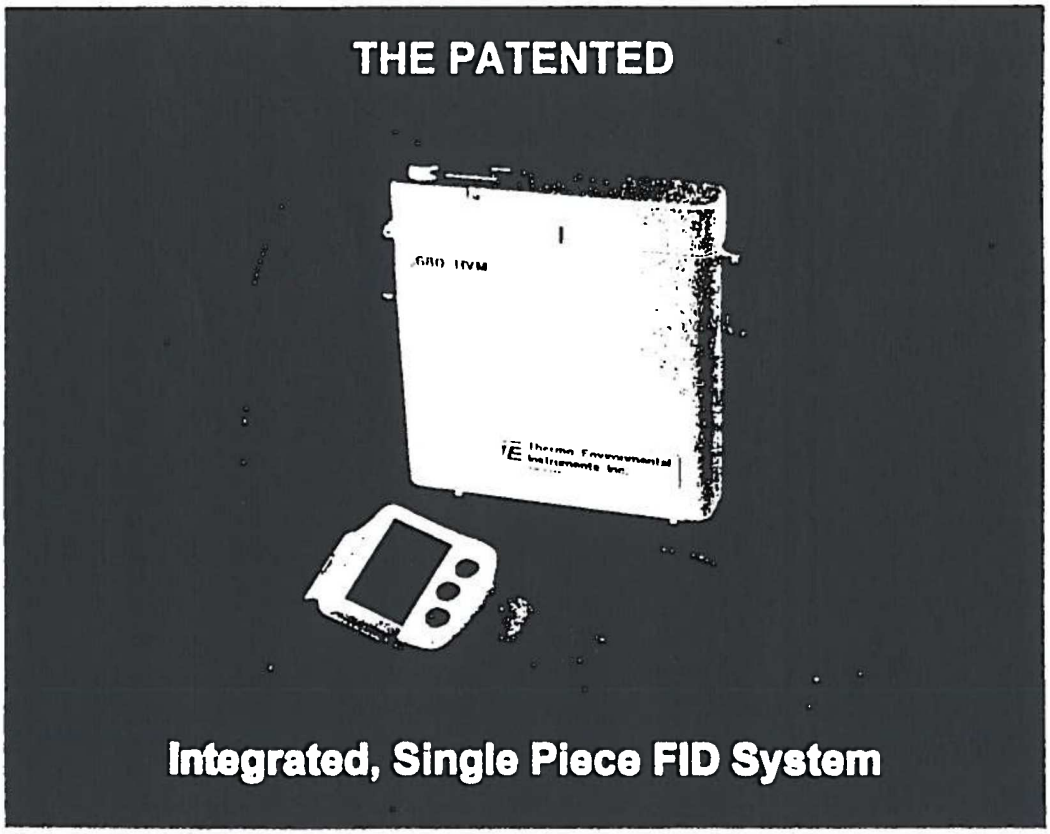
Foxboro 108 Flame Ionization Detector
Information and Specifications

Thermo Environmental Instruments Inc.

BOCAGE SPECIALTY COMPANY
P O Box 740382
NEW ORLEANS LA 70174-0382
(504) 366-0006

MODEL 680

PORTABLE HYDROCARBON VAPOR METER



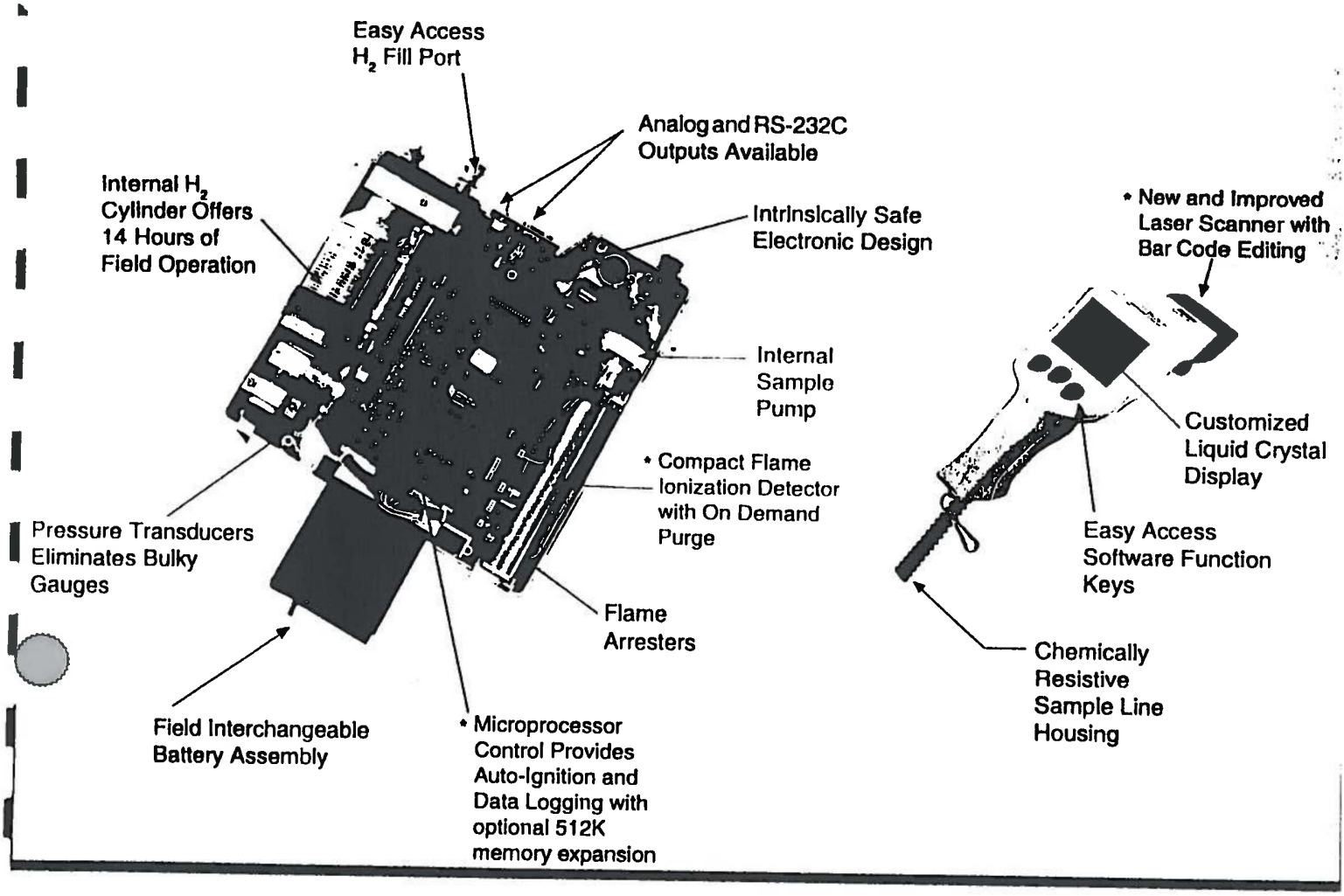
Advanced Technology For Applications In:

- EPA Method 21 Compliance Testing
- Fugitive Emissions Monitoring
- Detection of Soil and Water Contaminants
- Leaking Underground Storage Tank Monitoring
- Industrial Hygiene Monitoring

*New Features for 1995:

- New and Improved Laser Scanner
- Bar Code Editing
- Optional 512K Memory Expansion
- Additional Database Interfaces
- On Demand Detector Purge

KEY DESIGN FEATURES



* New and Improved for 199

ADVANCED TECHNOLOGY

The Model 680 Hydrocarbon Vapor Meter (HVM) microprocessor based design offers capabilities previously unavailable with portable flame ionization instrumentation, including, system diagnostics (check-out) upon power-up, bidirectional RS-232 communications, maximum concentration hold, Time Weighted Averaging (TWA) report capability and auto-ranging over the entire 0-20,000 ppm concentration range.

However, the technological advances within this state-of-the-art design does not end here. Thermo Environmental Instruments engineers implemented an interchangeable battery assembly resulting in extended field operation and pressure transducer technology for monitoring hydrogen flow status and operating time indication.

The user programmable software capabilities entail response factor settability, self-calibration adjustment, storage of up to 10 calibrations in memory, and automatic data logging of up to 4000 sample readings by time, date, concentration value, location code.

Additionally, the Model 680 HVM is an ergonomic success with its pistol grip display gun and light-weight sidepack layout. This will result in increased field comfort for all types of operators.

A Truly Portable, Truly Integrated, Intrinsically Safe

FUGITIVE EMISSIONS MONITORING SYSTEM

The regulations to be promulgated by the Environmental Protection Agency in support of the Clean Air Act Amendments of 1990 impose stringent demands on process component leak measurement and management.

Existing Fugitive Emissions Monitoring technologies are labor intensive, suffer from erroneous interpretation of data, utilize manual reporting techniques, or require one to be an octopus to operate the system components effectively.

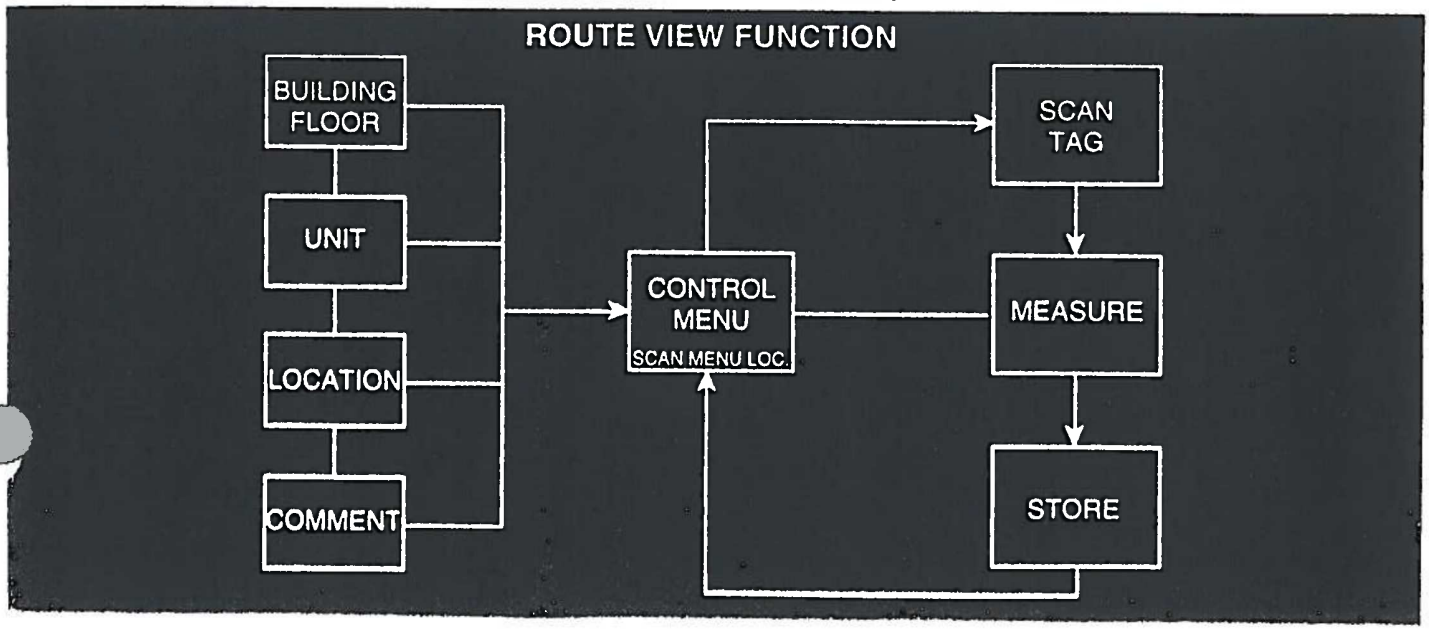
The Model 680 HVM utilizes and integrated system approach which incorporates the flame-ionization detector assembly, data logger, and bar code scanning device into a single sidepack/hand-held gun package. This integrated system addresses the shortcomings of past technologies while providing fugitive emissions monitoring personnel with enhanced capabilities including:

- Integral manual or automatic logging of up to 4000 individual data points by location code, time, date and sample concentration.
- Lock-in of maximum concentration reading. This is useful in isolating or pin-pointing the source of a gaseous chemical leak.
- Increased operator safety via an intrinsically safe design which includes the laser based bar code reading device. The Model 680 HVM is Factory Mutual (FM) certified for use in Class I, Division 1 Groups A, B, C, D hazardous locations.

Leak Detection and Repair (LDAR) programs require extensive documentation and follow-up. The Model 680 HVM addresses LDAR requirements via its ROUTE VIEW function which is illustrated in the flow diagram below. As a self-contained fugitive emissions monitoring system, the Model 680 HVM improves LDAR management efficiency by offering:

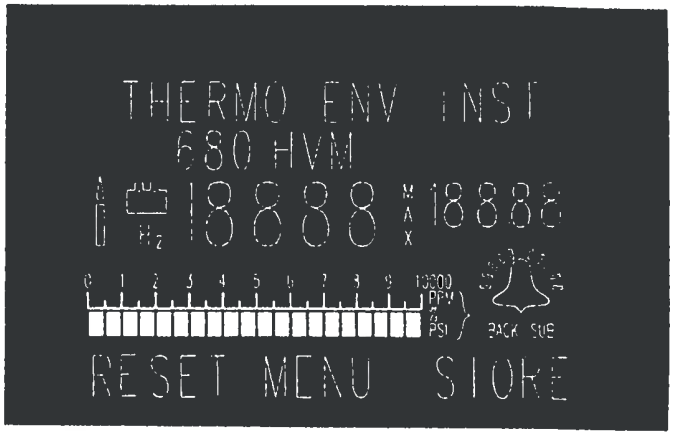
- Reread capability for situations in which an exceedance (violation) measurement is encountered and subsequent repair attempted.
- Report identification of any missed component tags.
- Ability to measure and record a background measurement which can subsequently be automatically subtracted from the fugitive emission measurement.
- Ability to generate process component leak reports.

Additionally, via bidirectional RS-232 communications, the Model 680 HVM interfaces directly with several commercially available fugitive emission data base computer software systems. This combination results in the ultimate utilization of the Model 680 HVM microprocessor capabilities by allowing LDAR personnel to download a pre-programmed survey route from a personal computer to the 680. Subsequently, the Model 680 will guide the operator through the designated leak survey route. Please contact us for database software compatibility.



Customized Liquid Crystal Display

- Digital & Graphical Sample Concentration Level
- Maximum Concentration Signal Hold
- Alarm Exceedance Indication
- Low Battery Warning
- Low Hydrogen Warning
- Flame Status



Specifications

Measurement:

Technique:	Flame Ionization Detection (FID) of most organic vapors. Note that sample also serves as source of combustion air.
Ranges:	Liquid Crystal Display (LCD) - Auto ranging over entire 0-20,000ppm concentration range. Displayed concentration reading resolution as follows: 0-100ppm (resolution to 0.1ppm) 0-20,000ppm (resolution to 1.0ppm)
Minimum Detectable:	0.5ppm methane in air matrix
Sensitivity:	0.1ppm methane
System Time Constant:	4.0 seconds at 800ml/min sample flow (10.0% to 90.0% of final reading)
Sampling Rate:	800ml/min
Sample Conditioning:	Changeable Teflon filter which also functions as water trap

Power Requirements:

Battery:	Internally rechargeable (external charger provided with unit.)
Service Life:	Ten hours per internal battery charge, operates from charger indefinitely. Battery is interchangeable. Therefore, battery based operation can be extended indefinitely.
Charger Requirements:	115/220 VAC, 50Hz

Controls, Panel:

Readout:	Highly visible (0.4"H x 0.2"W) seven (7) segment concentration readout; 2 line by 17 character message display; 1 line by 17 character key function display; calibrated bar graph; symbolic status messages including flame out/lit, low battery charge, low H_2 pressure and concentration level exceedance. Current time and date also available for display.
Keypad:	Three keys control instrument software functions. Keys offer tactile feedback with current function displayed at all times.

Gases:

Combustion Air:	Provided by sample at a flow rate of 800 ml/min.
Hydrogen:	Provided by refillable internal cylinder. 1800 psig capacity offers 14 hours operation. H_2 flow is 13 ml/min.

Physical Dimensions:

Case Size:	HWD 12.5 x 11.5 x 2.6 inches
Weight:	Side Pack - 10.5 lbs; Gun - 12 oz.

Communication:

- 9 Pin RS-232 Port
- 0 - 1V Analog Signal

Approvals: Factory Mutual (FM) Class I, Division 1, Groups A, B, C, D
CENELEC EEx ib d IIC T4

Patents: Covered by U.S. Patent 5,356,594

For Price and Delivery Information, Contact:

Thermo Environmental Instruments Inc.

Thermo Electron Ltd., 910 Birchwood Blvd., Warrington, Cheshire, WA3 7QN, ENGLAND / Telephone: 0925 / 813600
Thermo Instrument Systems, GMBH, Martenerstrasse 539, 4600 Dortmund 70, WEST GERMANY / Telephone :231 / 6170 78
ThIS Analytical B.V., Heerbaan 220, 4817 Breda, HOLLAND / Telephone: 76 / 713717
Thermo Instrument Systems, Spinnerslaan 2A, Lokeren, BELGIUM / Telephone: 93/485841

8 West Forge Parkway
Franklin, MA 02038

(508) 520-0430

FAX: (508) 520-1460

Eco•Systems, Inc.
Consultants, Engineers and Scientists

March 8, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on February 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable pumps were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the First Quarter, 1999 section. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Jeffrey L. Allen, P.E.
Senior Engineer

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Table 1
Epichlorohydrin Screening Results - Pumps
February, 1999
Hercules. Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	2/25/99	0.0
Percent Leakers					**0%**

Table 2
Epichlorohydrin Screening Results - Agitators
February, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	2/25/99	0.0
Percent Leakers					**0%**

Eco•Systems, Inc.
Consultants, Engineers and Scientists

April 19, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on March 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable components were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the First Quarter, 1999 section. The next monitoring event is tentatively scheduled for mid-April, 1999.

Eco·Systems appreciates providing environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan M. Tullos
Project Scientist

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	3/25/99	0.0
Percent Leakers					**0%**

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	3/25/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	1.4	0.06
95 ppmv	98.2	94.7
980 ppmv	932	978

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.2	100%

Eco•Systems, Inc.
Consultants, Engineers and Scientists

May 6, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on April 14, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable components were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the Second Quarter, 1999 section. The next monitoring event is tentatively scheduled for mid-May, 1999.

Eco·Systems appreciates providing environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan M. Tullos
Project Scientist

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
April, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	4/14/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	3.5	-1.5
95 ppmv	100	95.2
980 ppmv	958	972

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.9	101%

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
April, 1999
Hercules, Inc

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	4/14/99	0.0
Percent Leakers					**0%**

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
May, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	5/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	5/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	5/25/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	2.7	0
95 ppmv	108	96
980 ppmv	1150	980

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95	100%

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
May, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	5/25/99	0.0
Percent Leakers					**0%**

Eco•Systems, Inc.
Consultants, Engineers and Scientists

July 1, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

COPY

Re: ***Environmental Engineering/Consulting Services***
Quarterly Leak Detection Monitoring for Valves,
and Monthly for Pumps, Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed quarterly leak detection services on the affected valves in the Kymene process and monthly monitoring on the pumps in the Kymene process on June 28, 1999. A total of 60 valves, three (3) pumps, and one (1) agitator were identified during the initial event in January, 1999. A leaking valve in this case is one which has an organic vapor emission of greater than 500 parts per million (ppm) and/or a visible leak. A leaking pump or agitator is one which has an organic vapor emission of greater than 5,000 ppm or 10,000 ppm, respectively. All applicable components were tested by *Eco·Systems* using a Thermo Environmental Model 680 organic vapor meter and no leaking units were discovered. Results of these tests are shown on the attached tables.

Eco·Systems will contact Hercules concerning timing of the next monitoring event tentatively scheduled for mid-July, 1999. *Eco·Systems* appreciates the opportunity to provide environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Evan Tullos
Project Scientist

Attachment

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Table 1a
Epichlorohydrin Screening Results for June, 1999 - Valves
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0004.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0020.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0023.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0037.00	Valve	Epichlorohydrin	Truck Loading	6/28/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	6/28/99	0.0
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	6/28/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	6/28/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Weigh Tks	6/28/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	6/28/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	6/28/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0

Table 1a
Epichlorohydrin Screening Results for June, 1999 - Valves
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0172.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	6/28/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	6/28/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	6/28/99	0.0
Percent Leakers					**0%**

Table 1b
Epichlorohydrin Screening Results for June, 1999 - Agitators
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	6/28/99	0.0
Percent Leakers					**0%**

Table 1c
Epichlorohydrin Screening Results for June, 1999 - Pumps
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	6/28/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	6/28/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	6/28/99	0.0
Percent Leakers					**0%**

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	3.2	0
95 ppmv	101	95.4
980 ppmv	1122	1002

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	97.2	102.3%

MONITORING, RECORDKEEPING & REPORTING REQUIREMENT **5.A.4**

YEAR 1999

GAS USAGE - MCF

EMISSION POINT	DESCRIPTION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AC001	Poly-pale nat. gas Dowtherm boiler	2042	0	1560	1200	3240	1320						
AF001	RAD nat. gas Dowtherm boiler	360	2661	0	0	0	1800						
AG001	HRA nat. gas Dowtherm boiler	1332	1235	3040	9110	8260	1368						
AG002	HRA nat. gas Dowtherm boiler	0	0	0	0	0	0						
AJ001	Rosin dist. nat. gas Dowtherm boiler	948	133	2230	4790	7440	297						
AK001	Hydrogen nat. gas Dowtherm boiler	0	0	0	0	0	0						
AL001	Silica nat. gas Dowtherm boiler	0	0	0	0	0	0						
AM001	No. 5 package boiler	38437	43307	43392	34194	31661	29911						
AM002	No. 6 package boiler	0	0	0	0	0	0						
AN001	Reg. furnace nat. gas boiler	1300	1200	2200	1100	2000	0						

T5ngas

0

Koch Gateway Pipeline Company
DETAIL METER STATEMENT
FOR THE MONTH OF 06/99

07/08/99 19:17:54
PAGE 4

METER ID: 002520-01
LOCATION: HATTIESBURG CITY GATE #1
TYPE METER: EFM Orifice

SYSTEM: 007:Mississippi
SUBSYSTEM: 014:Jackson to Leaksville 16" & 8"
PURPOSE: Koch Custody Delivery

CONTRACT TIME: 09:00
ANALYST: Matthews, Llola
PHONE #: 5044695903

METER INFORMATION

EFFECTIVE DATE	REF NUM	STATIC RANGE	DIFF RANGE	TUBE SIZE	PLATE SIZE	TAP TYPE	TAP LOCA	CHART DAYS	MACHINE CONSTANT	CALC TYPE
06/01/99	1	500	100	8.072	3.250	P	U	1	1.0000	14

VOLUME INFORMATION

DAY ON	DAY OFF	REF NUM	FLOW EXTENT	FLOW HOURS	TEMP	PRES PSIA	DIFF	SPEC GRAV	MCF VOLUME @ 14.730	BTU(A)	Dth
1	2	1	18	24.0	61.9	112.6	2.9	0.6017	1323	1016.3000	1345
2	3	2	17	24.0	63.1	112.8	2.6	0.6017	1260	1016.3000	1281
3	4	3	17	24.0	63.7	112.8	2.7	0.6017	1275	1016.3000	1296
4	5	4	16	24.0	64.8	112.9	2.3	0.6017	1164	1016.3000	1183
5	6	5	15	24.0	66.2	112.9	2.0	0.6017	1101	1016.3000	1119
6	7	6	16	24.0	63.6	112.7	2.4	0.6017	1216	1016.3000	1236
7	8	7	18	24.0	62.8	112.7	3.0	0.6017	1347	1016.3000	1369
8	9	8	18	24.0	62.5	112.4	3.0	0.6017	1349	1016.3000	1371
9	10	9	18	24.0	63.9	112.4	3.1	0.6017	1366	1016.3000	1388
10	11	10	19	24.0	63.3	112.4	3.3	0.6017	1408	1016.3000	1431
11	12	11	18	24.0	62.1	112.4	3.1	0.6017	1374	1016.3000	1396
12	13	12	17	24.0	63.1	112.5	2.7	0.6017	1282	1016.3000	1303
13	14	13	17	24.0	63.4	112.4	2.8	0.6017	1295	1016.3000	1316
14	15	14	19	24.0	63.6	112.4	3.3	0.6017	1413	1016.3000	1436
15	16	15	19	24.0	62.4	112.3	3.4	0.6017	1430	1016.3000	1453
16	17	16	19	24.0	62.2	112.2	3.5	0.6017	1451	1016.3000	1475
17	18	17	20	24.0	61.5	112.3	3.8	0.6017	1522	1016.3000	1547
18	19	18	20	24.0	60.6	112.3	3.5	0.6017	1472	1016.3000	1496
19	20	19	18	24.0	61.7	112.3	2.9	0.6017	1332	1016.3000	1354
20	21	20	18	24.0	62.3	112.4	2.9	0.6017	1313	1016.3000	1334
21	22	21	19	24.0	65.1	112.4	3.2	0.6017	1403	1016.3000	1426
22	23	22	20	24.0	64.2	112.2	3.6	0.6017	1469	1016.3000	1493
23	24	23	19	24.0	65.5	112.3	3.1	0.6017	1384	1016.3000	1407
24	25	24	18	24.0	66.5	112.3	3.0	0.6017	1338	1016.3000	1360
25	26	25	18	24.0	65.0	112.2	3.1	0.6017	1370	1016.3000	1392
26	27	26	17	24.0	65.8	112.2	2.8	0.6017	1302	1016.3000	1323
27	28	27	16	24.0	68.6	112.4	2.3	0.6017	1169	1016.3000	1188
28	29	28	17	24.0	69.3	112.2	2.7	0.6017	1255	1016.3000	1275
29	30	29	17	24.0	67.7	112.2	3.0	0.6017	1266	1016.3000	1287
30	1	30	15	24.0	69.3	112.4	2.2	0.6017	1132	1016.3000	1150
Total									39781		40430

GAS QUALITY INFORMATION

EFFECTIVE DATE	SAMPLE TYPE	WATER CONTENT	N2	CO2	H2S	C1	C2	C3	IC4	NC4	IC5	NC5	C6+
06/01/99	C	9.6	1.1550	2.0400	0.0000	94.7810	1.0770	0.3020	0.0940	0.1240	0.0630	0.0700	0.2940

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
12/29/98	16	87	[redacted]	1.349
1/5/99	8	42	[redacted]	1.302
1/6/99	16	130	[redacted]	2.015
1/7/99	16	120	59524	1.860
1/8/99	16	116	57540	1.798
1/9/99	16	100	49604	1.550
1/11/99	16	112	55556	1.736
1/12/99	16	58	28770	0.899
1/13/99	16	93	46131	1.442
1/14/99	16	80	39683	1.240
1/19/99	8	40	19841	1.240
1/20/99	8	30	14881	0.930
1/22/99	8	50	24802	1.550
3/16/99	16	102	50596	1.581
3/17/99	16	125	62004	1.938
3/18/99	16	120	59524	1.860
3/19/99	16	120	59524	1.860
3/20/99	16	120	59524	1.860

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
3/21/99	16	100	49604	1.550
3/23/99	16	122	60516	1.891
3/24/99	8	40	19841	1.240
3/25/99	16	120	59524	1.860
3/27/99	16	100	49604	1.550
3/28/99	8	30	14881	0.930
3/29/99	16	66	32738	1.023
3/31/99	16	50	24802	0.775
4/1/99	16	94	46627	1.457
4/2/99	16	100	49604	1.550
4/3/99	16	102	50596	1.581
4/5/99	8	32	15873	0.992
4/6/99	8	60	29762	1.860
4/7/99	16	120	59524	1.860
4/8/99	16	120	59524	1.860
4/9/99	16	120	59524	1.860
4/10/99	16	89	44147	1.380

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
4/11/99	16	104	51588	1.612
4/12/99	16	96	47619	1.488
4/17/99	16	90	44643	1.395
4/26/99	16	124	61508	1.922
4/28/99	8	40	19841	1.240
5/3/99	8	60	29762	1.860
5/4/99	16	80	39683	1.240
5/5/99	16	98	48611	1.519
5/6/99	16	110	54564	1.705
5/7/99	16	120	59524	1.860
5/8/99	16	120	59524	1.860
5/9/99	16	120	59524	1.860
5/10/99	16	120	59524	1.860
5/11/99	16	120	59524	1.860
5/12/99	16	124	61508	1.922
5/13/99	16	100	49604	1.550
5/14/99	16	70	34722	1.085

EMISSION POINT AC-004 (MELTER)

Note: No activity on those dates not shown.

Report Period: Jan.- June, 1999

DATE	# HOURS	# DRUMS	TOTAL LBS.	TONS/HR.
5/15/99	16	80	39683	1.240
5/16/99	16	100	49604	1.550
5/17/99	16	100	49604	1.550
5/18/99	16	40	19841	0.620
5/19/99	16	120	59524	1.860
5/20/99	16	120	59524	1.860
5/21/99	16	100	49604	1.550
5/22/99	8	20	9921	0.620
5/23/99	8	40	19841	1.240
5/24/99	16	120	59524	1.860
5/25/99	8	36	17857	1.116
5/26/99	16	100	49604	1.550
5/27/99	8	26	12897	0.806

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
12/31/98	180	16	23900	4.0	
12/31/98	90	8	11966	4.0	
1/2/99	90	8	11960	4.0	
1/4/99	180	16	23920	4.0	
1/5/99	90	8	11960	4.0	
1/6/99	90	8	11960	4.0	
1/7/99	180	16	23920	4.0	
1/8/99	90	8	11960	4.0	
1/9/99	90	8	11960	4.0	
1/10/99	90	8	11960	4.0	
1/12/99	90	8	11960	4.0	
1/13/99	90	8	11960	4.0	
1/15/99	180	~~8~~ 16	23920	4.0	
1/17/99	90	8	11960	4.0	
1/18/99	90	8	11960	4.0	
1/19/99	90	8	11966	4.0	
1/21/99	90	8	11960	4.0	
1/23/99	180	16	23920	4.0	
1/24/99	180	16	23920	4.0	
1/25/99	90	8	11960	4.0	
1/26/99	90	8	11960	4.0	
1/28/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
1/29/99	90	8	11960	4.0	
1/31/99	180	16	23920	4.0	
2/1/99	90	8	11960	4.0	
2/2/99	90	8	11960	4.0	
2/3/99	90	8	11960	4.0	
2/4/99	90	8	11960	4.0	
2/5/99	90	8	11960	4.0	
2/7/99	180	16	23920	4.0	
2/9/99	90	8	11960	4.0	
2/10/99	90	8	11960	4.0	
2/11/99	90	8	11960	4.0	
2/12/99	90	8	11960	4.0	
2/13/99	90	8	11960	4.0	
2/14/99	180	16	23920	4.0	
2/16/99	90	8	11960	4.0	
2/□/99	90	8	11960	4.0	
2/18/99	90	8	11960	4.0	
2/19/99	90	8	11960	4.0	
2/20/99	90	8	11960	4.0	
2/22/99	90	8	11960	4.0	
2/23/99	90	8	11960	4.0	
2/24/99	90	8	11960	4.0	
2/25/99	90	8	11960	4.0	
2/26/99	90	8	11960	4.0	
2/27/99	90	8	11960	4.0	
2/28/99	180	16	23920	4.0	

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date (M-D-Y)	Adipic Acid Addition Time minutes	Adipic Acid Total Charge boxes	Adipic Acid Total Charge pounds	Adipic Acid Total Charge ton/hr	Comments
3/1/99	90	8	11960	4.0	
3/2/99	90	8	11960	4.0	
3/3/99	90	8	11960	4.0	
3/4/99	90	8	11960	4.0	
3/6/99	90	8	11960	4.0	
3/7/99	180	16	23920	4.0	
3/8/99	90	8	11920	4.0	
3/9/99	90	8	11960	4.0	
3/11/99	90	8	11960	4.0	
3/12/99	90	8	11960	4.0	
3/15/99	180	16	23920	4.0	
3/16/99	90	8	11960	4.0	
3/17/99	90	8	11960	4.0	
3/18/99	180	16	23920	4.0	
3/19/99	90	8	11960	4.0	
3/20/99	90	8	11960	4.0	
3/25/99	90	8	11960	4.0	
3/26/99	180	16	23920	4.0	
3/28/99	90	8	11960	4.0	

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
3/29/99	90	8	11960	4.0	
3/30/99	90	8	11960	4.0	
3/31/99	90	8	11960	4.0	
4/1/99	90	8	11960	4.0	
4/2/99	90	8	11960	4.0	
4/4/99	180	16	23920	4.0	
4/6/99	180	16	23920	4.0	
4/7/99	90	8	11960	4.0	
4/8/99	180	16	23920	4.0	
4/9/99	180	16	23920	4.0	
4/11/99	180	16	23920	4.0	
4/13/99	90	8	11960	4.0	
4/14/99	90	8	11960	4.0	
4/15/99	90	8	11960	4.0	
4/19/99	90	8	11960	4.0	
4/20/99	90	8	11960	4.0	
4/23/99	90	8	11960	4.0	
4/24/99	90	8	11960	4.0	
4/25/99	180	16	23920	4.0	

(EPAA002b.WK4)

Emission Point - AA002
Adipic Acid Handling System Equipment with a Dust Shaker

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
4/29/99	180	16	23920	4.0	
5/1/99	180	16	23920	4.0	
5/2/99	90	8	11960	4.0	
5/7/99	90	8	11960	4.0	
5/9/99	180	16	23920	4.0	
5/11/99	90	8	11960	4.0	
5/12/99	90	8	11960	4.0	
5/13/99	180	16	23920	4.0	
5/14/99	90	8	11960	4.0	
5/16/99	90	8	11960	4.0	
5/17/99	90	8	11960	4.0	
5/20/99	90	8	11960	4.0	
5/21/99	90	8	11960	4.0	
5/23/99	90	8	11960	4.0	
5/25/99	90	8	11960	4.0	
5/27/99	90	8	11960	4.0	
5/28/99	90	8	11960	4.0	

Emission Point - AA002

Adipic Acid Handling System Equipment with a Dust Shaker

Enviro Batch

Date	Adipic Acid Addition Time	Adipic Acid Total Charge	Adipic Acid Total Charge	Adipic Acid Total Charge	Comments
(M-D-Y)	minutes	boxes	pounds	ton/hr	
5/28/99	90	8	11960	4.0	
5/29/99	180	16	23920	4.0	
5/30/99	180	16	23920	4.0	
5/31/99	90	8	11960	4.0	
6/4/99	90	8	11960	4.0	
6/7/99	180	16	23920	4.0	
6/8/99	90	8	11960	4.0	
6/9/99	90	8	11960	4.0	
6/10/99	180	16	23920	4.0	
6/12/99	90	8	11960	4.0	
6/13/99	90	8	11960	4.0	
6/17/99	90	8	11960	4.0	
6/20/99	90	8	11960	4.0	
6/21/99	90	8	11960	4.0	
6/21/99	90	8	11960	4.0	
6/23/99	90	8	11960	4.0	
6/24/99	90	8	11960	4.0	
6-27-99	90	8	11960	4.0	
6-29-99	90	8	11960	4.0	
6-30-99	90	8	11960	4.0	
7-1-99	90	8	11960	4.0	
7-5-99	90	8	11960	4.0	
7-6-99	90	8	11960	4.0	
7-6-99	90	8	11960	4.0	
7/7/99	90	8	11960	4.0	
7/14/99	90	8	11960	4.0	
7/15/99	90	8	11960	4.0	
7/16/99	90	8	11960	4.0	
7/18/99	90	8	11960	4.0	
7/20/99	90	8	11960	4.0	

(EPAA002b.WK4)

Emission Point - AL002
Defoamer Process Silica Furnance Dust Collector

Date (M-D-Y)	Silica Addition Time minutes	Silica Total Charge bages	Silica Total Charge pounds	Silica Total Charge ton/hr	Comments
12/31/98	NO Operation of silica drying process in December 1998				
1/31/99	No Operation of Silica dryer process in January 1999				
2/28/99	No operation of Silica dryer process in the month of February 1999				
3/31/99	No operation of Silica dryer process in the month of March 1999				
4/26/99	No operation of Silica dryer process in the month of April 1999				
5/24/99	No operation of the Silica dryer process in the month of May 1999				
6/27/99	No operation of the Silica dryer process in the month of June 1999. See Operation log sheet for data subsequent to 6/99. [signature]				

(EPAL002.WK4)

PERIODIC LEAK MONITORING REPORT

January, 1999 To June, 1999

KYMENE PROCESS

for

HERCULES, INCORPORATED
CHEMICAL SPECIALTIES
Hattiesburg, Mississippi

Forrest County

prepared by:

ECO·SYSTEMS, INC.
ENVIRONMENTAL ENGINEERS AND SCIENTISTS
Jackson, Mississippi

June, 1999

Hercules, Inc.
Hatteisburg, Mississippi
June, 1999

ESI

PERIODIC LEAK MONITORING REPORT - KYMENE PROCESS
For Compliance Period - January, 1999 through June, 1999

Hercules, Incorporated
Hattiesburg, Mississippi

1. ***Number of affected valves for which leaks were detected; percent leakers; total number of valves:***

   - No affected valves were discovered leaking during compliance period (greater than 500 ppm and/or a visible leak);
   - 0.00% of total affected valves were leaking;
   - 60 total affected valves are in the Kymene process.

2. ***Number of valves which were not repaired during this period:***

   - No affected valves were discovered leaking.

3. ***Number of pumps for which leaks were detected; percent leakers; total number of pumps:***

   - No affected pumps were discovered leaking during the compliance period (greater than 5,000 ppm or a visible leak);
   - 0.00% of affected pumps were leaking;
   - 3 total affected pumps are in the Kymene process.

4. ***Number of pumps which were not repaired during this period:***

   - No affected pumps were discovered leaking during this compliance period.

5. ***Number of agitators for which leaks were detected; percent leakers; total number of agitators:***

   - No affected agitators were discovered leaking during compliance period (greater than 10,000 ppm or a visible leak);
   - 0.00% of affected agitators were leaking;
   - 1 total affected agitator is in the Kymene process.

6. ***Number of agitators which were not repaired during this period:***

   - No affected agitators required repair.

7. ***Number of connectors (flanges, screwed fittings and others) for which leaks were detected; percent leakers; total number of connectors:***

- 1 affected connector (flange) was discovered leaking during compliance period (greater than 500 ppm);
- 0.33% of total affected connectors were leaking;
- 302 total affected connectors are in the Kymene process.

8. ***Number of connectors which were not repaired during this period:***

- Leaking connector was sucessfully repaired.

9. ***Provide explanation of any repairs that were unable to be made:***

- Repairs of all affected leaking components were successful.

10. ***Provide results of all monitoring conducted during compliance period:***

- All results for the specified reporting period may be found in Attachment A to this report.

ATTACHMENT A

Results Of Leak Monitoring
Kymene Process
January, 1999 - June, 1999

CONSTRUCTION PERMIT APPLICATION
HERCULES, INC.
HATTIESBURG, MISSISSIPPI

(REDACTED)
FOR PUBLIC REVIEW

FACILITY NUMBER 0800-00001

JANUARY, 1998

PREPARED BY

ECO·SYSTEMS, INC.
Consultants Engineers and Scientists

Jackson, Mississippi
Little Rock, Arkansas
Houston, Texas
Dallas, Texas

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REPORT

1 INTRODUCTION

Hercules Inc. (Hercules) owns and operates a Specialty Chemicals manufacturing facility in Hattiesburg, Mississippi (the facility). The facility is located in Forrest County, at 613 West 7th Street, Hattiesburg, Mississippi. The facility consists of various chemical production/process areas. This facility currently operates under the Mississippi Department of Environmental Quality Air Permit No. 0800-00001.

One of the various production processes operated at the Hercules facility is the Hard Resins Processing Area (HRA - Emission Point 080). Several products are produced in this production area. The pollutants emitted from the existing HRA area include PM, VOCs, and HAPs. HAPs emitted include Acrolein, Formaldehyde, Maleic Anhydride, Phthalic Anhydride, and Ethyl Glycol.

Hercules intends to produce a new confidential product in the HRA. Production of the new product is similar to the current proprietary production process and is confidential business information. The existing equipment in the HRA is sufficient to support the production operation for the new product. However, Hercules intends to replace an existing storage tank (S-94) with an identical new stainless steel storage tank (S-94) for storing Maleic Anhydride.

Figure 1 Shows the site location as depicted on a 7.5 minute United States Geological Survey (USGS) quad map. Figure 2 is the layout for the proposed new product production process and indicates the location of the proposed new Maleic Anhydride storage tank.

2 Purpose

As mentioned above Hercules proposes to replace an existing storage tank with a new stainless steel storage tank for Maleic Anhydride. This application is prepared in order to apply for a 'State of Mississippi Construction Permit' for the proposed construction at the Hercules facility.

3 Proposed Storage Tank

The proposed Maleic Anhydride storage tank will be a vertical tank with a fixed roof. The tank will have 8,565 gallon capacity. The tank will be located as shown in Figure 2. The only emissions expected from the tank are VOCs and Maleic Anhydride (HAP). The emissions from the proposed tank are estimated by using the API's Tanks3 program. Please see the attached tanks program output for more details.

4 REGULATORY REVIEW

New Source Performance Standards (NSPS)

New Source Performance Standards (NSPS) have been promulgated to govern the emissions of certain sources of air pollutant emissions modified, constructed, or reconstructed after the applicability dates of the regulations. These standards are documented in 40 CFR 60. The proposed storage tank at the Hercules facility is not subject to NSPS requirements since its capacity is below 10,560 gallons.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

National Emission Standards for Hazardous Air Pollutants (NESHAP) have been promulgated to govern the emissions of certain hazardous air pollutants. These standards are documented in 40 CFR 61 and 63. The proposed storage tank at the Hercules facility is not subject to any NESHAP requirements.

Non-attainment Area Review (NAR)

The proposed modification is not subject to NAR because the facility is located in an attainment area.

Prevention of Significant Deterioration (PSD) Review

Prevention of Significant Deterioration (PSD) applies to major stationary sources and major modifications with respect to each pollutant regulated under the federal PSD program. This facility meets the definition of a major stationary source because it has the potential to emit 250 tons per year or more of a pollutant (VOCs) subject to the PSD regulations. However, the requested increase in emissions from the proposed modification is less than the significant emission rate thresholds for triggering PSD review. No de-bottlenecking of the facility will occur from the installation of this new tank.

Title V Applicability

The Hercules facility in Hattiesburg is a major source and therefore subject to the Title V requirements. This facility has submitted a complete Title V application to the MDEQ in a timely manner.

APPLICATION

STATE OF MISSISSIPPI
DEPT. OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
P. O. BOX 10385
JACKSON, MS 39289-0385
(601) 961-5171

APPLICATION FOR
AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT AND/OR OPERATE
AIR EMISSIONS EQUIPMENT

TYPE OF PERMIT

_X_ New Source
____ Modification
____ Renewal of Operating Permit
____ Existing Source Operating Permit

Name: Hercules, Inc.
Location: City Hattiesburg **County** Forrest
Facility No. (if known) 0800-00001

APPLICATION FOR PERMIT TO CONSTRUCT AND/OR OPERATE AIR EMISSIONS EQUIPMENT GENERAL FORM

1. Name, Address & Contact for the Owner/Applicant

   A. Company Name: Hercules, Inc.

   B. Mailing Address:

      1. Street Address or P.O. Box: P. O. Box 1937
      2. City: Hattiesburg 3. State: Mississippi
      4. Zip Code: 39401 5. Telephone No.: (601) 545-3450

   C. Contact:

      1. Name: Charles Jordan
      2. Title: Environmental Coordinator

2. Name, Address, Location and Contact for the Facility:

   A. Name: Hercules, Inc.

   B. Mailing Address:

      1. Street Address or P.O. Box: P. O. Box 1937
      2. City: Hattiesburg 3. State: Mississippi
      4. Zip Code: 39401 5. Telephone No.: (601) 545-3450

   C. Site Location:

      1. Street: 613 West 7th Street
      2. City: Hattiesburg 3. State: Mississippi
      4. County: Forrest 5. Zip Code: 39401
      6. Telephone No.: (601) 545-3450

      Note: If the facility is located outside of the City limits, please attach a sketch or description to this application showing the approximate location of the site.

   D. Contact:

      1. Name: Charles Jordan
      2. Title: Environmental Coordinator

3. SIC Code(s) 2861, 2821, 2869, 2899

4. Number of Employees: 142

5. Principal Process(es): Specialty Chemicals Manufacturing

6. Principle Product(s) and maximum amount produced per day Specialty Chemicals.
   Maximum Production: 3,103,720 lbs/day.

7. Principal Raw Materials and maximum amount consumed per day Rosin and Paper Chemicals.
   Maximum amount consumed: 3,103,720 lbs/day.

8. Facility Operating Schedule:

A. Specify maximum hours per day the operation will occur: 24

B. Specify maximum days per week the operation will occur: 7

C. Specify maximum weeks per year the operation will occur: 52

D. Specify the months the operation will occur: January to December

9. Only if the application is for Operating Permit renewal, has the facility been modified in any way (including production rate, fuel, and or raw material changes) during the period covered by the Operating Permit?
_____ YES _____ NO, If yes, give years in which modification occurred and explain. _____
Not Applicable

10. If after August 7, 1977, provide the date construction commenced. NA

11. If after August 7, 1977, provide the date operation began. NA

12. Please list the dates of any modifications or emissions increases since August 7, 1977.
April 1985 – Metal Resinates production permitted and began operation.
October 1985 – Added #6 natural gas steam boiler.
May 1987 – Neuphor production process permitted and began operation.
November 1987 – Synthetic Resins modification permitted.
January 1991 – Kymene production expansion permitted.
April 1991 – Dresinol production permitted and began operation.
December 1993 – Permitted to increase Metal Resinates production capacity.

13. **EACH APPLICATION MUST BE SIGNED BY THE APPLICANT.**

If the applicant is a corporation, it must be signed by a corporate officer as defined in Regulation APC-S-2. If the applicant is a partnership, it must be signed by a partner with authority to bind the partnership. In the case of a governmental agency, the application must be signed by the facility manager or senior staff officer responsible for the installations or facility's environmental compliance.

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate, and that, as an appropriate representative of the applicant, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations.

Walter Langhans
Printed Name of Person signing

Plant Manager
Title

1/16/98
Date Application Signed

Signature of Applicant

PLEASE COMPLETE THE FOLLOWING PAGES WHERE APPLICABLE

GENERAL INFORMATION & INSTRUCTIONS

1) The application is designed to obtain information to allow evaluation of a number of different types of air emission facilities. If the space provided in the application is not adequate or does not fit your air emissions equipment, you may use a separate sheet(s) to provide the necessary information.

2) Permits will be valid only for those operations, pollutants, and pollutant emission rates identified in the application. As a minimum, the application must identify the following:

A. All operations or equipment having air emissions. For each, specify the maximum schedule, the maximum operating rate and the expected operating rate, if different from the maximum.

B. Emission rates (in units of the applicable emission standard as well as lbs/hr and tons/year) for each air pollutant subject to regulation under the Federal Act that can be reasonably expected to be emitted from each independent emission point. The following emission rates shall be provided in the EMISSIONS SUMMARY SECTION:

1. Potential Uncontrolled Emissions - this emission rate is defined in Regulation APC-S-2, amended December 9, 1993.

2. Proposed Emission Rate - the maximum emission rate at which the applicant proposes to operate the emission point.

EMISSION RATE CALCULATIONS MUST BE PROVIDED.

C. The exhaust or stack parameters for each emission source (height, velocity, diameter, and temperature) shall be provided in the EMISSIONS SUMMARY SECTION.

APPLICATION FOR AIR POLLUTION CONTROL PERMIT
ADDITIONAL INFORMATION REQUIRED FOR MODIFICATIONS,
EXISTING SOURCE OPERATING PERMITS,
AND/OR APPROVAL TO CONSTRUCT

The following additional information must be submitted in duplicate. Failure to submit any of the additional information or to conform to the instructions may result in initial rejection of the application.

1) Design Calculations and Specifications - all data and calculations used in selecting or designing process and control equipment.

2) Site Drawings - the drawing(s) or sketch(es) must be to scale and show at least the following:

A. The property involved with dimensions, clearly defining restricted entry boundaries and, if different, the total property boundaries.

B. Location and identification of all existing and/or proposed buildings, structures, and/or equipment, including points of discharge of air contaminants to the atmosphere, drawn to scale and in proper orientation.

C. The dimensions (length, width) of all buildings, structures, and/or equipment, including emission points.

D. The elevation of all buildings, structures, and/or equipment, including emission points, showing heights, grade baseline, and grade baseline height above mean sea level.

E. Primary compass direction indicator.

F. Location of streets and all adjacent properties. Show location of all buildings outside the property that are within 150 feet of the equipment involved in the application. Identify all such buildings (as a residence, apartment, warehouse, etc.), specifying number of stories or approximate height, and indicate the prevailing wind direction.

3) Construction Drawings (See Note Below) - an assembly drawing, dimensioned and to scale, in as many sections as are needed to show clearly the design and operation of the equipment and the means by which air contaminants are controlled. The following must be shown:

A. Size and shape of equipment. Show exterior and interior dimensions and features.

B. Locations, sizes, and shape details of all features which may affect the production, collection, conveying or control of air contaminants of any kind; location, size and shape details concerning all materials handling equipment.

NOTE: Structural design calculations and details are not required.

4) Description of Process and Control Equipment - a written description of each process to be carried out in the facility and the function of the equipment used in the process. The descriptions must be complete and particular attention must be given to explaining all stages in the process where the discharge of any materials might contribute in any way to air pollution. Control procedures must be described in sufficient detail to show the extent of control of air contaminants anticipated in the design, specifying the expected efficiencies of the capture systems and the control devices. All obtainable data must be supplied concerning the nature, volumes, particle size, weights, chemical composition and concentrations of all types of air contaminants.

5) Block Flow Diagram - a drawing showing the steps of the process and the flow of materials through the process and any control devices.

Additional information may be required as is necessary to evaluate the design adequacy of the facility or to comply with the requirements of the Prevention of Significant Deterioration (PSD) regulations.

ALL ENGINEERING PLANS AND SPECIFICATIONS MUST BEAR THE SIGNATURE, REGISTRATION NUMBER, AND SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSISSIPPI.

EMISSIONS SUMMARY SECTION

PART I

STACK PARAMETERS								
Reference Number	Stack Height (feet)	Inside Exit Diameter (feet)	Exit Gas Velocity (ft/sec)	Exit Gas Volume (acfm)	Exit Gas Temperature (°F)	Moisture Content (%)	U.T.M. Coordinates Zone 16 East	U.T.M. Coordinates Zone 16 North
S-94	8,565 gallon capacity, vertical fixed roof tank Internal diameter = 9.0 ft and tank height = 18 ft.				Ambient	na	280,700	3,469,200

EMISSIONS SUMMARY SECTION
PART II

Reference Number	Pollutant	PROPOSED EMISSION RATE			POTENTIAL UNCONTROLLED EMISSIONS	
		See Footnote (1)	(lbs/hr)	(TPY)	(lbs/hr)	(TPY)
S-94	VOC	na	None proposed		5.36 lb/yr	

(1) Provide emission rate in units of applicable emission standard, e.g., lb/MMBTU, gr/dscf at 12% CO_2, etc. This may not apply to every emission point or every pollutant from an emission point.

(2) Please provide the total emissions from the facility by pollutant.

EMISSIONS SUMMARY SECTION
PART III

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
75070	Acetaldehyde	NA	NA	NA	NA
60355	Acetamide	NA	NA	NA	NA
75058	Acetonitrile	NA	NA	NA	NA
98862	Acetophenone	NA	NA	NA	NA
53963	Acetylaminofluorene(2)	NA	NA	NA	NA
107028	Acrolein	NA	NA	NA	NA
79061	Acrylamide	NA	NA	NA	NA
79107	Acrylic Acid	NA	NA	NA	NA
107131	Acrylonitrile	NA	NA	NA	NA
107051	Allyl Chloride	NA	NA	NA	NA
92671	Aminodipheyl(4)	NA	NA	NA	NA
62533	Aniline	NA	NA	NA	NA
90040	Anisidine(o)	NA	NA	NA	NA
7440360	Antimony Compounds	NA	NA	NA	NA
7440382	Arsenic Compounds (inorganic including arsine)	NA	NA	NA	NA
1332214	Asbestos	NA	NA	NA	NA
71432	Benzene	NA	NA	NA	NA
92875	Benzidine	NA	NA	NA	NA
98077	Benzotrichloride	NA	NA	NA	NA
100447	Benzyl Chloride	NA	NA	NA	NA
7440417	Beryllium Compounds	NA	NA	NA	NA
192524	Biphenyl	NA	NA	NA	NA
117817	Bis(2-ethhylhexyl)phthalate (DEHP) (Dioctyl Phthalate)	NA	NA	NA	NA
542881	Bis(chloromethyl)ether	NA	NA	NA	NA
75252	Bromoform	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
106990	Butadiene(1,3)	NA	NA	NA	NA
7440439	Cadmium Compounds	NA	NA	NA	NA
156627	Calcium Cyanamide	NA	NA	NA	NA
105602	Caprolactam	NA	NA	NA	NA
133062	Captan	NA	NA	NA	NA
63252	Carbaryl	NA	NA	NA	NA
75150	Carbon Disulfide	NA	NA	NA	NA
56235	Carbon Tetrachloride	NA	NA	NA	NA
463581	Carbonyl Sulfide	NA	NA	NA	NA
120809	Catechol	NA	NA	NA	NA
133904	Chloramben	NA	NA	NA	NA
57749	Chlordane	NA	NA	NA	NA
7782505	Chlorine	NA	NA	NA	NA
79118	Chloroacetic Acid	NA	NA	NA	NA
532274	Chloroacetophenone(2)	NA	NA	NA	NA
108907	Chlorobenzene	NA	NA	NA	NA
510156	Chlorobenzinate	NA	NA	NA	NA
67663	Chloroform	NA	NA	NA	NA
107302	Chloromethyl methyl ether	NA	NA	NA	NA
126998	Chloroprene (Neoprene; 2-Chloro-1,3-Butadiene)	NA	NA	NA	NA
7440473	Chromium Compounds (IV)	NA	NA	NA	NA
10210681	Cobalt Carbonyl (as Co)	NA	NA	NA	NA
7440484	Cobalt Compounds (metal, dust, and fumes as Co)	NA	NA	NA	NA
16842038	Cobalt Hydrocarbonyl (as Co)	NA	NA	NA	NA
65996818A	Coke Oven Emissions	NA	NA	NA	NA
1319773	Cresols/Cresylic acid	NA	NA	NA	NA
108394	Cresol(m)	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
95487	Cresol(o)	NA	NA	NA	NA
106445	Cresol(p)	NA	NA	NA	NA
98828	Cumene (Isopropylbenzene)	NA	NA	NA	NA
---	Cyanide Compounds (NOTE # 1)	NA	NA	NA	NA
3547044	DDE	NA	NA	NA	NA
334883	Diazomethane	NA	NA	NA	NA
132649	Dibenzofurans	NA	NA	NA	NA
96128	Dibromo-3-chloropropane(1,2)	NA	NA	NA	NA
84742	Dibutylphthalate	NA	NA	NA	NA
106467	Dichlorobenzene(1,4)(p)	NA	NA	NA	NA
91941	Dichlorobenzidene(3,3)	NA	NA	NA	NA
111444	Dichloroethyl ether (Bis(2-chloroehtyl)ether)	NA	NA	NA	NA
542756	Dichloropropene(1,3)	NA	NA	NA	NA
62737	Dichlorvos	NA	NA	NA	NA
111422	Diethanolamine	NA	NA	NA	NA
121697	Diethyl aniline (N,N) (dimethylaniline (N,N))	NA	NA	NA	NA
64675	Diethyl Sulfate	NA	NA	NA	NA
119904	Dimethoxybenzidine(3,3')	NA	NA	NA	NA
60117	4 - Dimethyl aminoazobenzene	NA	NA	NA	NA
119937	Dimethyl benzidine (3,3')	NA	NA	NA	NA
79447	Dimethyl carbamoyl chloride	NA	NA	NA	NA
68122	Dimethyl formamide	NA	NA	NA	NA
57147	Dimethyl hydrazine(1,1)	NA	NA	NA	NA
131113	Dimethyl phthalate	NA	NA	NA	NA
77781	Dimethyl sulfate	NA	NA	NA	NA
534521	Dinitro-o-cresol(4,6), and salts	NA	NA	NA	NA
51285	Dinitrophenol(2,4)	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
121142	Dinitrotoluene(2,4)	NA	NA	NA	NA
123911	Dioxane(1,4) (1,4-diethyleneoxide)	NA	NA	NA	NA
122667	Diphenylhydrazine(1,2)	NA	NA	NA	NA
94757	d(2,4), salts and esters	NA	NA	NA	NA
106898	Epichlorohydrin (Chloro-2,3-epoxypropane(1))	NA	NA	NA	NA
106887	Epoxybutane(1,2) (1,2-Butylene oxide)	NA	NA	NA	NA
140885	Ethyl acrylate	NA	NA	NA	NA
100414	Ethyl benzene	NA	NA	NA	NA
51796	Ethyl carbamate (Urethane)	NA	NA	NA	NA
75003	Ethyl chloride (Chloroethane)	NA	NA	NA	NA
106934	Ethylene dibromide (1,2-Dibromoethane)	NA	NA	NA	NA
107062	Ethylene dichloride (1,2-Dichloroethane)	NA	NA	NA	NA
107211	Ethylene glycol	NA	NA	NA	NA
151564	Ethylene imine (Azridine)	NA	NA	NA	NA
75218	Ethylene oxide	NA	NA	NA	NA
96457	Ethylene thiourea	NA	NA	NA	NA
75343	Ethylidene dichloride (1,1-Dichloroethane)	NA	NA	NA	NA
50000	Formaldehyde	NA	NA	NA	NA
---	Glycol ethers (NOTE #2)	NA	NA	NA	NA
76448	Heptachlor	NA	NA	NA	NA
118741	Hexachlorobenzene	NA	NA	NA	NA
87683	Hexachlorocyclopentadiene	NA	NA	NA	NA
67721	Hexachloroethane	NA	NA	NA	NA
822060	Hexamethylene-1,6-diisocyanate	NA	NA	NA	NA
680319	Hexamethylphosphoramide	NA	NA	NA	NA
110543	Hexane	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
302012	Hydrazine	NA	NA	NA	NA
7647010	Hydrochloric acid	NA	NA	NA	NA
7664393	Hydrogen Fluoride (Hydrofluoric acid)	NA	NA	NA	NA
123319	Hydroquinone	NA	NA	NA	NA
78591	Isophorone	NA	NA	NA	NA
7439921	Lead Compounds	NA	NA	NA	NA
58899	Lindane (all isomers)	NA	NA	NA	NA
108316	**Maleic anhydride**	**NA**	**NA**	**5.36 LB/YR**	
7439965	Manganese Compounds	NA	NA	NA	NA
7439976	Mercury Compounds	NA	NA	NA	NA
67561	Methanol	NA	NA	NA	NA
72435	Methoxychlor	NA	NA	NA	NA
74839	Methyl bromide (Bromomethane)	NA	NA	NA	NA
74873	Methyl chloride (Chloromethane)	NA	NA	NA	NA
71556	Methyl chloroform (1,1,1-Trichloroethane)	NA	NA	NA	NA
78933	Methyl ehtyl ketone (2-Butanone) (MEK)	NA	NA	NA	NA
60344	Methyl hydrazine	NA	NA	NA	NA
74884	Methyl iodide (Iodomethane)	NA	NA	NA	NA
108101	Methyl isobutyl ketone (Hexone)	NA	NA	NA	NA
624839	Methyl isocyanate	NA	NA	NA	NA
80626	Methyl methacrylate	NA	NA	NA	NA
1634044	Methyl tert butyl ether	NA	NA	NA	NA
101144	Methylene bis(2-chloroaniline)(4,4) (MOCA)	NA	NA	NA	NA
75092	Methylene chloride (Dichloromethane)	NA	NA	NA	NA
101688	Methylene diphenyl diisocynate (MDI)	NA	NA	NA	NA
101779	Methylenedianiline(4,4')	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
---	Mineral fibers (NOTE #3)	NA	NA	NA	NA
91203	Naphthalene	NA	NA	NA	NA
7440020	Nickel Compounds	NA	NA	NA	NA
7440020	Nickel, refinery dust	NA	NA	NA	NA
12035722	Nickel, subsulfide	NA	NA	NA	NA
98953	Nitrobenzene	NA	NA	NA	NA
92933	Nitrodiphenyl(4)	NA	NA	NA	NA
100027	Nitrophenol(4)	NA	NA	NA	NA
79469	Nitropropane(2)	NA	NA	NA	NA
62759	Nitrosodimethylamine(N) (Dimethylnitrosoamine)	NA	NA	NA	NA
59892	Nitrosomorpholine(N)	NA	NA	NA	NA
684935	Nitroso-N-methylurea(N)	NA	NA	NA	NA
56382	Parathion	NA	NA	NA	NA
82688	Pentachloronitrobenzene (Quintobenzene)	NA	NA	NA	NA
87865	Pentachlorophenol	NA	NA	NA	NA
108952	Phenol	NA	NA	NA	NA
106503	Phenylenediamine(p)	NA	NA	NA	NA
75445	Phosgene	NA	NA	NA	NA
7803512	Phosphine	NA	NA	NA	NA
7723140	Phosphorus	NA	NA	NA	NA
85449	Phthalic anhydride	NA	NA	NA	NA
1336363	Polychlorinated biphenyls (Arochlors)	NA	NA	NA	NA
---	Polycylic Organic Matter (NOTE #5)	NA	NA	NA	NA
1120714	Propane sultone(1,3)	NA	NA	NA	NA
57578	Propiolactone(beta)	NA	NA	NA	NA
123386	Propionaldehyde	NA	NA	NA	NA
114261	Propoxur (Baygon)	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
78875	Propylene dichloride (1,2 dichloropropane)	NA	NA	NA	NA
75558	Propylene imine(1,2) (2-methyl aziridine)	NA	NA	NA	NA
75569	Propylene oxide	NA	NA	NA	NA
91225	Quinoline	NA	NA	NA	NA
106514	Quinone (1,4-Cyclohexadienedione)	NA	NA	NA	NA
---	Radionuclides (including radon) (NOTE #4)	NA	NA	NA	NA
7782492	Selenium Compounds	NA	NA	NA	NA
100425	Styrene	NA	NA	NA	NA
96093	Styrene oxide	NA	NA	NA	NA
1746016	Tetrachlorodibenzo-p-dioxin(2,3,7,8) (TCDD) (Dioxin)	NA	NA	NA	NA
79345	Tetrachloroethane(1,1,2,2)	NA	NA	NA	NA
127184	Tetrachloroethylene (Perchloroethylene)	NA	NA	NA	NA
7550450	Titanium Tetrachloride	NA	NA	NA	NA
108883	Toluene	NA	NA	NA	NA
95807	Toluene diamine(2,4) (2,4-diaminotoluene)	NA	NA	NA	NA
584849	Toluene diisocyanate(2,4)	NA	NA	NA	NA
95534	Toluidine(o)	NA	NA	NA	NA
8001352	Toxaphene (Chlorinated camphene)	NA	NA	NA	NA
120821	Trichlorobenzene(1,2,4)	NA	NA	NA	NA
79005	Trichloroethane(1,1,2)	NA	NA	NA	NA
79016	Trichloroethylene	NA	NA	NA	NA
95954	Trichlorophenol(2,4,5)	NA	NA	NA	NA
88062	Trichlorophenol(2,4,6)	NA	NA	NA	NA
121448	Triethylamine	NA	NA	NA	NA
1582098	Trifluralin	NA	NA	NA	NA

CAS NO.	HAP	Proposed Emission Rate		Potential Uncontrolled Emission Rate	
		lbs/hr	TPY	lbs/hr	TPY
540841	Trimethylpentane(2,2,4)	NA	NA	NA	NA
75014	Vinyl Chloride	NA	NA	NA	NA
108054	Vinyl Acetate	NA	NA	NA	NA
593602	Vinyl Bromide	NA	NA	NA	NA
75354	Vinylidene chloride (1,1-Dichloroethylene)	NA	NA	NA	NA
1330207	Xylenes (mixed)	NA	NA	NA	NA
108383	Xylene(m)	NA	NA	NA	NA
95476	Xylene(o)	NA	NA	NA	NA
106423	Xylene(p)	NA	NA	NA	NA

NOTE # 1: X'CN where X = H' or any other group where a formal dissociation may occur, for example: KCN or Ca(CN)2.

NOTE # 2: Includes mono- and di- ethers of ethylene glycol, dietheylene glycol and triethylene glycol R-(OCH2CH2)n-OR' where:

n = 1,2,3
R = alkyl or arl groups
R' = R,H, or group which, when removed, yield glycol ethers with the structure: R-(OCH2CH2)n-OH. Polymers are excluded from the glycol category.

NOTE # 3: Includes glass microfibers, glass wool fibers, rock wool fibers, and slag wool fibers, each characterized as "respirable" (fiber diameter less then 3.5 micrometers) and possessing an aspect ratio (fiber length divided by fiber diameter) greater than 3.

NOTE # 4: A type of atom which spontaneously undergoes radioactive decay.

NOTE # 5: Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 Celsius.

APPLICATION SUMMARY SECTION

I. Indicate below which sections have been completed as part of this application. Where applicable, also indicate the number of each section completed.

Administrative Information	X
Emission Summary Section	
Part I	X
Part II	X
Part III	X
Fuel Burning Equipment	
Manufacturing Process Operations	
Refuse Disposal	
Tank Section	X
Incineration Section	
Asphalt Plant Section	
Concrete Plant Section	
Air Pollution Control Devices	
Baghouse	
Cyclone	
Adsorption	
Afterburner	
Scrubber	
Electrostatic Precipitator	
Other Air Pollution Control Equipment/Devices	

II. Please list any other attachments.

Report, Figures, and Tanks Program Output.

TANK SUMMARY (page 1 of 2) **SECTION H**

1. Emission Point No./Name: Em. Point 080: S-94 (Hercules Reference # M0899) / Maleic Anhydride Storage Tank

2. Was this unit constructed or modified after August 7, 1977? X yes _____ no
If yes please give date and explain. To be Constructed in January 1998.

3. Product Stored: Maleic Anhydride
If more than one product is stored, provide the information in 4 A-E for each product.

4. Tank Data:

A.	True Vapor Pressure at storage temperature:	0.01	psia/°F
B.	Reid Vapor Pressure at storage temperature:	N/A	psia/°F
C.	Density of product at storage temperature:	8.0	lb/gal
D.	Molecular Weight of product vapor at storage temperature:	98.06	lb/lbmol
E.	Throughput for most recent calendar year:	119,615	gal/yr
F.	Tank Capacity:	8,565	gal
G.	Tank Diameter:	9	feet
H.	Tank Height / Length:	18	feet
I.	Average Vapor Space Height:	9	feet
J.	Tank Orientation:	**Vertical** or Horizontal	
K.	Type of Roof:	**Dome** or Cone	
L.	Is the Tank Equipped with a Vapor Recovery System?	_____ Yes	X No

If Yes, describe on separate sheet of paper and attach. Indicate efficiency.

M. Check the Type of Tank:

X Fixed Roof	_____ External Floating Roof
_____ Pressure	_____ Internal Floating Roof
_____ Variable Vapor Space	
_____ Other, describe: _____	

N. Check the Closest City:

X Jackson, Ms.	_____ Birmingham, Al.
_____ Memphis, Tn.	_____ Montgomery, Al.
_____ New Orleans, La.	_____ Baton Rouge, La.

O Check the Tank Paint Color:

X Aluminum Specular	_____ Gray Light
_____ Aluminum Diffuse	_____ Gray Medium
_____ Red	_____ White
_____ Other, describe: _____	

P. Tank Paint Condition: **Good** or Poor

Q. Check Type of Tank Loading

1. Trucks and Rail Cars *Not applicable*
   - _____ Submerged Loading of clean cargo tank
   - _____ Submerged Loading : Dedicated Normal Service
   - _____ Submerged Loading : Dedicated Vapor Balance Service
   - _____ Splash Loading of clean cargo tank
   - _____ Splash Loading : Dedicated Normal Service
   - _____ Splash Loading : Dedicated Vapor Balance Service
2. Marine Vessels *Not applicable*
   - _____ Submerged Loading: Ships
   - _____ Submerged Loading: Barges

TANK SUMMARY (page 2 of 2) **SECTION H**

R. For External Floating Roof Tanks ***Not Applicable***

1. Check the Type of Tank Seal:
   _____ Mechanical Shoe
   _____ Primary Seal Only
   _____ With Shoe-Mounted Secondary Seal
   _____ With Rim-Mounted Secondary Seal
   _____ Liquid Mounted Resilient Seal
   _____ Primary Seal Only
   _____ With Shoe-Mounted Secondary Seal
   _____ With Rim-Mounted Secondary Seal
   _____ Vapor Mounted Resilient Seal
   _____ Primary Seal Only
   _____ With Shoe-Mounted Secondary Seal
   _____ With Rim-Mounted Secondary Seal

2. Type of External Floating Roof: _____ Pontoon
   _____ Double-Deck

S. For Internal Floating Roof Tanks ***Not Applicable***

1. Check the Type of Tank Seal:
   _____ Liquid Mounted Resilient Seal
   _____ Primary Seal Only
   _____ With Rim-Mounted Secondary Seal
   _____ Vapor Mounted Resilient Seal
   _____ Primary Seal Only
   _____ With Rim-Mounted Secondary Seal
2. Number of Roof Columns: _____
3. Length of Deck Seam _____ feet:
4. Area of Deck: _____ $feet^2$
5. Effective Column Diameter: _____ feet
6. Check the Type of Tank:
   _____ Bolted with Column Supported Roof
   _____ Welded with Column Supported Roof
   _____ Bolted with Self-Supported Roof
   _____ Welded with Self-Supported Roof

5. Emissions Summary

1.	Breathing Loss:	0.015	lb/hr	0.066	TPY
2.	Working Loss:	0.029	lb/hr	0.126	TPY
3.	Total Emissions:	0.044	lb/hr	0.192	TPY

6. UTM Coordinates:

A. Zone 16 B. North 3,469,200 C. East 280,700

TABLE 1
CODE NUMBERS FOR CONTROL DEVICES

Vapor Control Equipment

00 GROUP - CONTROL BY COMBUSTION

01 Catalytic Combustion
02 Furnace Combustion
03 Boiler Firebox
04 Steam Injection Flare
05 Venturi Flare
06 Direct Flame Combustion (Afterburner)

10 GROUP - ADSORBERS

10 Activated Carbon - Nonregenerative
11 Activated Carbon - Regneerative
12 Silica Gel - Nonregenerative
13 Silica Get - Regenerative
14 Lithium Chloride
15 Activated Alumina
16 Activated Bauxite

20 GROUP - ABSORBERS

20 Sieve Plate Tower
21 Bubble - Cap Tower
22 Packed Tower

Particulate Matter -
Liquid Mist Control Equipment

30 GROUP - DRY SEPARATORS & FILTERS

30 Simple Cyclones
31 High Efficiency Cyclones
32 Settling Chamber
33 Simple Filters
34 Baghouse (Shaking)
35 Baghouse (Reverse Jet)
36 Dry Collector (Dynamic)

40 GROUP - WET COLLECTORS

40 Spray Chamber - No Baffles
41 Spray Chamber - With Baffles
42 Wet Cyclones - Rotoclone
43 Wet Dynamic Precipitator
44 Venturi Scrubber
45 Spray Tower (Not Absorption - Scrubbers)
46 Packed Tower (Not Absorption - Scrubbers)
47 Condensers (Tube and Shell); air
48 Barometric Condenser with hot wells

50 GROUP - ELECTRICAL PRECIPITATORS

50 Single Stage
51 Double Stage
52 Precipition

60 GROUP

60 Counteractant

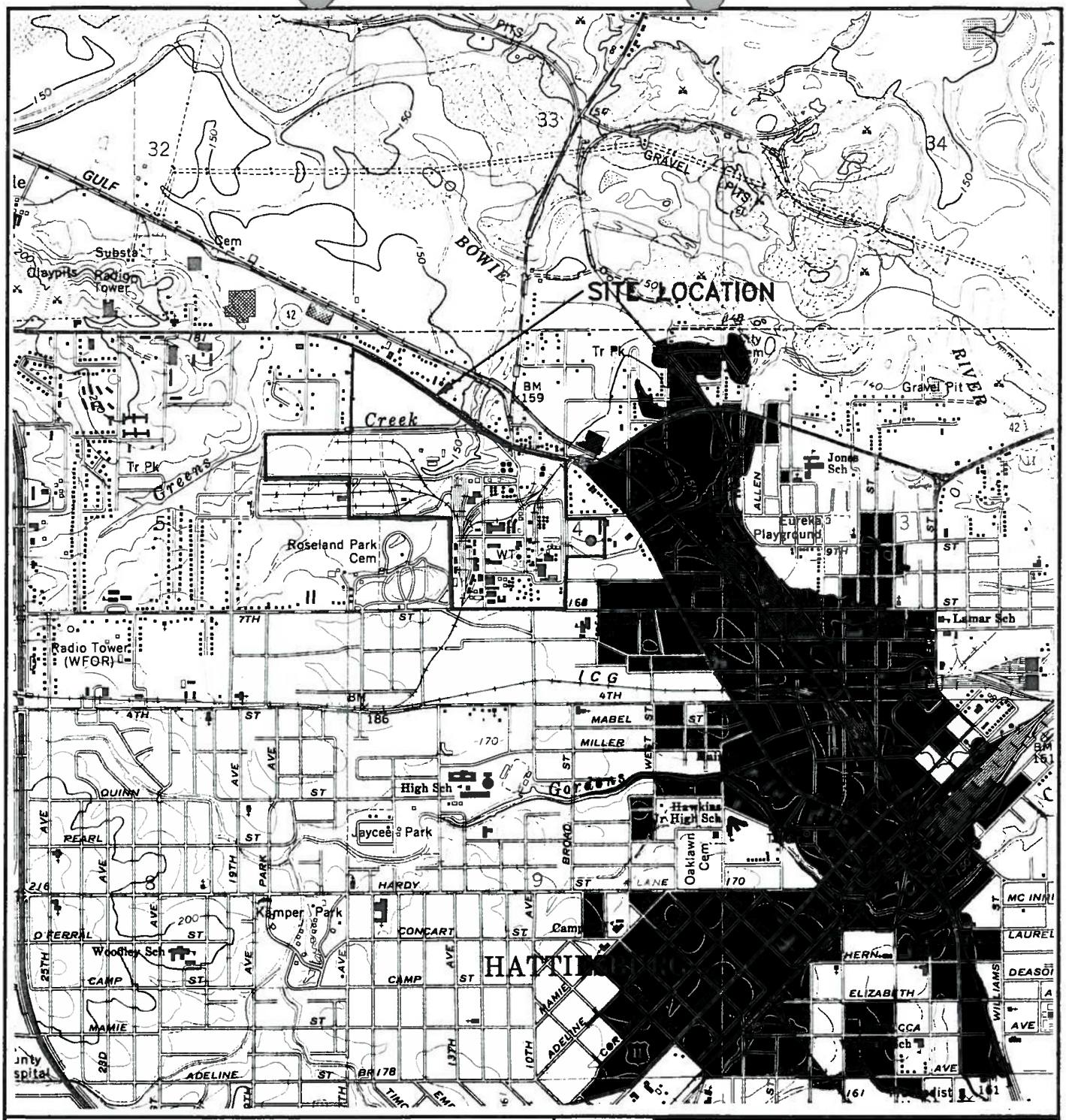
70 GROUP - SPECIAL

71 Jet Exhausters (Air Dilution)
72 Mist Eliminators

80 GROUP - Other

80 Specify

FIGURES



MISS.

QUADRANGLE LOCATION

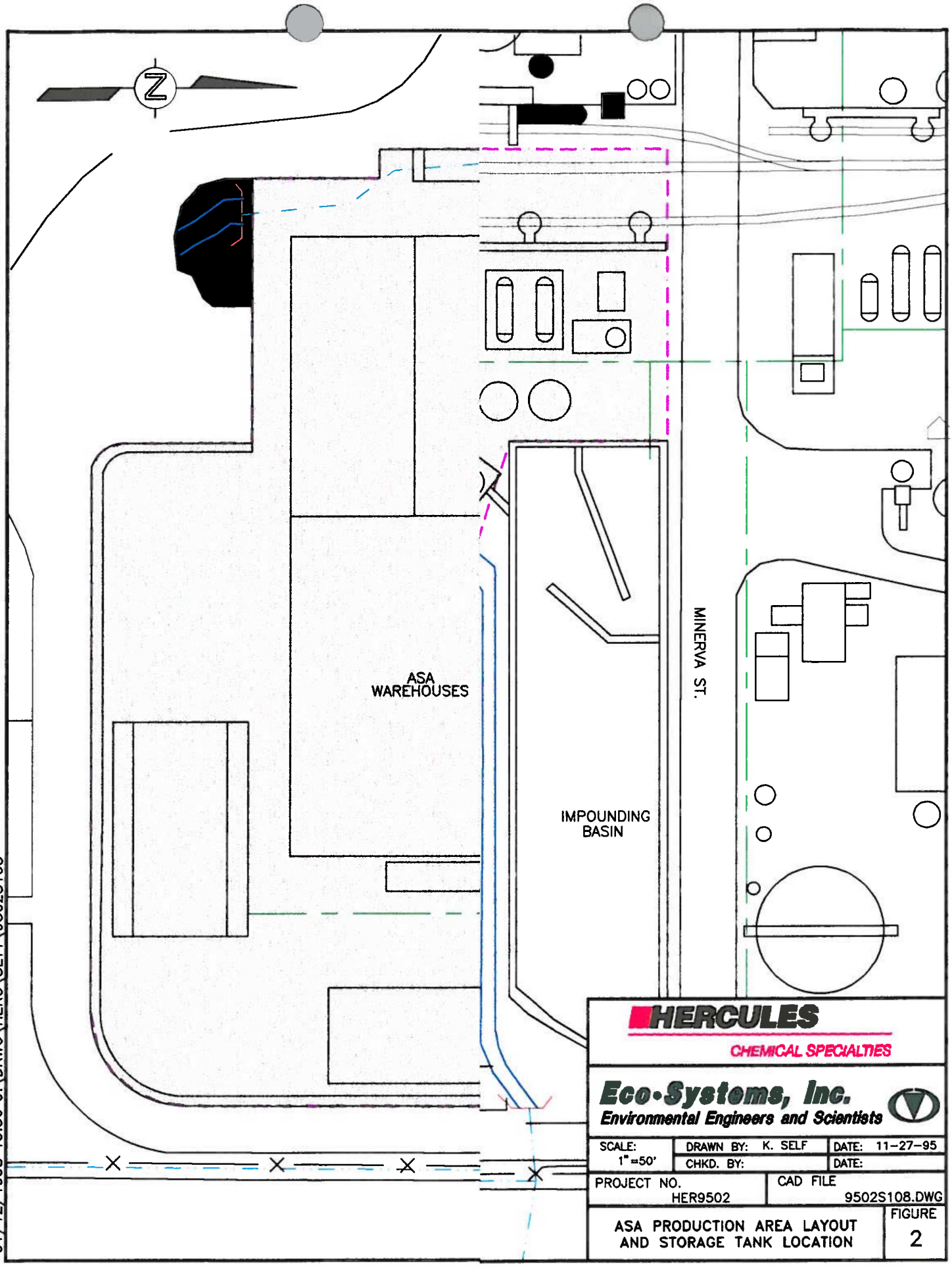
SOURCE:
U.S.G.S. 7.5 MINUTE QUADRANGLE MAP,
HATTIESBURG, MISSISSIPPI 1964

HERCULES
CHEMICAL SPECIALTIES

Eco-Systems, Inc.
Environmental Engineers and Scientists

DATE: 12-29-95
DATE:

SITE LOCATION



HERCULES
CHEMICAL SPECIALTIES

Eco-Systems, Inc.
Environmental Engineers and Scientists

SCALE: 1"=50'	DRAWN BY: K. SELF	DATE: 11-27-95
	CHKD. BY:	DATE:
PROJECT NO. HER9502	CAD FILE 9502S108.DWG	

ASA PRODUCTION AREA LAYOUT AND STORAGE TANK LOCATION

FIGURE 2

01/12/1998 15:36 U:\DRWG\HERC\SET1\9502S108

TANKS PROGRAM OUTPUT

TANKS PROGRAM 3.0
EMISSIONS REPORT - SUMMARY FORMAT
TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification

Identification No.:	S-94
City:	Hattiesburg
State:	MS
Company:	Hercules, Inc.
Type of Tank:	Vertical Fixed Roof
Description:	Maleic An. Stg. Tank

Tank Dimensions

Shell Height (ft):	18.0
Diameter (ft):	9.0
Liquid Height (ft):	18.0
Avg. Liquid Height (ft):	9.0
Volume (gallons):	8565
Turnovers:	14.0
Net Throughput (gal/yr):	119615

Paint Characteristics

Shell Color/Shade:	Aluminum/Specular
Shell Condition:	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft):	0.00
Radius (ft) (Dome Roof):	5.00
Slope (ft/ft) (Cone Roof):	0.0000

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Jackson, Mississippi (Avg Atmospheric Pressure = 14.7 psia)

xture/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
leic Anhydride	All	69.69	61.63	77.75	65.94	0.0100	0.0100	0.0100	98.060			98.06	Option 1

ıual Emissions Report

ɟuid Contents	Losses (lbs.): Standing	Working	Total
ŀeic Anhydride	2.57	2.79	5.36
:al:	2.57	2.79	5.36

Mississippi Department of Environmental Quality
Office of Pollution Control

I-sys 2000 Master Site Detail Report

Site Name: Hercules Inc

PHYSICAL ADDRESS	
LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

MAILING ADDRESS	
LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

OTHER INFORMATION	
MASTER ID:	002022
COUNTY:	Forrest
REGION	SRO
SIC 1:	2822
AIR TYPE:	TITLE V
HW TYPE:	LARGE QUANTITY
SOLID TYPE:	
WATER TYPE:	INDUSTRIAL
BRANCH:	Chemical
ECED CONTACT:	
Yassin, Mohammad	
BASIN:	

AIR PROGRAMS	☑ SIP	☐ PSD	☐ NSPS	☐ NESHAPS	☑ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

Pemits

PROGRAM	PERMIT TYPE	PERMIT #	MDEQ PERMIT CONTACT	ACTIVE
HAZ. WASTE	EPA ID	MSD008182081		NO
AIR	TITLE V	080000001	Ketchum, Brian	YES
AIR	SOP	080000001	Ketchum, Brian	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Beasley, Jerry	YES
WATER	PRE-TREATMENT	MSP091286	Tomkins, Tracy	YES
GENERAL	SARA TITLE III	MSR110153	Lavallee, Louis	YES
AIR	TITLE V	0800-00001	Glenn, Montie	NO

Compliance Actions

MEDIA	ACTIVITY TYPE	SCHEDULED	COMPLETED	INSPECTED B
WATER	CEI - NA	3/17/99	3/17/99	Yassin, Mohammad
WATER	CMI - PRETREATMENT	11/1/99		Sharp, Loyd
WATER	CMI - NPDES	4/1/00		Sharp, Loyd
WATER	CMI - NPDES	11/1/99		Sharp, Loyd
WATER	CEI - NA	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Yassin, Mohammad
AIR	State Compliance Inspection	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	6/30/99	6/30/99	Yassin, Mohammad
AIR	State Compliance Inspection	6/29/99	6/29/99	Yassin, Mohammad
WATER	CEI - NA	6/30/99	6/30/99	Yassin, Mohammad

ETHYLENE OXIDE EMISSIONS TEST

HERCULES, INC

RAD ETHYLENE OXIDE SCRUBBER

EMISSION POINT AF-004

FACILITY NO. 0800-00001

Hattiesburg, Mississippi
April 5, 2002

Hercules, Inc.
613 West 7th Street
Hattiesburg, MS 39401-2812

Performed by:

ENVIRONMENTAL MONITORING LABORATORIES, INC.

624 Ridgewood Road
P.O. Box 655
Ridgeland, Mississippi 39158

Phone: (601)856-3092
Fax: (601)853-2151

REPORT OF
AIR EMISSIONS TESTS
FOR
HERCULES, INC.

RAD ETHYLENE OXIDE SCRUBBER

Hattiesburg, Mississippi
April 5, 2002

FACILITY NO. 0800-00001

Hercules, Inc.
613 West 7th Street
Hattiesburg, Mississippi 39401-2812

contact: Charlie Jordan
phone: 601/584-3264

Performed By:
Environmental Monitoring Laboratories
Ridgeland, Mississippi
601/856-3092

ENVIRONMENTAL MONITORING LABORATORIES, INC.

P.O. Box 655 ➲ 624 Ridgewood Road
Ridgeland, Mississippi 39158

phone: 601/856-3092
fax : 601/853-2151

May 9, 2002

Subject: Hercules, Inc. Hattiesburg, Mississippi
FACILITY NO. 0800-00001 EP AF-004

On April 5, 2002, Environmental Monitoring Laboratories performed air emissions testing for Hercules, Inc. in Hattiesburg, Mississippi. Testing was performed to measure ethylene oxide concentrations from and loading to the RAD Ethylene Oxide Scrubber in accordance with requirements of the Mississippi Department of Environmental Quality.

The RAD process is subject to provisions of 40 CFR 63, subpart PPP Polyether Polyols Production. The applicable equipment in organic HAP service is equipment that contains or contacts a fluid, which is ≥ 5% by weight of total organic HAPs and operates 300 hours or more during the calendar year. Compliance with provisions of the subpart can be demonstrated by using equipment shown to reduce ethylene oxide emissions by 98% or to a concentration of less than 20 ppm.

Results of testing are summarized in the table below.

ETHYLENE OXIDE EMISSIONS		REMOVAL EFFICIENCY, %
EO SCRUBBER INLET	EO SCRUBBER OUTLET	
49.666 %	4.00 ppm	99.99 %

Mr. Charlie Jordan of Hercules coordinated the testing project. Danny Russell of EML was responsible for sample and data collection and for report preparation. Summa Canisters used for sampling and sample analysis was provided by Enthalpy Analytical. Otherwise, sample custody was limited to Mr. Russell.

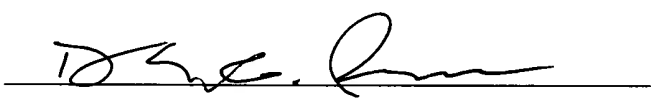
Following is a report of the test.

REPORT OF AIR EMISSIONS TESTS FOR HERCULES, INC. RAD ETHYLENE OXIDE SCRUBBER HATTIESBURG, MISSISSIPPI APRIL 5, 2002

CONTENTS

REPORT CERTIFICATION

I certify that I have examined the information submitted herein, and based upon inquires of those responsible for obtaining the data or upon my direct acquisition of data, I believe the submitted information is true, accurate and complete.

Signed 

Daniel G. Russell

1.0 Test Results:

The following table is a summary of the measured parameters for air emissions testing done on April 5, 2002, for the RAD Ethylene Oxide Scrubber at Hercules in Hattiesburg, Mississippi.

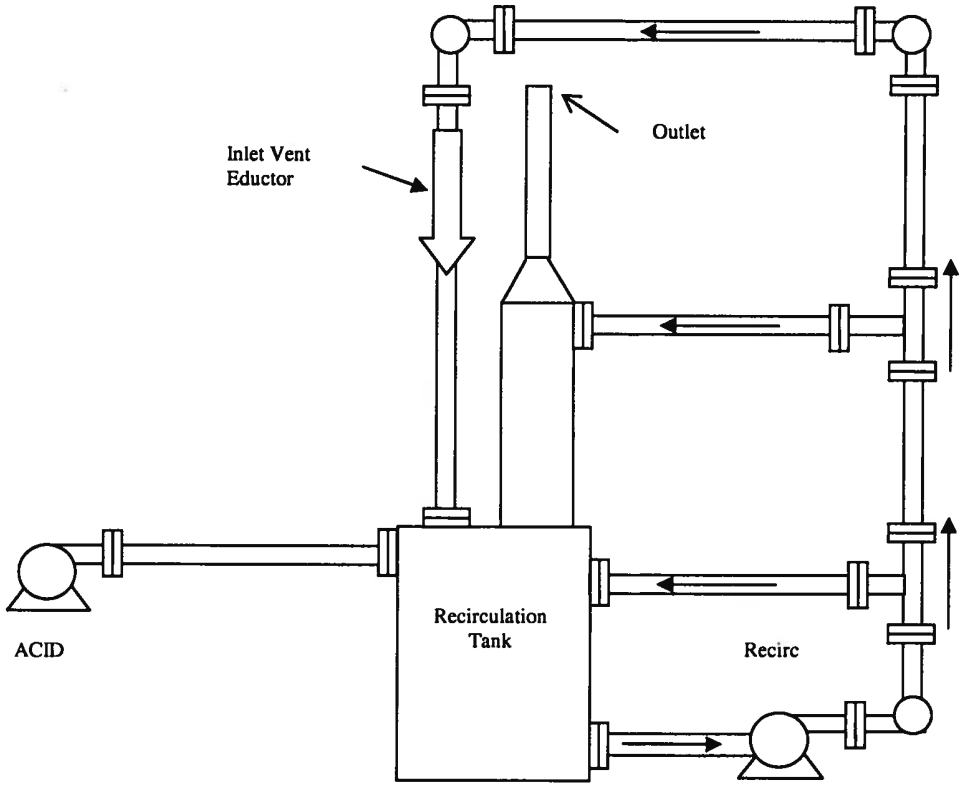
Run No.		1	2	3	AVG.
Date		04/05/02	04/05/02	04/05/02	-------
Time Start		1131	1238	1356	-----
Time End		1231	1338	1456	-----
EO SCRUBBER INLET LOADING	ppm	44,265	71,256	33,476	49,666
EO SCRUBBER OUTLET EMISSIONS	ppm	6.01	4.02	1.97	4.00
EO SCRUBBER REMOVAL EFFICIENCY	%	99.99	99.99	99.99	99.99

Details of the analyses indicating these results may be reviewed in Appendix B. Enthalpy Analytical performed the analysis and reported the values shown in the table. Enthalpy's report is copied in total in Appendix B.

2.0 SOURCE DESCRIPTION:

Ethylene Oxide Derivatives, including polyrads and surfactants are corrosion inhibitors that are used for hydrochloric acid and for petroleum refining equipment. Their detergent properties aid in loosening and dispersing scale. The manufacturing scheme for EOD is 1) reacting ethylene oxide with various feed resins, and 2) various blending operations. Exhaust from the batch process consists primarily of ethylene oxide and nitrogen. This exhaust is directed to a weak sulfuric acid scrubber where ethylene oxide is converted to ethylene glycol and controlled by scrubber blowdown. The EO Scrubber exhausts to the atmosphere by way of a two inch diameter pipe about 30 feet above grade.

Outlet samples were collected from a 3/8 inch diameter tube and valve installed about 15 feet above the scrubber and directed to ground level valved outlet. Inlet samples were collected from a similar installation immediately prior to the sulfuric acid scrubber. Both lines were adequately purged prior to commencing sample collection.



3.0 TEST PROCEDURES:

Inlet and outlet samples were collected in two liter Summa canisters provided by Enthalpy Analytical. Flow to the evacuated canisters was controlled to a constant rate over the 60 minute sample time by use of a critical orifice controller also provide by Enthalpy. Ambient temperature, barometric pressure, and canister beginning and ending pressures were recorded for each of the three runs. Inlet and outlet samples were collected simultaneously. This procedure resembles Method 18 in function. The Summa canisters were chosen over Tedlar bags for their inherent sturdiness and resistance to sample loss due to leakage from handling. Those canisters were shipped to Enthalpy Analytical for analysis by GCMS.

Oxygen content was continuously measured at the outlet during sampling to monitor for ambient air leakage dilution.

As an additional quality control measure, selected samples were re-analyzed after two weeks to determine if the samples may have degraded from the time the samples were collected to the time they were initially analyzed. Reanalysis of the samples illustrated satisfactory stability

Reported values:

	Run 2 Inlet	Run 1 Outlet
Ethylene Oxide (4/29/02)	67.417 ppm	5.52 ppm
Ethylene Oxide (4/16/02)	71,256 ppm	6.01 ppm

7.0 APPENDICES

A. Field Data

B. Wastewater Analysis (Bonner)

C. Enthalpy Report (EO analysis)

APPENDIX A

FIELD DATA

RAD Process E.O. scrubber Hercules . Hattiesburg MS 04/05/02

IN/OUT	Canister #	time Start	time End.	Vacuum "Hg Start	Vacuum "Hg Stop.
R1 out	1003	1131	1231	29.35	0.55
R1 IN	1037	1131	1231	29.60	3.95
R2 out	~~1043~~ 1016	1238	1338	25.90	0.30
R2 IN	1044	1238	1338	29.65	3.75
R3 out	1035	1356	1456	29.80	1.50
R3 IN	1108	1356	1456	29.15	~~3.00~~ 3.40

time	pbar
1120	30.18
1240	30.15
1501	30.09

TIME	O2	CO2
04/05/02 11:09	20.89	0.10
04/05/02 11:09	20.96	-0.02
04/05/02 11:10	20.98	-0.05
04/05/02 11:10	20.96	-0.05
04/05/02 11:10	20.90	0.00
04/05/02 11:10	20.94	-0.01
04/05/02 11:11	20.93	-0.02
04/05/02 11:11	20.73	-0.02
04/05/02 11:11	20.85	-0.03
04/05/02 11:11	20.90	-0.03
04/05/02 11:12	20.91	-0.05
04/05/02 11:12	20.91	-0.04
04/05/02 11:12	20.88	-0.03
04/05/02 11:12	20.81	-0.02
04/05/02 11:13	20.85	-0.07
04/05/02 11:13	20.87	-0.07
04/05/02 11:13	20.86	-0.05
04/05/02 11:13	20.86	-0.05
04/05/02 11:14	20.85	-0.04
04/05/02 11:14	20.85	-0.06
04/05/02 11:14	20.85	-0.06
04/05/02 11:14	20.85	-0.06
04/05/02 11:15	20.85	-0.07
04/05/02 11:15	20.85	-0.06
04/05/02 11:15	20.85	-0.07
04/05/02 11:15	20.84	-0.08
04/05/02 11:16	20.83	-0.08
04/05/02 11:16	20.83	-0.09
04/05/02 11:16	20.82	-0.08
04/05/02 11:16	20.82	-0.04
04/05/02 11:17	20.82	-0.06
04/05/02 11:17	20.81	-0.05
04/05/02 11:17	20.81	-0.04
04/05/02 11:17	20.80	-0.04
04/05/02 11:18	20.80	-0.04
04/05/02 11:18	20.80	-0.02
04/05/02 11:18	20.80	-0.03
04/05/02 11:18	20.79	-0.02
04/05/02 11:19	20.79	-0.01
04/05/02 11:19	20.79	-0.02
04/05/02 11:19	20.78	-0.03
04/05/02 11:19	20.78	-0.03
04/05/02 11:20	20.78	-0.03
04/05/02 11:20	20.77	-0.03
04/05/02 11:20	20.76	-0.04
04/05/02 11:20	20.77	-0.03
04/05/02 11:21	20.77	-0.04
04/05/02 11:21	20.77	-0.04
04/05/02 11:21	20.77	-0.03
04/05/02 11:21	20.76	-0.05
04/05/02 11:22	20.76	-0.07
04/05/02 11:22	20.76	-0.06
04/05/02 11:22	20.76	-0.06
04/05/02 11:22	20.76	-0.06
04/05/02 11:23	20.74	-0.05
04/05/02 11:23	20.75	-0.04
04/05/02 11:23	20.75	-0.03
04/05/02 11:23	20.75	-0.03
04/05/02 11:24	20.75	-0.03
04/05/02 11:24	20.74	-0.02
04/05/02 11:24	20.75	-0.02
04/05/02 11:24	20.75	-0.02
04/05/02 11:25	20.07	-0.02
04/05/02 11:25	7.43	-0.05
04/05/02 11:25	1.16	-0.07
04/05/02 11:25	0.33	-0.08
04/05/02 11:26	0.22	-0.07
04/05/02 11:26	0.20	-0.08
04/05/02 11:26	0.20	-0.08
04/05/02 11:26	0.21	-0.07
04/05/02 11:27	0.21	-0.07
04/05/02 11:27	0.21	-0.08
04/05/02 11:27	3.61	-0.07
04/05/02 11:27	15.20	-0.05
04/05/02 11:28	19.88	-0.04
04/05/02 11:28	20.60	-0.04
04/05/02 11:28	20.69	-0.03
04/05/02 11:28	20.70	-0.03
04/05/02 11:29	20.70	-0.02
04/05/02 11:29	20.69	-0.02
04/05/02 11:29	20.70	-0.03
04/05/02 11:29	20.69	-0.04
04/05/02 11:30	20.69	-0.04
04/05/02 11:30	20.70	-0.04
04/05/02 11:30	20.70	-0.04
04/05/02 11:30	20.71	-0.05
04/05/02 11:31	20.71	-0.04
04/05/02 11:31	20.71	-0.03
04/05/02 11:31	20.71	-0.02
04/05/02 11:31	20.31	-0.02
04/05/02 11:32	8.96	-0.04
04/05/02 11:32	1.50	-0.06

START RUN 1	O2	CO
04/05/02 11:32	0.44	-0.05
04/05/02 11:32	0.30	-0.05
04/05/02 11:33	0.28	-0.05
04/05/02 11:33	0.27	-0.06
04/05/02 11:33	0.18	-0.07
04/05/02 11:33	0.18	-0.07
04/05/02 11:34	0.18	-0.08
04/05/02 11:34	0.18	-0.09
04/05/02 11:34	0.18	-0.11
04/05/02 11:34	0.18	-0.13
04/05/02 11:35	0.18	-0.13
04/05/02 11:35	0.18	-0.18
04/05/02 11:35	0.19	-0.19
04/05/02 11:35	0.19	-0.19
04/05/02 11:36	0.19	-0.20
04/05/02 11:36	0.19	-0.15
04/05/02 11:36	0.19	-0.14
04/05/02 11:36	0.19	-0.13
04/05/02 11:37	0.19	-0.13
04/05/02 11:37	0.20	-0.12
04/05/02 11:37	0.20	-0.12
04/05/02 11:37	0.20	-0.12
04/05/02 11:38	0.20	-0.14
04/05/02 11:38	0.20	-0.13
04/05/02 11:38	0.20	-0.12
04/05/02 11:38	0.20	-0.11
04/05/02 11:39	0.20	-0.11
04/05/02 11:39	0.20	-0.11
04/05/02 11:39	0.21	-0.11
04/05/02 11:39	0.20	-0.11
04/05/02 11:40	0.21	-0.11
04/05/02 11:40	0.21	-0.10
04/05/02 11:40	0.20	-0.12
04/05/02 11:40	0.21	-0.12
04/05/02 11:41	0.20	-0.12
04/05/02 11:41	0.21	-0.10
04/05/02 11:41	0.21	-0.09
04/05/02 11:41	0.21	-0.07
04/05/02 11:42	0.20	-0.05
04/05/02 11:42	0.21	-0.05
04/05/02 11:42	0.20	-0.04
04/05/02 11:42	0.20	-0.04
04/05/02 11:43	0.20	-0.04
04/05/02 11:43	0.20	-0.04
04/05/02 11:43	0.20	-0.05
04/05/02 11:43	0.20	-0.05
04/05/02 11:44	0.20	-0.05
04/05/02 11:44	0.20	-0.05
04/05/02 11:44	0.20	-0.07
04/05/02 11:44	0.20	-0.06
04/05/02 11:45	0.20	-0.05
04/05/02 11:45	0.19	-0.06
04/05/02 11:45	0.20	-0.04
04/05/02 11:45	0.19	-0.07
04/05/02 11:46	0.19	-0.07
04/05/02 11:46	0.20	-0.10
04/05/02 11:46	0.19	-0.12
04/05/02 11:46	0.18	-0.11
04/05/02 11:47	0.18	-0.12
04/05/02 11:47	0.17	-0.13
04/05/02 11:47	0.17	-0.14
04/05/02 11:47	0.17	-0.17
04/05/02 11:48	0.16	-0.17
04/05/02 11:48	0.16	-0.17
04/05/02 11:48	0.16	-0.20
04/05/02 11:48	0.15	-0.21
04/05/02 11:49	0.15	-0.21
04/05/02 11:49	0.15	-0.21
04/05/02 11:49	0.15	-0.20
04/05/02 11:49	0.15	-0.21
04/05/02 11:50	0.14	0.06
04/05/02 11:50	0.14	0.00
04/05/02 11:50	0.14	0.04
04/05/02 11:50	0.14	0.06
04/05/02 11:51	0.14	0.07
04/05/02 11:51	0.13	0.03
04/05/02 11:51	0.13	0.02
04/05/02 11:51	0.12	0.02
04/05/02 11:52	0.12	0.01
04/05/02 11:52	0.11	0.03
04/05/02 11:52	0.11	0.03
04/05/02 11:52	0.10	0.01
04/05/02 11:53	0.10	0.00
04/05/02 11:53	0.09	0.00
04/05/02 11:53	0.09	0.00
04/05/02 11:53	0.09	0.00
04/05/02 11:54	0.08	0.00
04/05/02 11:54	0.08	-0.01
04/05/02 11:54	0.08	-0.01
04/05/02 11:54	0.08	-0.01
04/05/02 11:55	0.08	0.00
04/05/02 11:55	0.07	0.00

04/05/02 11:55	0.07	0.02
04/05/02 11:55	0.06	0.03
04/05/02 11:56	0.06	0.04
04/05/02 11:56	0.06	0.01
04/05/02 11:56	0.06	0.03
04/05/02 11:56	0.05	0.04
04/05/02 11:57	0.05	0.04
04/05/02 11:57	0.04	0.06
04/05/02 11:57	0.04	0.07
04/05/02 11:57	0.03	0.07
04/05/02 11:58	0.03	0.07
04/05/02 11:58	0.03	0.09
04/05/02 11:58	0.02	0.07
04/05/02 11:58	0.02	0.07
04/05/02 11:59	0.02	0.07
04/05/02 11:59	0.01	0.08
04/05/02 11:59	0.01	0.08
04/05/02 11:59	0.01	0.08
04/05/02 12:00	0.01	0.08
04/05/02 12:00	0.01	0.08
04/05/02 12:00	0.01	0.08
04/05/02 12:00	0.01	0.08
04/05/02 12:01	0.01	0.08
04/05/02 12:01	0.00	0.08
04/05/02 12:01	0.00	0.08
04/05/02 12:01	0.00	0.08
04/05/02 12:02	-0.01	0.07
04/05/02 12:02	-0.01	0.06
04/05/02 12:02	-0.01	0.07
04/05/02 12:02	-0.01	0.06
04/05/02 12:03	-0.01	0.07
04/05/02 12:03	-0.02	0.06
04/05/02 12:03	-0.01	0.07
04/05/02 12:03	-0.01	0.06
04/05/02 12:04	-0.01	0.07
04/05/02 12:04	-0.01	0.07
04/05/02 12:04	-0.01	0.07
04/05/02 12:04	-0.01	0.07
04/05/02 12:05	-0.01	0.08
04/05/02 12:05	-0.01	0.11
04/05/02 12:05	-0.01	0.11
04/05/02 12:05	-0.01	0.12
04/05/02 12:06	-0.01	0.13
04/05/02 12:06	-0.01	0.13
04/05/02 12:06	0.00	0.13
04/05/02 12:06	-0.01	0.15
04/05/02 12:07	-0.01	0.15
04/05/02 12:07	-0.01	0.13
04/05/02 12:07	-0.01	0.14
04/05/02 12:07	-0.01	0.15
04/05/02 12:08	-0.01	0.15
04/05/02 12:08	-0.01	0.16
04/05/02 12:08	-0.01	0.16
04/05/02 12:08	-0.02	0.16
04/05/02 12:09	-0.02	0.17
04/05/02 12:09	-0.02	0.17
04/05/02 12:09	-0.02	0.17
04/05/02 12:09	-0.02	0.17
04/05/02 12:10	-0.02	0.17
04/05/02 12:10	-0.02	0.16
04/05/02 12:10	-0.03	0.16
04/05/02 12:10	-0.03	0.16
04/05/02 12:11	-0.03	0.16
04/05/02 12:11	-0.03	0.16
04/05/02 12:11	-0.04	0.17
04/05/02 12:11	-0.04	0.17
04/05/02 12:12	-0.04	0.16
04/05/02 12:12	-0.04	0.17
04/05/02 12:12	-0.04	0.17
04/05/02 12:12	-0.04	0.17
04/05/02 12:13	-0.04	0.17
04/05/02 12:13	-0.05	0.19
04/05/02 12:13	-0.05	0.18
04/05/02 12:13	-0.05	0.18
04/05/02 12:14	-0.06	0.18
04/05/02 12:14	-0.06	0.18
04/05/02 12:14	-0.06	0.18
04/05/02 12:14	-0.06	0.19
04/05/02 12:15	-0.06	0.18
04/05/02 12:15	-0.06	0.18
04/05/02 12:15	-0.06	0.18
04/05/02 12:15	-0.06	0.18
04/05/02 12:16	-0.06	0.19
04/05/02 12:16	-0.06	0.19
04/05/02 12:16	-0.06	0.19
04/05/02 12:16	-0.06	0.19
04/05/02 12:17	-0.06	0.19
04/05/02 12:17	-0.06	0.19
04/05/02 12:17	-0.05	0.19
04/05/02 12:17	-0.05	0.20
04/05/02 12:18	-0.05	0.20
04/05/02 12:18	-0.06	0.20
04/05/02 12:18	-0.06	0.19

04/05/02 12:18	-0.05	0.19
04/05/02 12:19	-0.06	0.19
04/05/02 12:19	-0.06	0.20
04/05/02 12:19	-0.06	0.19
04/05/02 12:19	-0.06	0.19
04/05/02 12:20	-0.06	0.20
04/05/02 12:20	-0.07	0.20
04/05/02 12:20	-0.07	0.19
04/05/02 12:20	-0.07	0.20
04/05/02 12:21	-0.07	0.19
04/05/02 12:21	-0.07	0.19
04/05/02 12:21	-0.07	0.16
04/05/02 12:21	-0.07	0.16
04/05/02 12:22	-0.07	0.16
04/05/02 12:22	-0.07	0.16
04/05/02 12:22	-0.06	0.14
04/05/02 12:22	-0.06	0.14
04/05/02 12:23	-0.06	0.14
04/05/02 12:23	-0.06	0.14
04/05/02 12:23	-0.06	0.14
04/05/02 12:23	-0.06	0.14
04/05/02 12:24	-0.06	0.15
04/05/02 12:24	-0.05	0.14
04/05/02 12:24	-0.05	0.14
04/05/02 12:24	-0.05	0.15
04/05/02 12:25	-0.05	0.14
04/05/02 12:25	-0.05	0.14
04/05/02 12:25	-0.04	0.14
04/05/02 12:25	-0.04	0.14
04/05/02 12:26	-0.04	0.14
04/05/02 12:26	-0.04	0.15
04/05/02 12:26	-0.04	0.14
04/05/02 12:26	-0.05	0.16
04/05/02 12:27	-0.05	0.17
04/05/02 12:27	-0.05	0.16
04/05/02 12:27	-0.05	0.17
04/05/02 12:27	-0.05	0.18
04/05/02 12:28	-0.05	0.18
04/05/02 12:28	-0.05	0.18
04/05/02 12:28	-0.05	0.18
04/05/02 12:28	-0.05	0.18
04/05/02 12:29	-0.05	0.18
04/05/02 12:29	-0.06	0.18
04/05/02 12:29	-0.06	0.18
04/05/02 12:29	-0.06	0.18
04/05/02 12:30	-0.07	0.19
04/05/02 12:30	-0.07	0.19
04/05/02 12:30	-0.07	0.19
04/05/02 12:30	0.04	0.20
04/05/02 12:31	0.03	0.20
04/05/02 12:31	0.03	0.20
04/05/02 12:31	0.03	0.21
04/05/02 12:31	0.03	0.20
04/05/02 12:32	0.03	0.20
04/05/02 12:32	0.02	0.20
AVG. R 1	**0.05**	**0.06**
04/05/02 12:32	11.05	0.23
04/05/02 12:32	18.68	0.24
04/05/02 12:33	20.37	0.24
04/05/02 12:33	20.57	0.24
04/05/02 12:33	14.08	0.23
04/05/02 12:33	2.84	0.21
04/05/02 12:34	0.32	0.20
04/05/02 12:34	0.01	0.20
04/05/02 12:34	-0.04	0.20
04/05/02 12:34	0.00	0.20
04/05/02 12:35	9.38	0.21
04/05/02 12:35	17.75	0.23
04/05/02 12:35	20.11	0.24
04/05/02 12:35	20.52	0.23
04/05/02 12:36	20.58	0.23
04/05/02 12:36	20.59	0.24
04/05/02 12:36	20.55	0.22
04/05/02 12:36	20.59	0.22
04/05/02 12:37	20.61	0.23
04/05/02 12:37	20.61	0.22
04/05/02 12:37	20.62	0.20
04/05/02 12:37	20.62	0.19
04/05/02 12:38	20.62	0.18
04/05/02 12:38	14.15	0.16
04/05/02 12:38	3.00	0.14
04/05/02 12:38	0.38	0.13
04/05/02 12:39	0.04	0.13

START RUN 2	O2	CO
04/05/02 12:39	-0.01	0.12
04/05/02 12:39	-0.02	0.14
04/05/02 12:39	-0.02	0.13
04/05/02 12:40	-0.02	0.13
04/05/02 12:40	-0.02	0.14
04/05/02 12:40	-0.01	0.13
04/05/02 12:40	-0.01	0.14
04/05/02 12:41	-0.01	0.14
04/05/02 12:41	0.00	0.14

04/05/02 12:41	0.00	0.14
04/05/02 12:41	0.00	0.14
04/05/02 12:42	0.01	0.15
04/05/02 12:42	0.01	0.14
04/05/02 12:42	0.01	0.14
04/05/02 12:42	0.01	0.15
04/05/02 12:43	0.02	0.15
04/05/02 12:43	0.02	0.15
04/05/02 12:43	0.02	0.14
04/05/02 12:43	0.02	0.14
04/05/02 12:44	0.02	0.14
04/05/02 12:44	0.03	0.14
04/05/02 12:44	0.03	0.14
04/05/02 12:44	0.03	0.14
04/05/02 12:45	0.03	0.14
04/05/02 12:45	0.03	0.13
04/05/02 12:45	0.04	0.14
04/05/02 12:45	0.03	0.14
04/05/02 12:46	0.04	0.14
04/05/02 12:46	0.04	0.14
04/05/02 12:46	0.04	0.14
04/05/02 12:46	0.04	0.14
04/05/02 12:47	0.04	0.14
04/05/02 12:47	0.04	0.14
04/05/02 12:47	0.04	0.14
04/05/02 12:47	0.04	0.14
04/05/02 12:48	0.05	0.14
04/05/02 12:48	0.04	0.14
04/05/02 12:48	0.04	0.14
04/05/02 12:48	0.04	0.14
04/05/02 12:49	0.04	0.14
04/05/02 12:49	0.05	0.15
04/05/02 12:49	0.04	0.15
04/05/02 12:49	0.05	0.15
04/05/02 12:50	0.05	0.15
04/05/02 12:50	0.05	0.16
04/05/02 12:50	0.05	0.16
04/05/02 12:50	0.05	0.15
04/05/02 12:51	0.05	0.15
04/05/02 12:51	0.06	0.15
04/05/02 12:51	0.06	0.14
04/05/02 12:51	0.06	0.15
04/05/02 12:52	0.07	0.15
04/05/02 12:52	0.07	0.14
04/05/02 12:52	0.07	0.14
04/05/02 12:52	0.08	0.14
04/05/02 12:53	0.08	0.14
04/05/02 12:53	0.08	0.15
04/05/02 12:53	0.08	0.15
04/05/02 12:53	0.08	0.16
04/05/02 12:54	0.08	0.15
04/05/02 12:54	0.09	0.14
04/05/02 12:54	0.09	0.14
04/05/02 12:54	0.09	0.15
04/05/02 12:55	0.10	0.15
04/05/02 12:55	0.10	0.15
04/05/02 12:55	0.10	0.15
04/05/02 12:55	0.11	0.15
04/05/02 12:56	0.11	0.15
04/05/02 12:56	0.11	0.15
04/05/02 12:56	0.11	0.15
04/05/02 12:56	0.11	0.15
04/05/02 12:57	0.11	0.15
04/05/02 12:57	0.11	0.15
04/05/02 12:57	0.11	0.15
04/05/02 12:57	0.11	0.15
04/05/02 12:58	0.11	0.15
04/05/02 12:58	0.11	0.15
04/05/02 12:58	0.11	0.15
04/05/02 12:58	0.12	0.15
04/05/02 12:59	0.12	0.15
04/05/02 12:59	0.12	0.14
04/05/02 12:59	0.12	0.14
04/05/02 12:59	0.12	0.14
04/05/02 13:00	0.12	0.14
04/05/02 13:00	0.13	0.14
04/05/02 13:00	0.13	0.14
04/05/02 13:00	0.13	0.15
04/05/02 13:01	0.13	0.15
04/05/02 13:01	0.13	0.14
04/05/02 13:01	0.14	0.14
04/05/02 13:01	0.14	0.15
04/05/02 13:02	0.14	0.14
04/05/02 13:02	0.15	0.14
04/05/02 13:02	0.15	0.14
04/05/02 13:02	0.15	0.14
04/05/02 13:03	0.15	0.14
04/05/02 13:03	0.16	0.14
04/05/02 13:03	0.16	0.14
04/05/02 13:03	0.16	0.13
04/05/02 13:04	0.16	0.14
04/05/02 13:04	0.16	0.13
04/05/02 13:04	0.16	0.13

04/05/02 13:04	0.16	0.14
04/05/02 13:05	0.17	0.14
04/05/02 13:05	0.17	0.13
04/05/02 13:05	0.17	0.12
04/05/02 13:05	0.17	0.13
04/05/02 13:06	0.17	0.12
04/05/02 13:06	0.17	0.13
04/05/02 13:06	0.17	0.13
04/05/02 13:06	0.18	0.12
04/05/02 13:07	0.18	0.12
04/05/02 13:07	0.19	0.12
04/05/02 13:07	0.19	0.12
04/05/02 13:07	0.19	0.12
04/05/02 13:08	0.19	0.12
04/05/02 13:08	0.19	0.12
04/05/02 13:08	0.19	0.12
04/05/02 13:08	0.20	0.12
04/05/02 13:09	0.20	0.12
04/05/02 13:09	0.20	0.12
04/05/02 13:09	0.20	0.11
04/05/02 13:09	0.20	0.12
04/05/02 13:10	0.20	0.12
04/05/02 13:10	0.20	0.13
04/05/02 13:10	0.20	0.16
04/05/02 13:10	0.20	0.17
04/05/02 13:11	0.20	0.17
04/05/02 13:11	0.20	0.17
04/05/02 13:11	0.21	0.17
04/05/02 13:11	0.21	0.17
04/05/02 13:12	0.21	0.17
04/05/02 13:12	0.21	0.17
04/05/02 13:12	0.21	0.17
04/05/02 13:12	0.21	0.17
04/05/02 13:13	0.21	0.17
04/05/02 13:13	0.21	0.17
04/05/02 13:13	0.22	0.17
04/05/02 13:13	0.22	0.17
04/05/02 13:14	0.22	0.16
04/05/02 13:14	0.22	0.16
04/05/02 13:14	0.22	0.15
04/05/02 13:14	0.22	0.16
04/05/02 13:15	0.22	0.16
04/05/02 13:15	0.23	0.15
04/05/02 13:15	0.23	0.15
04/05/02 13:15	0.23	0.16
04/05/02 13:16	0.23	0.15
04/05/02 13:16	0.23	0.15
04/05/02 13:16	0.23	0.15
04/05/02 13:16	0.23	0.15
04/05/02 13:17	0.23	0.16
04/05/02 13:17	0.23	0.16
04/05/02 13:17	0.23	0.15
04/05/02 13:17	0.23	0.16
04/05/02 13:18	0.23	0.16
04/05/02 13:18	0.23	0.16
04/05/02 13:18	0.23	0.15
04/05/02 13:18	0.23	0.16
04/05/02 13:19	0.23	0.16
04/05/02 13:19	0.23	0.16
04/05/02 13:19	0.23	0.16
04/05/02 13:19	0.23	0.16
04/05/02 13:20	0.23	0.16
04/05/02 13:20	0.23	0.17
04/05/02 13:20	0.23	0.17
04/05/02 13:20	0.23	0.17
04/05/02 13:21	0.24	0.17
04/05/02 13:21	0.24	0.16
04/05/02 13:21	0.24	0.17
04/05/02 13:21	0.24	0.17
04/05/02 13:22	0.24	0.16
04/05/02 13:22	0.24	0.16
04/05/02 13:22	0.25	0.16
04/05/02 13:22	0.25	0.16
04/05/02 13:23	0.25	0.16
04/05/02 13:23	0.25	0.15
04/05/02 13:23	0.25	0.16
04/05/02 13:23	0.25	0.17
04/05/02 13:24	0.25	0.17
04/05/02 13:24	0.25	0.17
04/05/02 13:24	0.24	0.17
04/05/02 13:24	0.24	0.17
04/05/02 13:25	0.24	0.17
04/05/02 13:25	0.25	0.18
04/05/02 13:25	0.24	0.17
04/05/02 13:25	0.24	0.17
04/05/02 13:26	0.24	0.18
04/05/02 13:26	0.24	0.18
04/05/02 13:26	0.24	0.17
04/05/02 13:26	0.24	0.17
04/05/02 13:27	0.24	0.18
04/05/02 13:27	0.24	0.17
04/05/02 13:27	0.23	0.17
04/05/02 13:27	0.24	0.18

04/05/02 13:28	0.24	0.18
04/05/02 13:28	0.24	0.17
04/05/02 13:28	0.24	0.17
04/05/02 13:28	0.24	0.16
04/05/02 13:29	0.24	0.16
04/05/02 13:29	0.24	0.16
04/05/02 13:29	0.24	0.16
04/05/02 13:29	0.24	0.16
04/05/02 13:30	0.24	0.16
04/05/02 13:30	0.24	0.16
04/05/02 13:30	0.24	0.16
04/05/02 13:30	0.24	0.16
04/05/02 13:31	0.24	0.16
04/05/02 13:31	0.24	0.16
04/05/02 13:31	0.24	0.17
04/05/02 13:31	0.24	0.18
04/05/02 13:32	0.24	0.18
04/05/02 13:32	0.24	0.18
04/05/02 13:32	0.24	0.18
04/05/02 13:32	0.24	0.18
04/05/02 13:33	0.23	0.18
04/05/02 13:33	0.23	0.18
04/05/02 13:33	0.23	0.18
04/05/02 13:33	0.23	0.19
04/05/02 13:34	0.23	0.19
04/05/02 13:34	0.23	0.19
04/05/02 13:34	0.23	0.20
04/05/02 13:34	0.23	0.23
04/05/02 13:35	0.23	0.24
04/05/02 13:35	0.23	0.24
04/05/02 13:35	0.23	0.25
04/05/02 13:35	0.23	0.25
04/05/02 13:36	0.23	0.25
04/05/02 13:36	0.23	0.25
04/05/02 13:36	0.23	0.25
04/05/02 13:36	0.23	0.25
04/05/02 13:37	0.22	0.26
04/05/02 13:37	0.22	0.26
04/05/02 13:37	0.22	0.25
04/05/02 13:37	0.22	0.26
04/05/02 13:38	0.22	0.26
04/05/02 13:38	0.22	0.26
04/05/02 13:38	0.22	0.26
04/05/02 13:38	0.22	0.25
04/05/02 13:39	0.22	0.25
AVG. R 2	**0.16**	**0.16**
04/05/02 13:39	20.61	0.26
04/05/02 13:39	20.61	0.26
04/05/02 13:39	20.62	0.25
04/05/02 13:40	20.62	0.25
04/05/02 13:40	20.62	0.25
04/05/02 13:40	20.63	0.25
04/05/02 13:40	20.62	0.25
04/05/02 13:41	20.62	0.25
04/05/02 13:41	20.63	0.24
04/05/02 13:41	20.62	0.25
04/05/02 13:41	20.62	0.25
04/05/02 13:42	20.62	0.25
04/05/02 13:42	20.63	0.25
04/05/02 13:42	20.63	0.25
04/05/02 13:42	20.63	0.25
04/05/02 13:43	20.62	0.26
04/05/02 13:43	20.62	0.26
04/05/02 13:43	20.63	0.26
04/05/02 13:43	20.63	0.25
04/05/02 13:44	20.63	0.26
04/05/02 13:44	20.61	0.26
04/05/02 13:44	20.64	0.26
04/05/02 13:44	20.63	0.26
04/05/02 13:45	20.63	0.26
04/05/02 13:45	20.63	0.26
04/05/02 13:45	20.62	0.26
04/05/02 13:45	20.61	0.26
04/05/02 13:46	20.62	0.26
04/05/02 13:46	20.62	0.26
04/05/02 13:46	20.62	0.27
04/05/02 13:46	20.63	0.26
04/05/02 13:47	20.63	0.26
04/05/02 13:47	20.63	0.26
04/05/02 13:47	20.62	0.26
04/05/02 13:47	20.63	0.26
04/05/02 13:48	20.63	0.27
04/05/02 13:48	20.62	0.27
04/05/02 13:48	20.62	0.26
04/05/02 13:48	20.62	0.27
04/05/02 13:49	20.62	0.27
04/05/02 13:49	20.61	0.27
04/05/02 13:49	20.62	0.27
04/05/02 13:49	20.61	0.26
04/05/02 13:50	20.61	0.24
04/05/02 13:50	20.61	0.24
04/05/02 13:50	20.33	0.23
04/05/02 13:50	19.89	0.22

04/05/02 13:51	20.44	0.21
04/05/02 13:51	20.58	0.20
04/05/02 13:51	20.61	0.18
04/05/02 13:51	20.62	0.16
04/05/02 13:52	20.61	0.17
04/05/02 13:52	20.61	0.17
04/05/02 13:52	20.60	0.16
04/05/02 13:52	20.60	0.16
04/05/02 13:53	20.92	0.17
04/05/02 13:53	20.91	0.17
04/05/02 13:53	20.93	0.17
04/05/02 13:53	20.92	0.17
04/05/02 13:54	20.85	0.17
04/05/02 13:54	20.84	0.17
04/05/02 13:54	20.85	0.17
04/05/02 13:54	20.85	0.17
04/05/02 13:55	20.44	0.17
04/05/02 13:55	9.44	0.15
04/05/02 13:55	1.41	0.13
04/05/02 13:55	0.21	0.13
04/05/02 13:56	0.01	0.12
04/05/02 13:56	-0.03	0.12
04/05/02 13:56	0.03	0.12
04/05/02 13:56	5.66	0.13
04/05/02 13:57	4.56	0.13
04/05/02 13:57	0.77	0.13
04/05/02 13:57	0.08	0.12
04/05/02 13:57	-0.02	0.12

START RUN 3	O2	CO
04/05/02 13:58	-0.04	0.12
04/05/02 13:58	-0.04	0.12
04/05/02 13:58	-0.04	0.13
04/05/02 13:58	-0.04	0.12
04/05/02 13:59	-0.04	0.12
04/05/02 13:59	-0.04	0.13
04/05/02 13:59	-0.04	0.12
04/05/02 13:59	-0.03	0.12
04/05/02 14:00	-0.03	0.12
04/05/02 14:00	-0.03	0.13
04/05/02 14:00	-0.03	0.13
04/05/02 14:00	-0.03	0.12
04/05/02 14:01	-0.03	0.12
04/05/02 14:01	-0.03	0.12
04/05/02 14:01	-0.03	0.12
04/05/02 14:01	-0.03	0.12
04/05/02 14:02	-0.03	0.13
04/05/02 14:02	-0.03	0.13
04/05/02 14:02	-0.03	0.14
04/05/02 14:02	-0.03	0.13
04/05/02 14:03	-0.03	0.14
04/05/02 14:03	-0.03	0.14
04/05/02 14:03	-0.03	0.14
04/05/02 14:03	-0.03	0.14
04/05/02 14:04	-0.03	0.14
04/05/02 14:04	-0.03	0.14
04/05/02 14:04	-0.03	0.14
04/05/02 14:04	-0.03	0.14
04/05/02 14:05	-0.02	0.14
04/05/02 14:05	-0.03	0.14
04/05/02 14:05	-0.03	0.14
04/05/02 14:05	-0.03	0.14
04/05/02 14:06	-0.02	0.15
04/05/02 14:06	-0.02	0.18
04/05/02 14:06	-0.02	0.18
04/05/02 14:06	-0.02	0.18
04/05/02 14:07	-0.02	0.18
04/05/02 14:07	-0.02	0.19
04/05/02 14:07	-0.03	0.19
04/05/02 14:07	-0.03	0.19
04/05/02 14:08	-0.03	0.19
04/05/02 14:08	-0.02	0.19
04/05/02 14:08	-0.02	0.19
04/05/02 14:08	-0.02	0.19
04/05/02 14:09	-0.02	0.19
04/05/02 14:09	-0.03	0.19
04/05/02 14:09	-0.02	0.20
04/05/02 14:09	-0.03	0.19
04/05/02 14:10	-0.03	0.19
04/05/02 14:10	-0.03	0.19
04/05/02 14:10	-0.03	0.19
04/05/02 14:10	-0.03	0.19
04/05/02 14:11	-0.03	0.19
04/05/02 14:11	-0.03	0.20
04/05/02 14:11	-0.03	0.20
04/05/02 14:11	-0.03	0.19
04/05/02 14:12	-0.03	0.19
04/05/02 14:12	-0.04	0.19
04/05/02 14:12	-0.03	0.19
04/05/02 14:12	-0.04	0.19
04/05/02 14:13	-0.04	0.19
04/05/02 14:13	-0.04	0.19
04/05/02 14:13	-0.04	0.19
04/05/02 14:13	-0.04	0.19

04/05/02 14:14	-0.04	0.19
04/05/02 14:14	-0.04	0.19
04/05/02 14:14	-0.04	0.19
04/05/02 14:14	-0.04	0.19
04/05/02 14:15	-0.04	0.19
04/05/02 14:15	-0.04	0.19
04/05/02 14:15	-0.04	0.19
04/05/02 14:15	-0.04	0.19
04/05/02 14:16	-0.04	0.19
04/05/02 14:16	-0.04	0.19
04/05/02 14:16	-0.04	0.19
04/05/02 14:16	-0.05	0.19
04/05/02 14:17	-0.05	0.19
04/05/02 14:17	-0.05	0.19
04/05/02 14:17	-0.05	0.20
04/05/02 14:17	-0.05	0.19
04/05/02 14:18	-0.05	0.19
04/05/02 14:18	-0.05	0.18
04/05/02 14:18	-0.05	0.19
04/05/02 14:18	-0.05	0.19
04/05/02 14:19	-0.05	0.19
04/05/02 14:19	-0.05	0.19
04/05/02 14:19	-0.05	0.19
04/05/02 14:19	-0.05	0.19
04/05/02 14:20	-0.05	0.19
04/05/02 14:20	-0.05	0.19
04/05/02 14:20	-0.05	0.19
04/05/02 14:20	-0.05	0.19
04/05/02 14:21	-0.05	0.19
04/05/02 14:21	-0.05	0.20
04/05/02 14:21	-0.05	0.19
04/05/02 14:21	-0.05	0.19
04/05/02 14:22	-0.05	0.19
04/05/02 14:22	-0.05	0.19
04/05/02 14:22	-0.05	0.19
04/05/02 14:22	-0.05	0.19
04/05/02 14:23	-0.05	0.19
04/05/02 14:23	-0.05	0.19
04/05/02 14:23	-0.05	0.19
04/05/02 14:23	-0.06	0.19
04/05/02 14:24	-0.06	0.19
04/05/02 14:24	-0.06	0.19
04/05/02 14:24	-0.06	0.19
04/05/02 14:24	-0.06	0.19
04/05/02 14:25	-0.06	0.19
04/05/02 14:25	-0.06	0.19
04/05/02 14:25	-0.06	0.19
04/05/02 14:25	-0.06	0.19
04/05/02 14:26	-0.06	0.19
04/05/02 14:26	-0.06	0.19
04/05/02 14:26	-0.06	0.19
04/05/02 14:26	-0.06	0.19
04/05/02 14:27	-0.06	0.19
04/05/02 14:27	-0.06	0.20
04/05/02 14:27	-0.06	0.19
04/05/02 14:27	-0.05	0.20
04/05/02 14:28	-0.05	0.20
04/05/02 14:28	-0.05	0.20
04/05/02 14:28	-0.05	0.19
04/05/02 14:28	-0.05	0.19
04/05/02 14:29	-0.06	0.19
04/05/02 14:29	-0.05	0.20
04/05/02 14:29	-0.05	0.19
04/05/02 14:29	-0.05	0.20
04/05/02 14:30	-0.05	0.21
04/05/02 14:30	-0.05	0.20
04/05/02 14:30	-0.05	0.20
04/05/02 14:30	-0.04	0.20
04/05/02 14:31	-0.04	0.21
04/05/02 14:31	-0.04	0.20
04/05/02 14:31	-0.04	0.20
04/05/02 14:31	-0.04	0.20
04/05/02 14:32	-0.04	0.20
04/05/02 14:32	-0.03	0.22
04/05/02 14:32	-0.03	0.22
04/05/02 14:32	-0.03	0.21
04/05/02 14:33	-0.03	0.21
04/05/02 14:33	-0.03	0.21
04/05/02 14:33	-0.03	0.21
04/05/02 14:33	-0.03	0.22
04/05/02 14:34	-0.03	0.21
04/05/02 14:34	-0.03	0.21
04/05/02 14:34	-0.03	0.21
04/05/02 14:34	-0.03	0.20
04/05/02 14:35	-0.02	0.22
04/05/02 14:35	-0.03	0.22
04/05/02 14:35	-0.02	0.22
04/05/02 14:35	-0.02	0.23
04/05/02 14:36	-0.02	0.24
04/05/02 14:36	-0.02	0.24
04/05/02 14:36	-0.02	0.24
04/05/02 14:36	-0.01	0.24
04/05/02 14:37	-0.01	0.24

04/05/02 14:37	-0.01	0.24
04/05/02 14:37	0.00	0.24
04/05/02 14:37	0.00	0.24
04/05/02 14:38	0.01	0.24
04/05/02 14:38	0.01	0.24
04/05/02 14:38	0.01	0.24
04/05/02 14:38	0.02	0.24
04/05/02 14:39	0.02	0.24
04/05/02 14:39	0.03	0.24
04/05/02 14:39	0.03	0.24
04/05/02 14:39	0.03	0.24
04/05/02 14:40	0.04	0.24
04/05/02 14:40	0.04	0.24
04/05/02 14:40	0.04	0.24
04/05/02 14:40	0.05	0.24
04/05/02 14:41	0.05	0.24
04/05/02 14:41	0.05	0.24
04/05/02 14:41	0.06	0.24
04/05/02 14:41	0.06	0.24
04/05/02 14:42	0.06	0.24
04/05/02 14:42	0.07	0.24
04/05/02 14:42	0.07	0.24
04/05/02 14:42	0.08	0.25
04/05/02 14:43	0.08	0.24
04/05/02 14:43	0.08	0.24
04/05/02 14:43	0.09	0.24
04/05/02 14:43	0.09	0.24
04/05/02 14:44	0.09	0.24
04/05/02 14:44	0.10	0.24
04/05/02 14:44	0.10	0.24
04/05/02 14:44	0.10	0.23
04/05/02 14:45	0.10	0.24
04/05/02 14:45	0.11	0.23
04/05/02 14:45	0.11	0.24
04/05/02 14:45	0.11	0.24
04/05/02 14:46	0.12	0.24
04/05/02 14:46	0.12	0.24
04/05/02 14:46	0.12	0.24
04/05/02 14:46	0.13	0.24
04/05/02 14:47	0.13	0.24
04/05/02 14:47	0.14	0.24
04/05/02 14:47	0.14	0.24
04/05/02 14:47	0.15	0.24
04/05/02 14:48	0.15	0.24
04/05/02 14:48	0.15	0.24
04/05/02 14:48	0.16	0.24
04/05/02 14:48	0.16	0.24
04/05/02 14:49	0.16	0.24
04/05/02 14:49	0.17	0.24
04/05/02 14:49	0.17	0.24
04/05/02 14:49	0.17	0.24
04/05/02 14:50	0.18	0.23
04/05/02 14:50	0.18	0.24
04/05/02 14:50	0.18	0.24
04/05/02 14:50	0.18	0.24
04/05/02 14:51	0.19	0.23
04/05/02 14:51	0.19	0.24
04/05/02 14:51	0.19	0.24
04/05/02 14:51	0.19	0.23
04/05/02 14:52	0.19	0.24
04/05/02 14:52	0.19	0.24
04/05/02 14:52	0.19	0.24
04/05/02 14:52	0.20	0.24
04/05/02 14:53	0.20	0.24
04/05/02 14:53	0.20	0.24
04/05/02 14:53	0.20	0.24
04/05/02 14:53	0.20	0.24
04/05/02 14:54	0.20	0.24
04/05/02 14:54	0.21	0.24
04/05/02 14:54	0.21	0.23
04/05/02 14:54	0.21	0.24
04/05/02 14:55	0.20	0.24
04/05/02 14:55	0.21	0.24
04/05/02 14:55	0.21	0.24
04/05/02 14:55	0.21	0.24
04/05/02 14:56	0.21	0.24
04/05/02 14:56	0.22	0.24
04/05/02 14:56	0.22	0.24
04/05/02 14:56	0.21	0.23
04/05/02 14:57	0.21	0.24
04/05/02 14:57	0.22	0.24
04/05/02 14:57	0.22	0.24
04/05/02 14:57	0.22	0.23
AVG. R	**0.02**	**0.20**
04/05/02 14:58	1.23	0.24
04/05/02 14:58	11.96	0.26
04/05/02 14:58	18.83	0.27
04/05/02 14:58	20.18	0.27
04/05/02 14:59	20.65	0.27
04/05/02 14:59	20.75	0.28
04/05/02 14:59	20.77	0.28
04/05/02 14:59	20.77	0.28
04/05/02 15:00	20.78	0.28

04/05/02 15:00	20.79	0.28
04/05/02 15:00	20.79	0.28
04/05/02 15:00	20.80	0.28
04/05/02 15:01	20.80	0.27
04/05/02 15:01	20.81	0.28
04/05/02 15:01	20.80	0.28
04/05/02 15:01	20.81	0.28
04/05/02 15:02	20.81	0.28
04/05/02 15:02	20.82	0.29
04/05/02 15:02	20.81	0.29
04/05/02 15:02	20.82	0.29
04/05/02 15:03	20.82	0.29
04/05/02 15:03	20.82	0.29
04/05/02 15:03	20.82	0.29
04/05/02 15:03	20.80	0.30
04/05/02 15:04	20.79	0.30
04/05/02 15:04	20.81	0.30
04/05/02 15:04	20.79	0.29
04/05/02 15:04	20.82	0.29
04/05/02 15:05	20.83	0.29
04/05/02 15:05	20.83	0.29
04/05/02 15:05	20.83	0.30
04/05/02 15:05	20.83	0.29
04/05/02 15:06	20.83	0.29
04/05/02 15:06	20.84	0.29
04/05/02 15:06	20.82	0.29
04/05/02 15:06	20.83	0.30
04/05/02 15:07	20.84	0.29
04/05/02 15:07	20.83	0.30
04/05/02 15:07	20.83	0.30
04/05/02 15:07	20.83	0.29
04/05/02 15:08	20.83	0.29
04/05/02 15:08	20.83	0.30
04/05/02 15:08	20.84	0.29
04/05/02 15:08	20.84	0.29
04/05/02 15:09	20.84	0.30
04/05/02 15:09	20.84	0.28
04/05/02 15:09	20.83	0.29
04/05/02 15:09	20.84	0.28
04/05/02 15:10	20.83	0.28
04/05/02 15:10	16.75	0.28
04/05/02 15:10	4.62	0.26
04/05/02 15:10	0.64	0.26
04/05/02 15:11	0.08	0.25
04/05/02 15:11	-0.01	0.25
04/05/02 15:11	-0.03	0.25
04/05/02 15:11	-0.04	0.24
04/05/02 15:12	-0.04	0.25
04/05/02 15:12	-0.04	0.25
04/05/02 15:12	-0.05	0.25
04/05/02 15:12	-0.04	0.25
04/05/02 15:13	4.40	0.26
04/05/02 15:13	15.45	0.29
04/05/02 15:13	19.80	0.30
04/05/02 15:13	20.55	0.31
04/05/02 15:14	20.75	0.31
04/05/02 15:14	20.81	0.31
04/05/02 15:14	20.81	0.31
04/05/02 15:14	20.82	0.30
04/05/02 15:15	20.83	0.30
04/05/02 15:15	20.83	0.32
04/05/02 15:15	20.85	0.31

APPENDIX B

WASTE WATER REPORT

(BONNER)

BONNER ANALYTICAL TESTING COMPANY
2703 Oak Grove Road
Hattiesburg, MS 39402
(601) 264-2854

Client: Hercules

File Number: BT75939
Project Number: 003827
Collected By: MGJ
Sample Type: Water

Sample Date/Time: 04/04/02 @ 1820
Date/Time Received: ~~04/05/02 @ 1600~~
Date/Time Begun: 04/17/02 @ 2013
Analyst: MGJ

Trip Blank

Analytical Parameter	Results ug/L, ppb	MDL ug/L, ppb
Ethylene Oxide	ND	20.00

Surrogate Recoveries: (%)

1,2-Dichloroethane-d4	98.9
Dibromofluoromethane	100.4

Method 8260B, SW - 846.

* Total BTEX is the sum of the Benzene, Toluene, Ethylbenzene and Xylenes concentrations.

MDL = Method Detection Limit
ND = Not Detected

Certified by: _____
Michael S. Bonner, Ph.D
BONNER ANALYTICAL TESTING COMPANY

BONNER ANALYTICAL TESTING COMPANY
2703 Oak Grove Road
Hattiesburg, MS 39402
(601) 264-2854

Client: Hercules

File Number: BT75940
Project Number: 003827
Collected By: MGJ
Sample Type: Water

Sample Date/Time: 04/05/02 @ 1500
Date/Time Received: 04/05/02 @ 1600
Date/Time Begun: 04/18/02 @ 0946
Analyst: MGJ

Ethylene Oxide Scrubber Blowdown

Analytical Parameter	Results ug/L, ppb	MDL ug/L, ppb
Ethylene Oxide	ND	20.00

Surrogate Recoveries: (%)

1,2-Dichloroethane-d4	103.4
Dibromofluoromethane	100.4

Method 8260B, SW - 846.

* Total BTEX is the sum of the Benzene, Toluene, Ethylbenzene and Xylenes concentrations.

MDL = Method Detection Limit
ND = Not Detected

Certified by: _____
Michael S. Bonner, Ph.D.
BONNER ANALYTICAL TESTING COMPANY

APPENDIX C

ETHYLENE OXIDE ANALYSIS

(ENTHALPY REPORT)

Environmental Monitoring Laboratories

624 Ridgewood Road
Ridgeland, MS 39158

Hercules

Analytical Report
(0402-37)

EPA Method 18 Type
Ethylene oxide

Enthalpy Analytical, Inc.

Phone: 919-850-4392 / Fax: 919-850-9012 / www.enthalpy.com
2202 Ellis Road Durham, NC 27703 - 5518

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

Michael Steven Schapira

QA Review Performed by: Michael Steven Schapira

Summary of Results

Company	Environmental Monitoring Labs
Analyst Initials	JRC
Parameters	EPA Method 18 Type
# Samples	6 Summa canisters

Client #	Hercules
Job #	0402-37
PO #	Verbal
Report Date	4/23/2002

Compound	Sample ID / Sample Conc (Canister) (ppm)					
	Run 1 Inlet	***Run 2 Inlet***	***Run 3 Inlet***	***Run 1 Outlet***	***Run 2 Outlet***	***Run 3 Outlet***
Ethylene oxide	44,265	71,256	33,476	6.01	4.02 J	1.97 ND

Results

Company	Environmental Monitoring Laboratories
Analyst Initials	JRC
Parameters	EPA Method 18 Type
# Samples	6 Summa canisters

Client #	Hercules
Job #	0402-37
PO #	Verbal
Report Date	4/23/2002

MDL 1.00 (ppm)
LOQ 2.00 (ppm)
Compound Ethylene oxide

Lower Curve Limit 6.04 (ppm)
Upper Curve Limit 2,020 (ppm)

Sample ID	Lab ID # 1	Lab ID # 2	Lab ID # 3	Analysis Method	Ret Time # 1	Ret Time # 2	Ret Time # 3	% Diff Ret	Conc # 1	Conc # 2	Conc # 3	% Diff Conc	Avg Conc (ppm)	DF	Tank Dilution	Sample Conc (ppm)	Qual
Run 1 Inlet	SIG20014.D	SIG20015.D	SIG20016.D	0402-37B.	1.57	1.57	1.57	0.0	1,998	2,027	2,053	1.4	2,026	10	2.185	44,265	
Run 2 Inlet	SIG20018.D	SIG20019.D	SIG20020.D	0402-37B.	1.57	1.57	1.57	0.0	1,695	1,578	1,659	4.0	1,644	20	2.167	71,256	
Run 3 Inlet	SIG20021.D	SIG20022.D	SIG20023.D	0402-37B.	1.57	1.57	1.57	0.0	767	744	762	1.8	758	20	2.209	33,476	
Run 1 Outlet	SIG20036.D	SIG20037.D	SIG20038.D	0402-37C.	1.57	1.57	1.57	0.2	3.03	3.12	3.17	2.5	3.11	1	1.935	6.01	
Run 2 Outlet	SIG20039.D	SIG20040.D	SIG20041.D	0402-37C.	1.57	1.57	1.57	0.1	1.81	1.83	1.87	1.7	1.84	1	2.188	4.02	J
Run 3 Outlet	SIG20042.D	SIG20043.D	SIG20044.D	0402-37C.	NA	NA	NA	NA	1.00	1.00	1.00	NA	1.00	1	1.968	1.97	ND

Company	Environmental Monitoring Labs
Analyst	JRC
Parameters	Tank Dilution
# Samples	6 Summa canisters

Client #	Hercules
Job #	0402-37
PO #	Verbal
Report Date	04/23/2002

			Pretest			Initial			Final		
Sample ID	**Tank ID**	**Tank Dilution**	**Gauge Field** (mmHg)	**Temp Field** (F)	**Pbar Field** (mmHg)	**Gauge Lab/Field** (mmHg)	**Temp Lab/Field** (F)	**Pbar Lab/Field** (mmHg)	**Gauge Lab** (mmHg)	**Temp Lab** (F)	**Pbar Lab** (mmHg)
Inlet R1	1037	2.185	-752	66	767	-100	66.0	767	686	74.3	761
Inlet R2	1044	2.167	-753	68	766	-95	68.0	766	682	74.3	761
Inlet R3	1108	2.209	-740	69	765	-86	69.0	765	698	74.3	761
Outlet R1	1003	1.935	-746	66	767	-14	66.0	767	678	74.3	761
Outlet R2	1016	2.188	-658	68	766	-8	68.0	766	678	74.3	761
Outlet R3	1035	1.968	-757	69	765	-38	69.0	765	668	74.3	761

Narrative Summary

Enthalpy Analytical Narrative Summary

Company:	Environmental Monitoring Labs
Client #:	Hercules
PO #:	Verbal

Enthalpy #:	0402-37
Analyst:	JRC
Parameters:	EPA Method 18 Type

Custody

Scott Grosshandler of Enthalpy Analytical, Inc. received 6 Summa canisters on 4/11/2002 after being relinquished by Environmental Monitoring Laboratories.. The samples were received with no noticeable container problems. Prior to analysis they were kept under lock with access only to authorized personnel of Enthalpy Analytical, Inc.

Analysis

The tank samples were analyzed using EPA Method 18 analytical procedures. Upon receipt, the tank pressures were measured and recorded. The tanks were then pressurized and a dilution ratio was calculated for each tank (see Tank Dilution).

All tanks were analyzed using a Hewlett Packard 5890 Series II gas chromatograph equipped with a flame ionization detector (FID). Samples and calibration standards were injected into the GC using a VICI six port valve with a gas sample loop. All analytes were referenced to gas phase standards.

Separation

All samples were separated using a Restek 30 m x 0.32 mm RTX-1 capillary column. Hydrogen was used as the carrier gas. Ethylene oxide eluted at approximate 1.6 minutes, separated well and was easily identified.

Chromatographic Conditions

Initial temperature:	45°C
Ramp:	17.5°C per minute to 185°C
Net Run Time:	8.0 minutes
Pressure Constant:	5.5 psi at 45°C
Detector temperature:	200°C
Injector temperature:	125°C

Reproducibility

All standards were within 10% of their tag value.

Tank Dilution

All tanks were adjusted from "as analyzed" concentrations to "as sampled" concentrations using a dilution factor which was calculated based on the following formula:

$$\frac{\dfrac{(GP_F + Pbar_F)}{(Temp_F + 460)}}{\dfrac{(GP_I + Pbar_I)}{(Temp_I + 460)} - \dfrac{(GP_P + Pbar_P)}{(Temp_P + 460)}}$$

where:

GP_F = Final Gauge Pressure, mmHg
$Pbar_F$ = Final Barometric Pressure, mmHg
$Temp_F$ = Final Temperature, degrees F
GP_I = Initial Gauge Pressure, mmHg
$Pbar_I$ = Initial Barometric Pressure, mmHg
$Temp_I$ = Initial Temperature, degrees F
GP_P = Pretest Gauge Pressure, mmHg
$Pbar_P$ = Pretest Barometric Pressure, mmHg
$Temp_P$ = Pretest Temperature, degrees F

Narrative Summary (Cont.)

Reporting Notes

The symbols *MDL* and *LOQ* represent the Minimum Detection Limit and the Limit of Quantification.

The symbols *ND* following a value indicate a non-detect or analytical result below the MDL.

The symbol *J* following a value indicates an analytical result between the MDL and the LOQ.

The symbol *E* following a value indicates an analytical result exceeding 125% of the highest calibration point.

Sample Custody

CHAIN OF CUSTODY AND REQUEST FOR ANALYSIS

ENVIRONMENTAL MONITORING LABORATORIES
POST OFFICE BOX 655
RIDGELAND, MISSISSIPPI 39158

PHONE: 601/856-3092
FAX: 601/853-2151 Attention: Danny Russell

Laboratory:
Enthalpy Analytical, Inc.
3211 Bramer Drive
Raleigh, NC 27604
PHONE: 919/850-4392
Attention: Tony Mastriani

Project: Hercules RAD ethylene oxide Scrubber

Rush ☐ Routine ☐ Fax Results ☒

ANALYSES REQUESTED

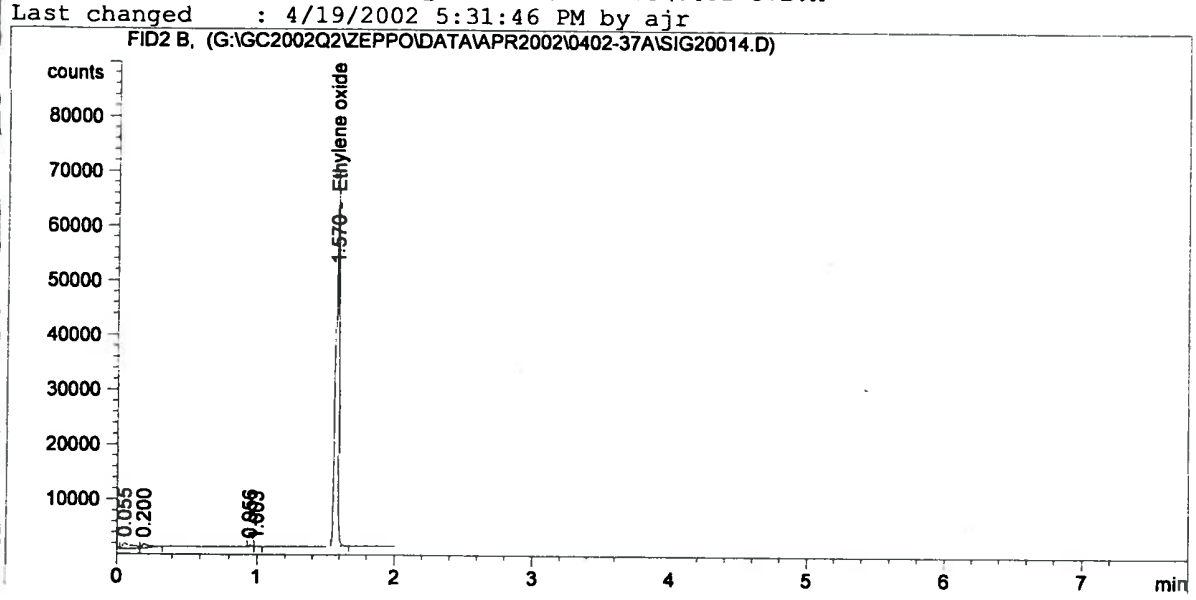
No. of containers	SAMPLE ID	Sample matrix	REMARKS	Ethylene Oxide	[redacted]			UNITS
1	Herc EO Inlet R1	Summa		X				
1	Herc EO Inlet R2	Summa		X				
1	Herc EO Inlet R3	Summa		X				
1	Herc EO Outlet R1	Summa		X				
1	Herc EO Outlet R2	Summa		X				
1	Herc EO Outlet R3	Summa		X				

Relinquished by: (print name; initial)	Date/time	Received by: (print name; initial)	Date/time
Daniel G. Russell	04/08/02	Scott Grossmueller SG	4-11-02/14:05
Relinquished by: (print name; initial)	Date/time	Received by: (print name; initial)	Date/time
Relinquished by: (print name; initial)	Date/time	Received by: (print name; initial)	Date/time
COURIER: FED EX	Date Shipped: 04/08/02	Received for lab by:	Date/time

Sample Chromatograms

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20014.D Sample Name: Run 1 Inlet *10

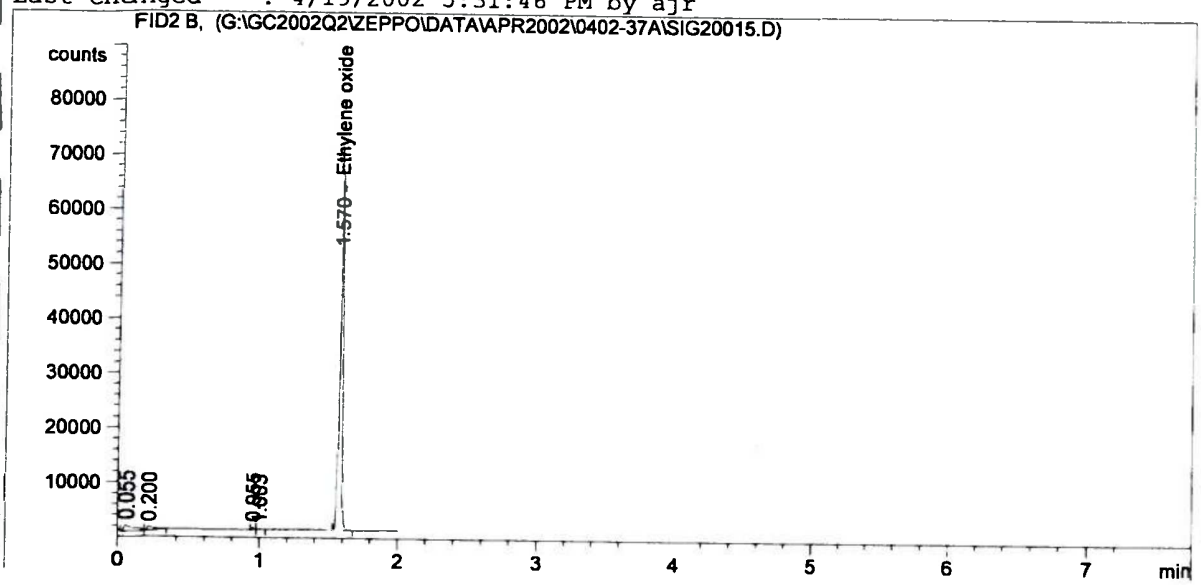
```
==============================================================================
Injection Date  : 4/16/2002 1:58:09 PM
Sample Name     : Run 1 Inlet *10                Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                        Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 1:46:43 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==============================================================================
                        External Standard Report
==============================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
   1.570 BB     9.74451e4  2.05059e-2 1998.20244    Ethylene oxide

Totals :                               1998.20244

 Results obtained with enhanced integrator!
==============================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20015.D Sample Name: Run 1 Inlet *10

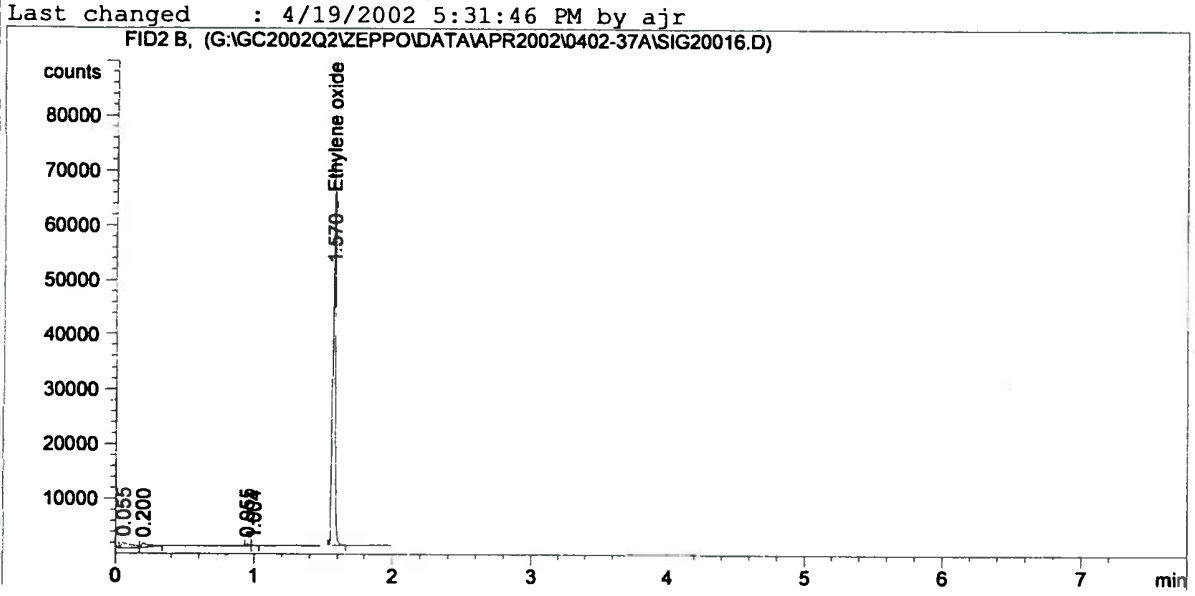
```
==========================================================================
Injection Date  : 4/16/2002 2:01:51 PM
Sample Name     : Run 1 Inlet *10                Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 1:46:43 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
   1.570 PB     9.88473e4  2.05054e-2 2026.90538    Ethylene oxide

Totals :                               2026.90538

  Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20016.D Sample Name: Run 1 Inlet *10

```
Injection Date  : 4/16/2002 2:05:36 PM
Sample Name     : Run 1 Inlet *10              Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                      Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 1:46:43 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,
```

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	PB	1.00119e5	2.05050e-2	2052.93173		Ethylene oxide

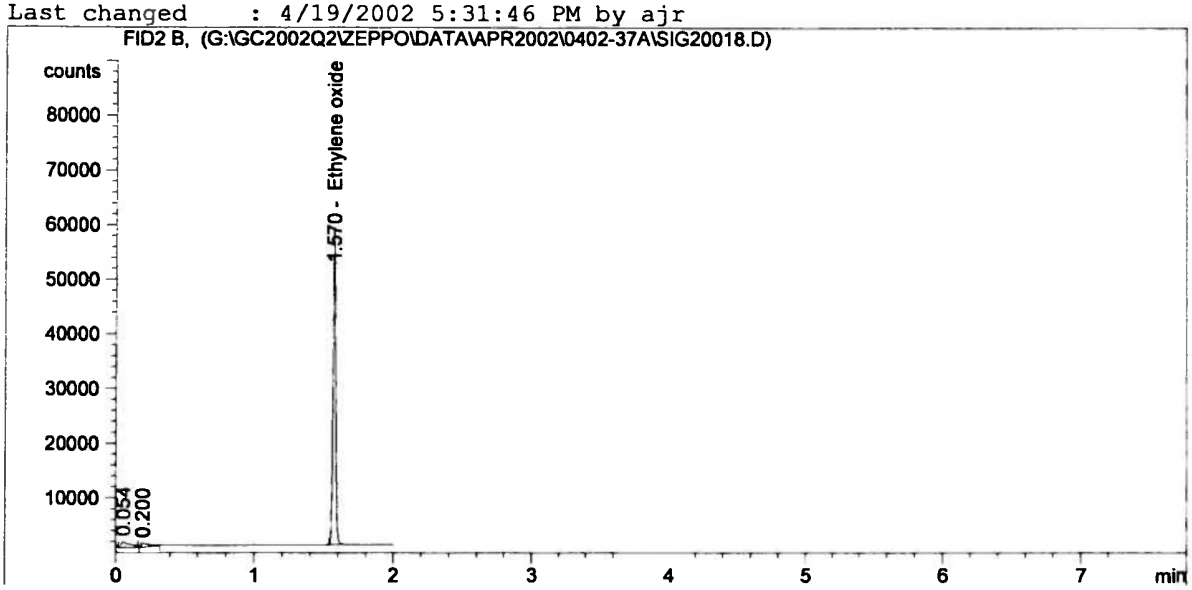
Totals : 2052.93173

Results obtained with enhanced integrator!

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20018.D Sample Name: Run 2 Inlet *20

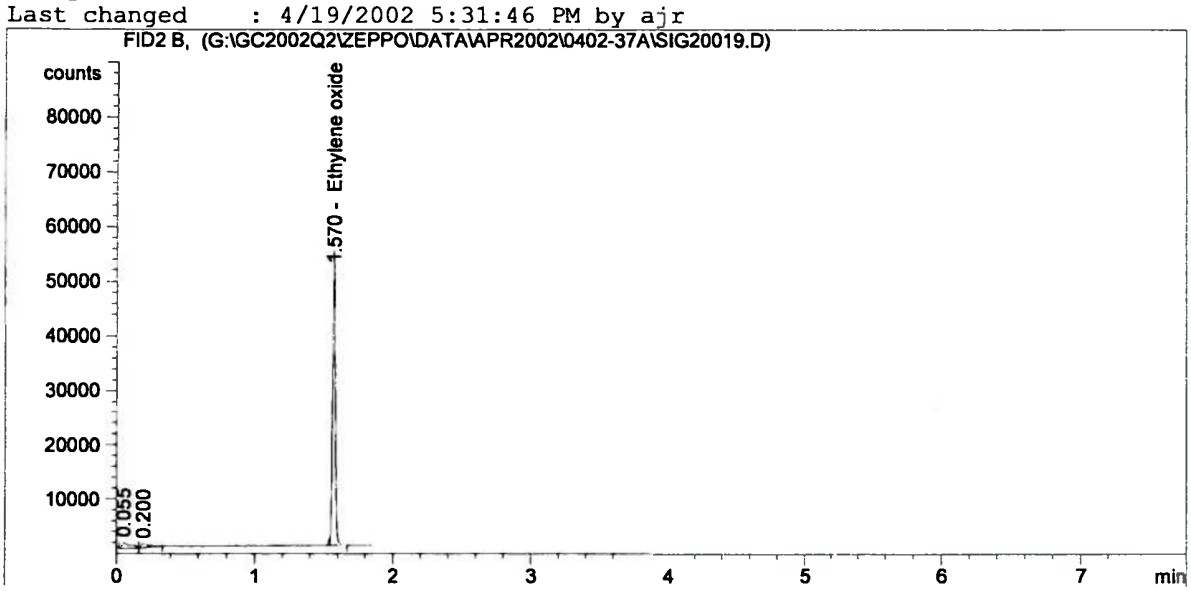
```
==========================================================================
Injection Date  : 4/16/2002 2:22:42 PM
Sample Name     : Run 2 Inlet *20                Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:22:55 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     8.26492e4  2.05124e-2 1695.33470    Ethylene oxide

Totals :                               1695.33470

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20019.D Sample Name: Run 2 Inlet *20

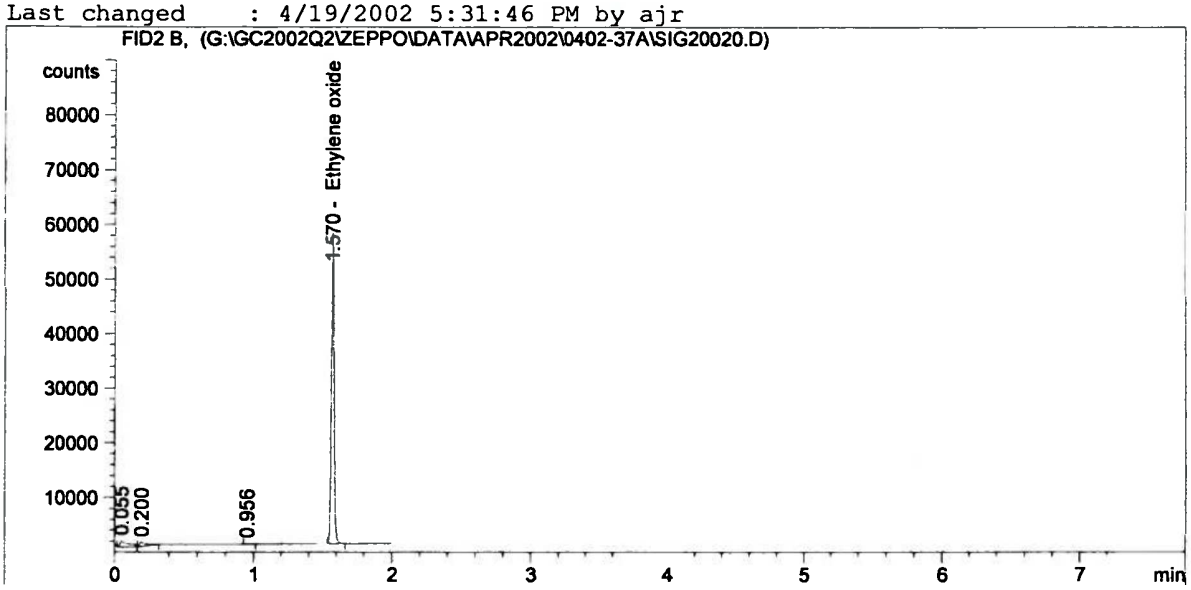
```
==========================================================================
Injection Date  : 4/16/2002 2:27:10 PM
Sample Name     : Run 2 Inlet *20                Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:22:55 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
   1.570 PB     7.68950e4  2.05156e-2 1577.54682    Ethylene oxide

Totals :                               1577.54682

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20020.D Sample Name: Run 2 Inlet *20

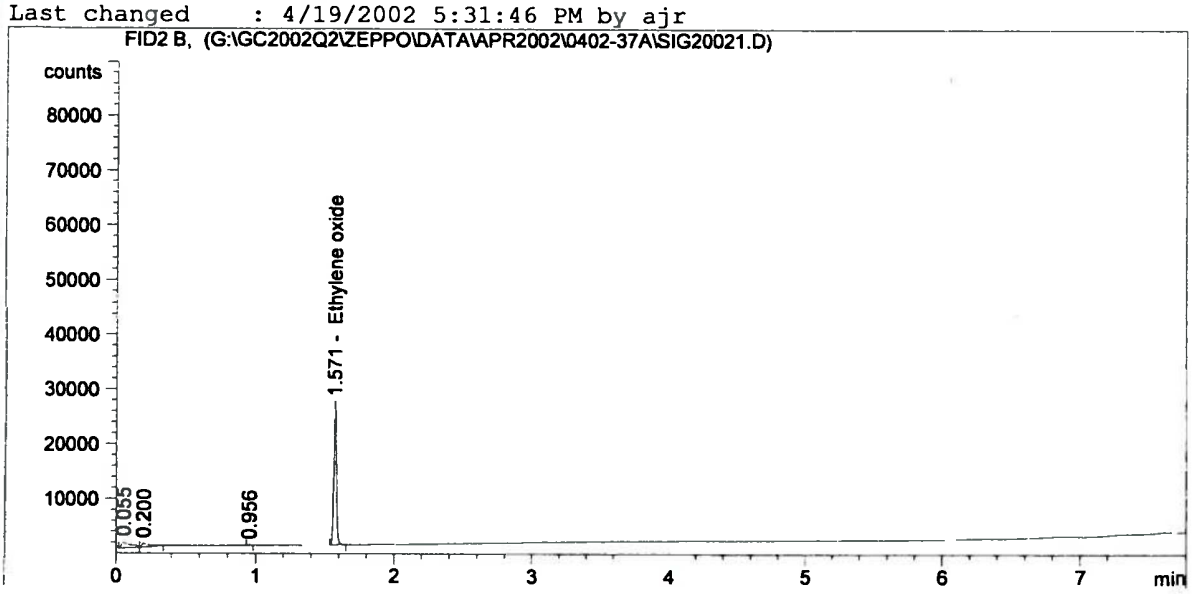
```
Injection Date  : 4/16/2002 2:33:03 PM
Sample Name     : Run 2 Inlet *20              Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                     Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:22:55 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
                        External Standard Report

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 BB     8.08809e4  2.05133e-2 1659.13742    Ethylene oxide

Totals :                               1659.13742

 Results obtained with enhanced integrator!

                          *** End of Report ***
```

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20021.D Sample Name: Run 3 Inlet *20

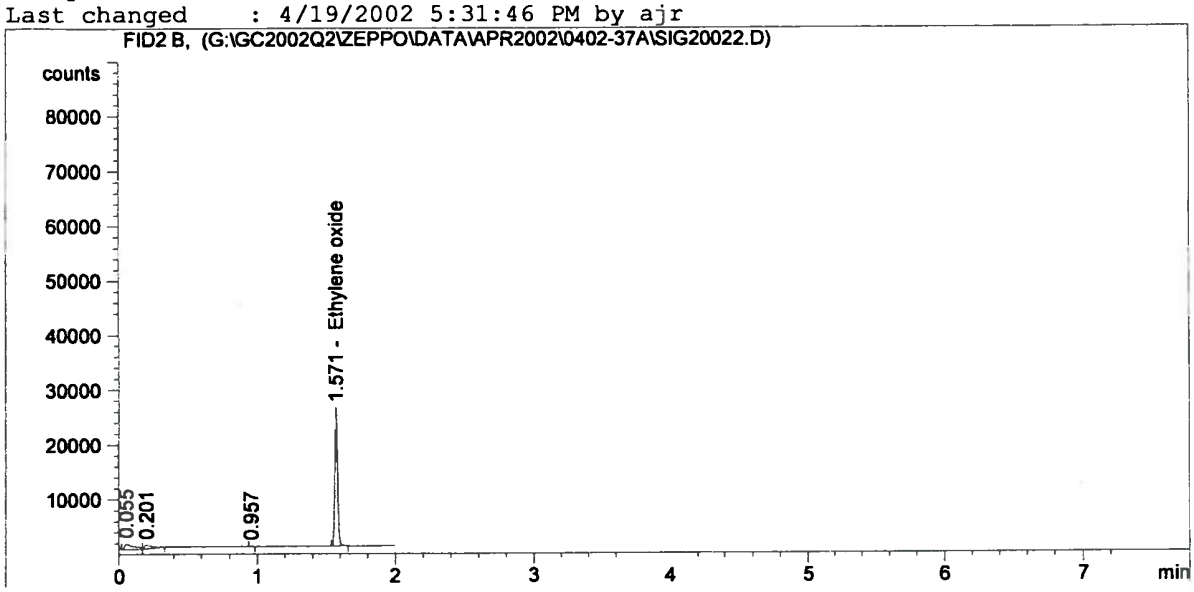
```
==============================================================================
Injection Date  : 4/16/2002 2:38:19 PM
Sample Name     : Run 3 Inlet *20                Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:22:55 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==============================================================================
                        External Standard Report
==============================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.571 BB     3.73200e4  2.05642e-2  767.45574     Ethylene oxide

Totals :                               767.45574

 Results obtained with enhanced integrator!
==============================================================================
                          *** End of Report ***
```

File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20022.D Sample Name: Run 3 Inlet *20

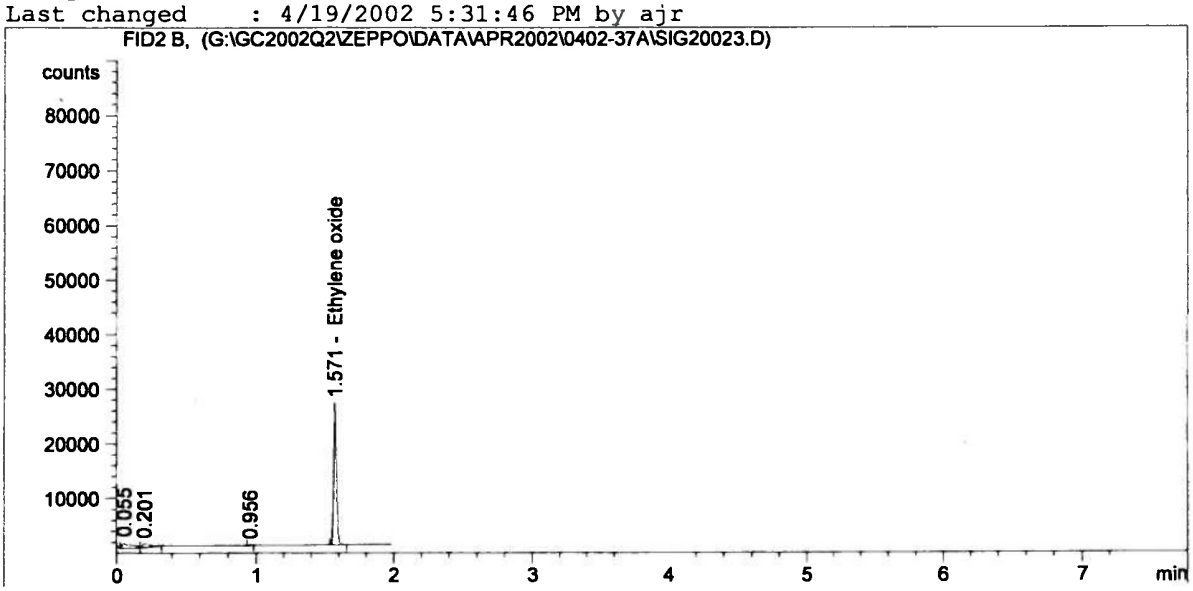
```
Injection Date  : 4/16/2002 2:50:13 PM
Sample Name     : Run 3 Inlet *20              Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                      Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:50:36 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
                    External Standard Report

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.571 BB     3.61876e4  2.05671e-2  744.27492     Ethylene oxide

Totals :                               744.27492

 Results obtained with enhanced integrator!

                        *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20023.D Sample Name: Run 3 Inlet *20

```
==========================================================================
Injection Date  : 4/16/2002 2:53:55 PM
Sample Name     : Run 3 Inlet *20              Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                     Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 2:50:36 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```

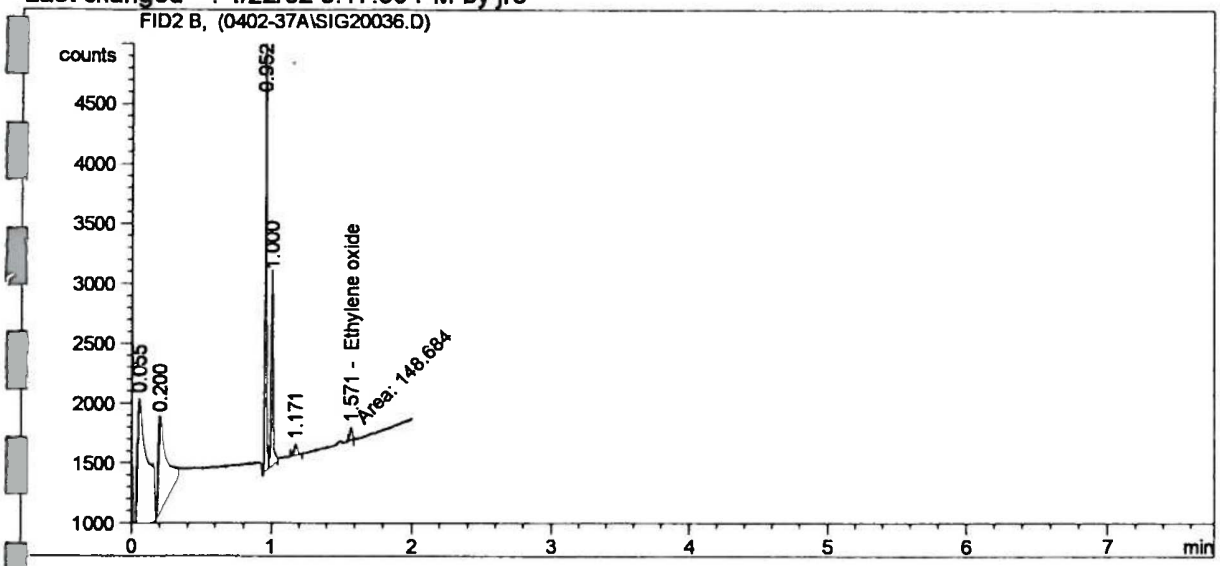



```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
   1.571 BB     3.70376e4  2.05649e-2  761.67519     Ethylene oxide

Totals :                               761.67519

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20036.D Sample Name: Run 1 Outlet

==========

Injection Date : 4/16/02 4:08:59 PM
Sample Name : Run 1 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	MM	148.68384	2.03640e-2	3.02780		Ethylene oxide

Totals : 3.02780

Results obtained with enhanced integrator!

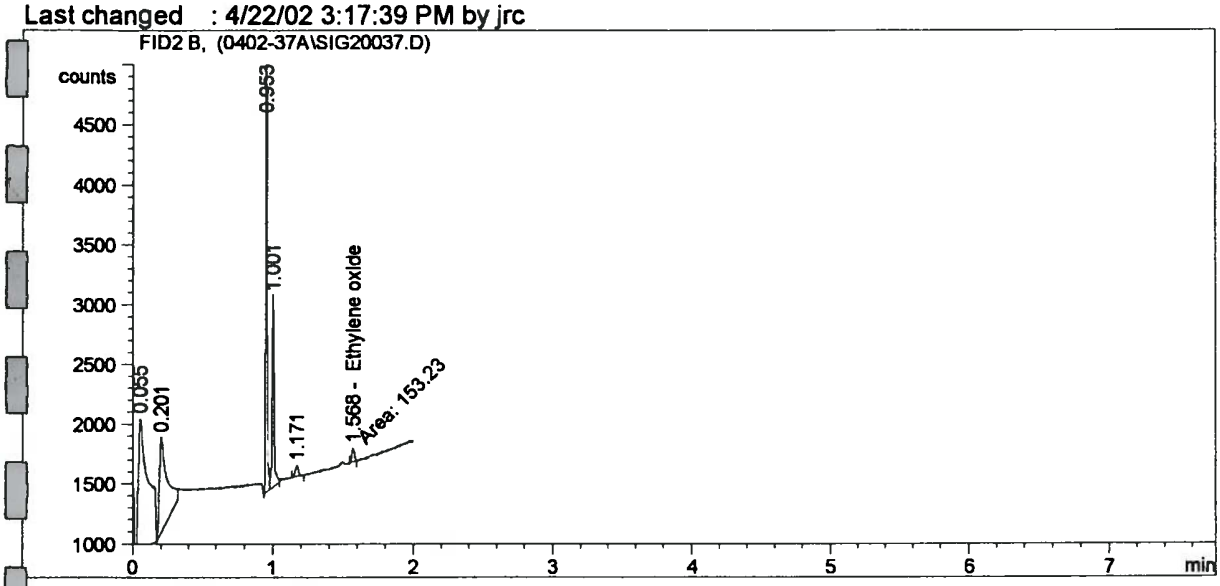
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20037.D Sample Name: Run 1 Outlet

==========

Injection Date : 4/16/02 4:12:34 PM
Sample Name : Run 1 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.568	MM	153.23042	2.03640e-2	3.12039		Ethylene oxide

Totals : 3.12039

Results obtained with enhanced integrator!

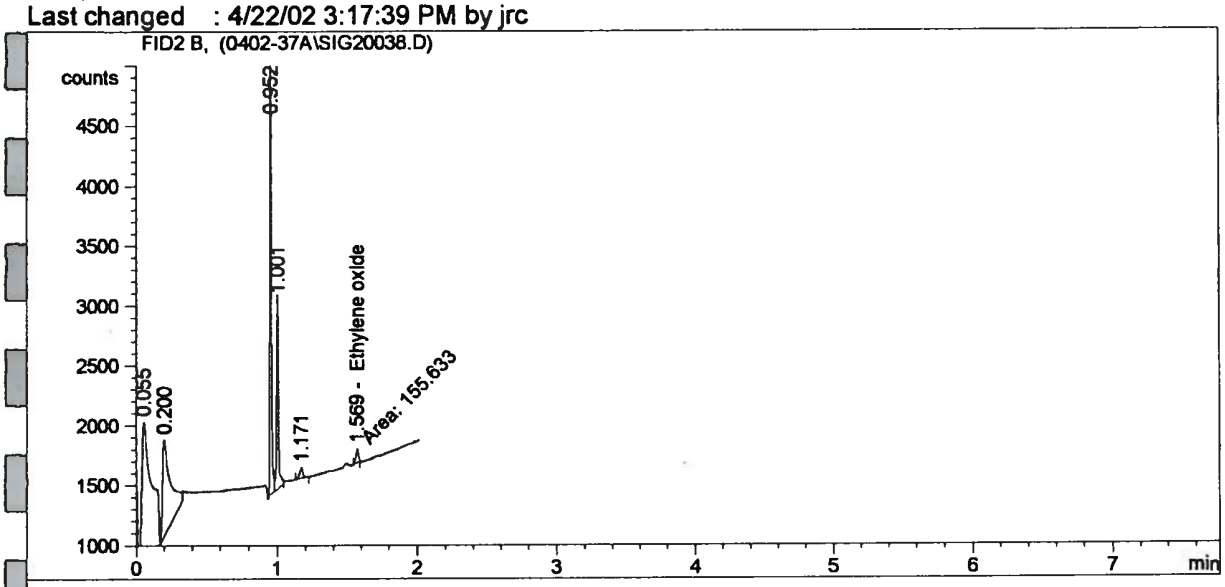
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20038.D Sample Name: Run 1 Outlet

==========

Injection Date : 4/16/02 4:16:24 PM
Sample Name : Run 1 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.569	MM	155.63316	2.03640e-2	3.16932		Ethylene oxide

Totals : 3.16932

Results obtained with enhanced integrator!

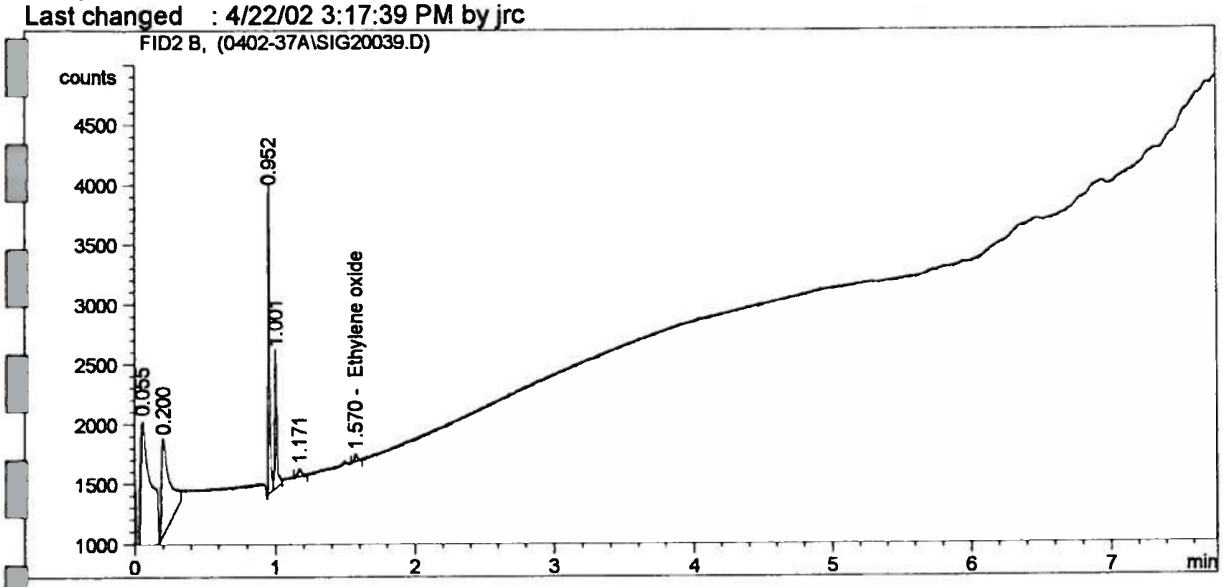
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20039.D Sample Name: Run 2 Outlet

==========

Injection Date : 4/16/02 4:20:13 PM
Sample Name : Run 2 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	PP	88.96947	2.03640e-2	1.81178		Ethylene oxide

Totals : 1.81178

Results obtained with enhanced integrator!

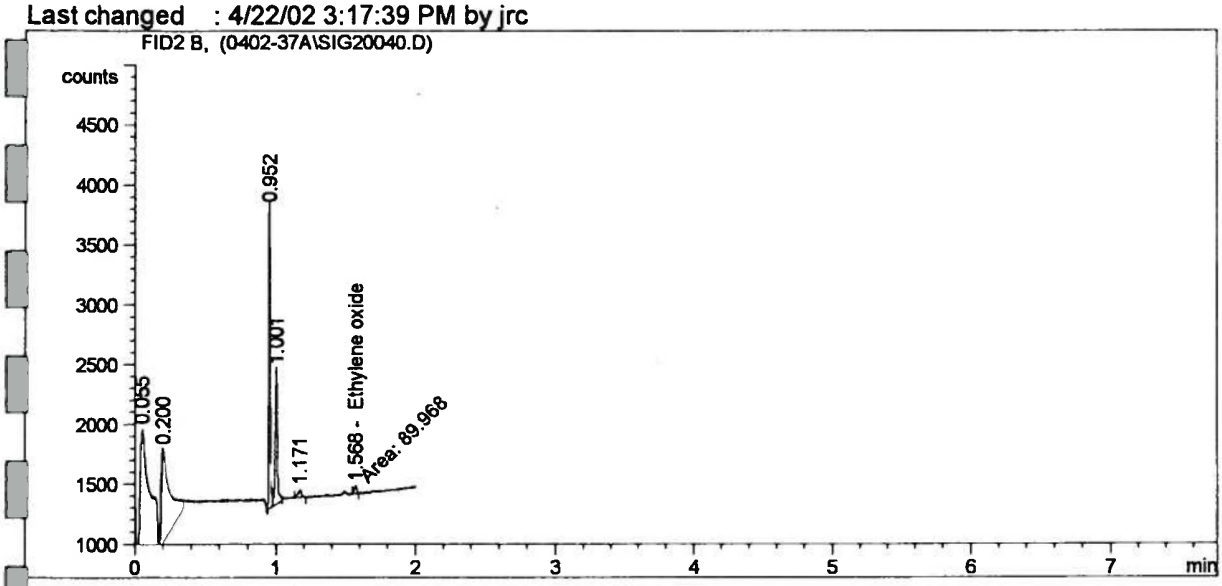
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20040.D Sample Name: Run 2 Outlet

==========

Injection Date : 4/16/02 4:32:23 PM
Sample Name : Run 2 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:30:15 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.568	MM	89.96803	2.03640e-2	1.83211		Ethylene oxide

Totals : 1.83211

Results obtained with enhanced integrator!

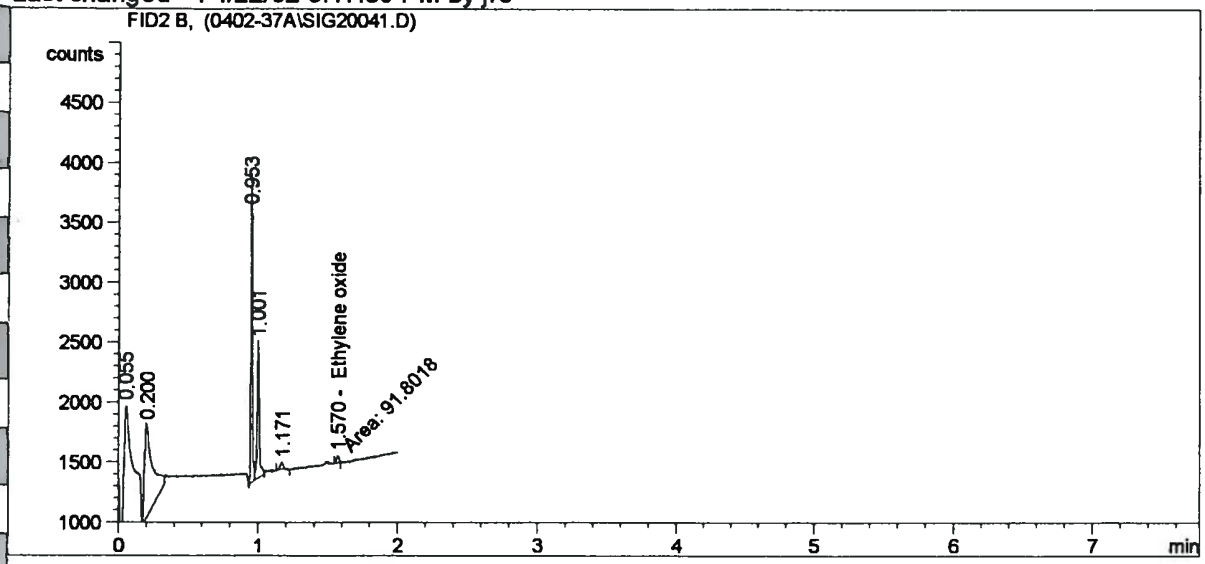
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20041.D Sample Name: Run 2 Outlet

==========

Injection Date : 4/16/02 4:35:49 PM
Sample Name : Run 2 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:30:15 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	MM	91.80181	2.03640e-2	1.86946		Ethylene oxide

Totals : 1.86946

Results obtained with enhanced integrator!

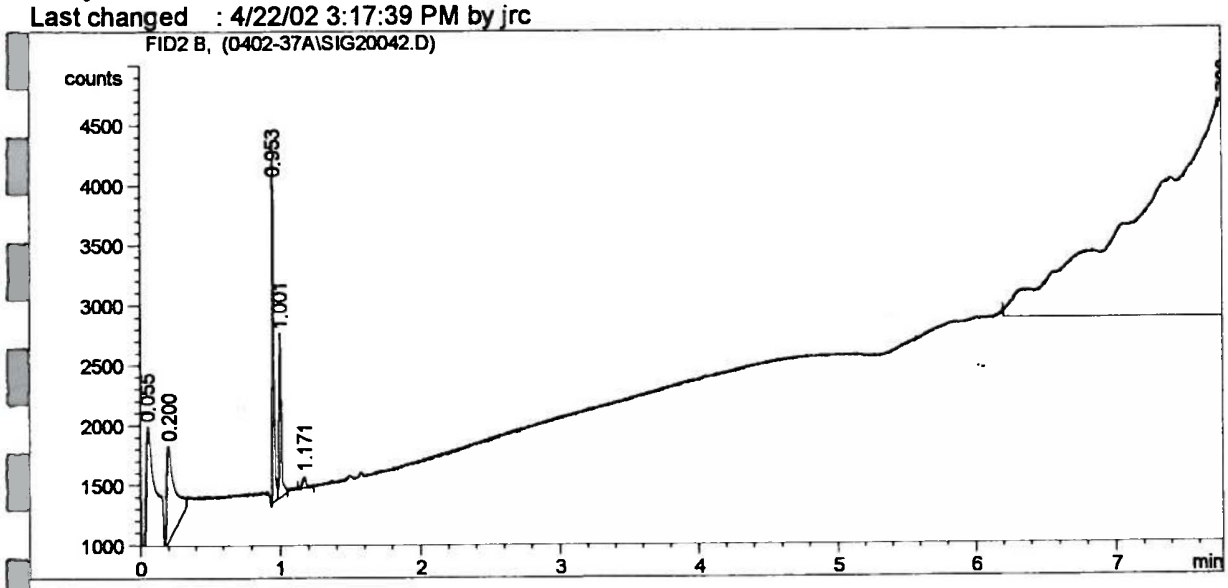
==========

*** End of Report ***

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20042.D Sample Name: Run 3 Outlet

==========

Injection Date : 4/16/02 4:40:19 PM
Sample Name : Run 3 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:30:15 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	-	-	-			Ethylene oxide

Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

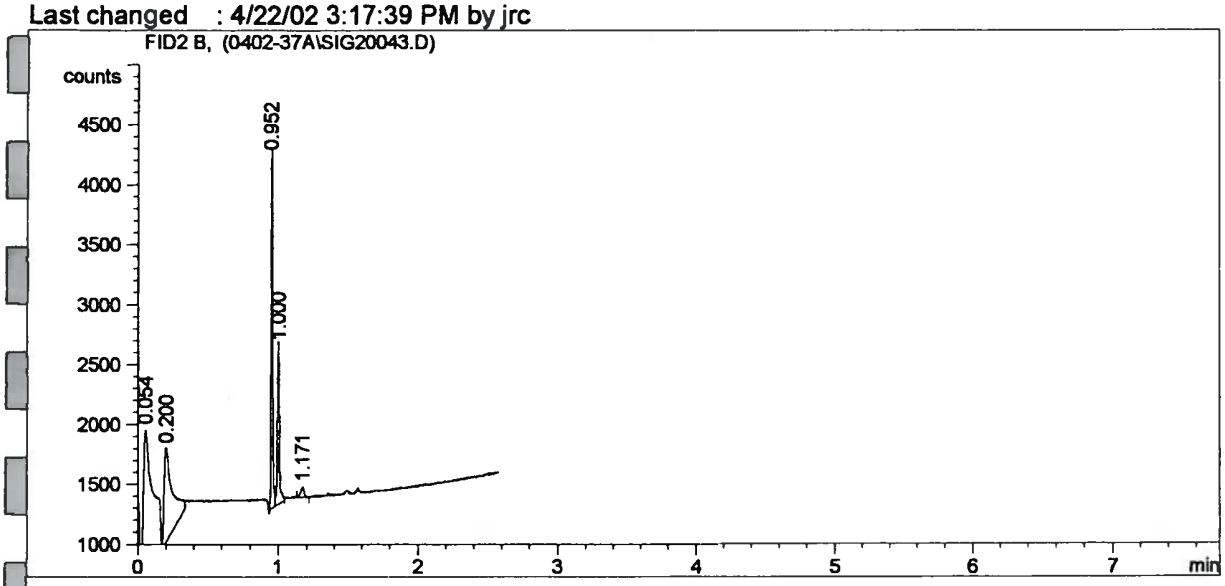
Warning : Calibrated compound(s) not found

==========

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20043.D Sample Name: Run 3 Outlet

==========

Injection Date : 4/16/02 4:52:24 PM
Sample Name : Run 3 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:30:15 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	-	-	-			Ethylene oxide

Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

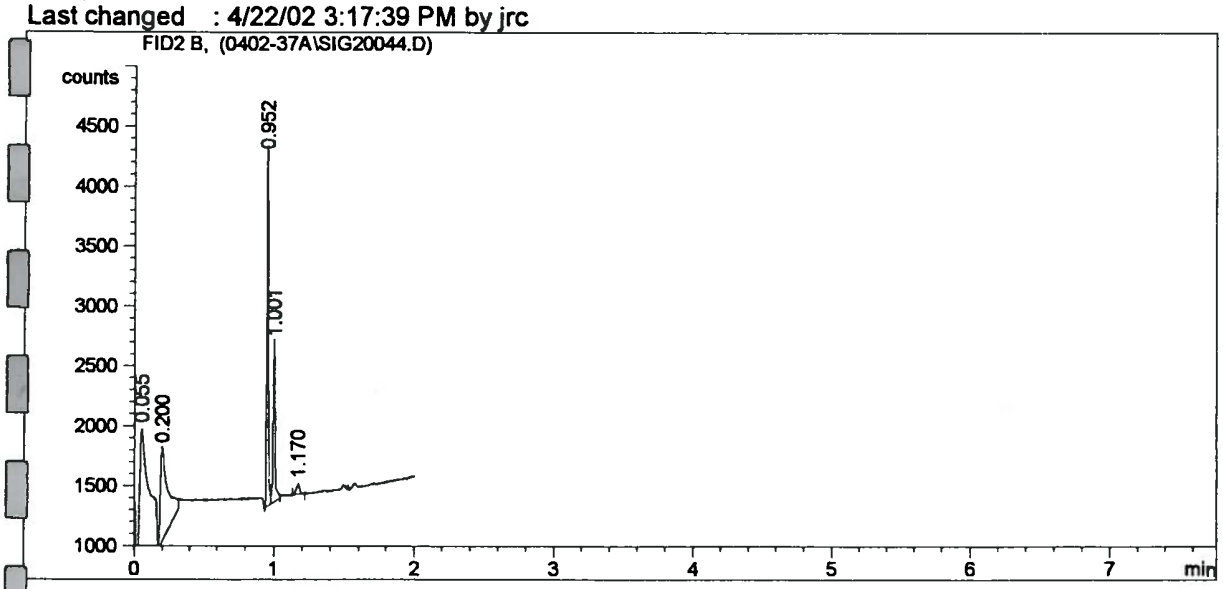
Warning : Calibrated compound(s) not found

==========

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20044.D Sample Name: Run 3 Outlet

==========

Injection Date : 4/16/02 4:56:57 PM
Sample Name : Run 3 Outlet Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:55:59 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	-	-	-			Ethylene oxide

Totals : 0.00000

Results obtained with enhanced integrator!
1 Warnings or Errors :

Warning : Calibrated compound(s) not found

==========

Curve(s)/QA Point(s) Chromatograms

lethod: G:\GC2002Q2\ZEPPO\METHODS\0402-37.M of 4/16/02 1:28:56 PM

OVEN\DET

Runtime (min): 8.0

e Temperatures:

	State	Setpoint
nl. A	OFF	125 C.
nl. B	OFF	125 C.
Det. A	ON	200 C.
Det. B	ON	200 C.
ux.	OFF	50 C.

ven Zone:

Oven max	195 C.
Equib Time	0.20 Min.
Oven State	ON
Cryo State	OFF
mbient	25 C.
ryo Blast	OFF

en Program:

Setpoint

Initial Temp.: 45 C.
Initial Time: 0.00 Min.

Level	Rate (C/min.)	Final Temp.(C)	Final Time (min)
1	17.5	185	0.00

Inlet A Pressure Program Information

Constant Flow: On
Pressure: 5.5 psi
Temperature: 45 C

ssure Program:

Setpoint

Initial Pres.: 0.0 psi
Initial Time: 650.00 min.

Level	Rate (psi/min.)	Final Pres.(psi)	Final Time (min)
1	0.00	0.0	0.00
2(A)	0.00	0.0	0.00
3(B)	0.00	0.0	0.00

Total Program Time: 650.00

Pressure Units: psi

ered Values:

Column Length: 30.00 m.
Column Diameter: 0.320 mm.

lethod: G:\GC2002Q2\ZEPPO\METHODS\0402-37.M of 4/16/02 1:28:56 PM

Gas: H2
Vacuum Comp: Off

Inlet B Pressure Program Information

Constant Flow: On
Pressure: 5.5 psi
Temperature: 45 C.
ressure Program:
Setpoint
Initial Pres.: 0.0 psi
Initial Time: 650.00 min.

Level	Rate (psi/min.)	Final Pres.(psi)	Final Time (min)
1	0.00	0.0	0.00
2(A)	0.00	0.0	0.00
3(B)	0.00	0.0	0.00

Total Program Time: 650.00

GC Pressure Units: psi

ntered Values:
Column Length: 30.00 m.
Column Diameter: 0.320 mm.
Gas: H2
Vacuum Comp: Off

Purge Valve Settings
urge A/B

	Init Value	On Time (Min.)	Off Time (Min.)
A (Valve 3)	On	0.00	100.00
B (Valve 4)	On	0.00	100.00

A - Splitless Injection: No
B - Splitless Injection: No

Valves/Relays Information
al Setpoints:
5890 Valves:
Valve 1: Off
Valve 2: Off
Valve 3 (Purge A): On
Valve 4 (Purge B): On

alve/Relay Time Table:

Time	Name	State	Comment
0.00	Valve 1	On	inject
0.05	Valve 1	Off	turn off valve 1
0.15	Valve 2	On	load
0.20	Valve 2	Off	turn off valve 2

Detector Information
ector A:

lethod: G:\GC2002Q2\ZEPPO\METHODS\0402-37.M of 4/16/02 1:28:56 PM

ype FID
tate OFF

etector B:
ype FID
tate ON

Signal Information
ave Data: Signal 2

nal 1:
Signal Testplot
Data rate 5.000 Hz.
Peakwidth 0.053 min.
Start Time 0.00 min.
Stop Time 650.00 min.

nal 2:
Signal Det. B
Data rate 10.000 Hz.
Peakwidth 0.027 min.
Start Time 0.00 min.
Stop Time 650.00 min.

ethod G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M

Calibration Table

Calib. Data Modified : Friday, April 19, 2002 5:31:45 PM

Calculate : External Standard
Based on : Peak Area

Rel. Reference Window : 5.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 5.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

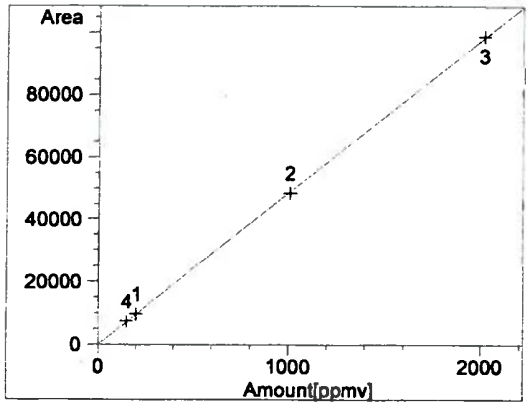
Signal 1: FID2 B,

RetTime [min]	Sig	Lvl	Amount [ppmv]	Area	Amt/Area	Ref	Grp	Name
1.570	1	4	151.00000	7448.51628	2.02725e-2			Ethylene oxide
		1	202.00000	9738.04395	2.07434e-2			
		2	1010.00000	4.86420e4	2.07640e-2			
		3	2020.00000	9.87510e4	2.04555e-2			

Peak Sum Table

No Entries in table

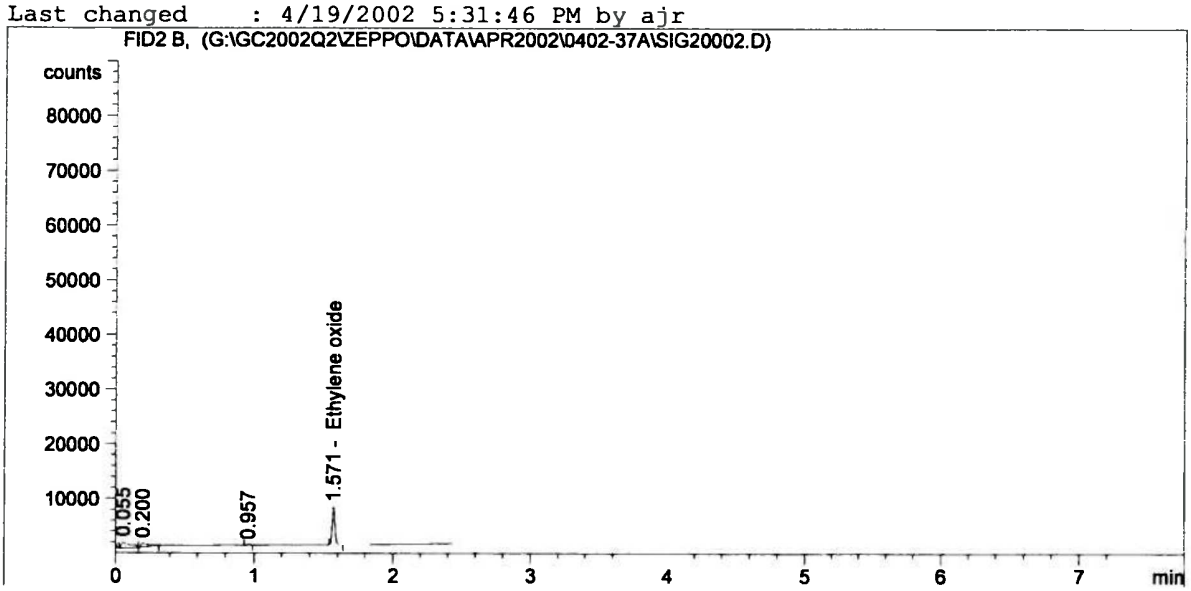
Calibration Curves



Ethylene oxide at exp. RT: 1.570
FID2 B,
Correlation: 0.99996
Residual Std. Dev.: 445.55214
Formula: y = mx + b
m: 48.85252
b: -172.14123
x: Amount[ppmv]
y: Area

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20002.D Sample Name: 202ppmv eo

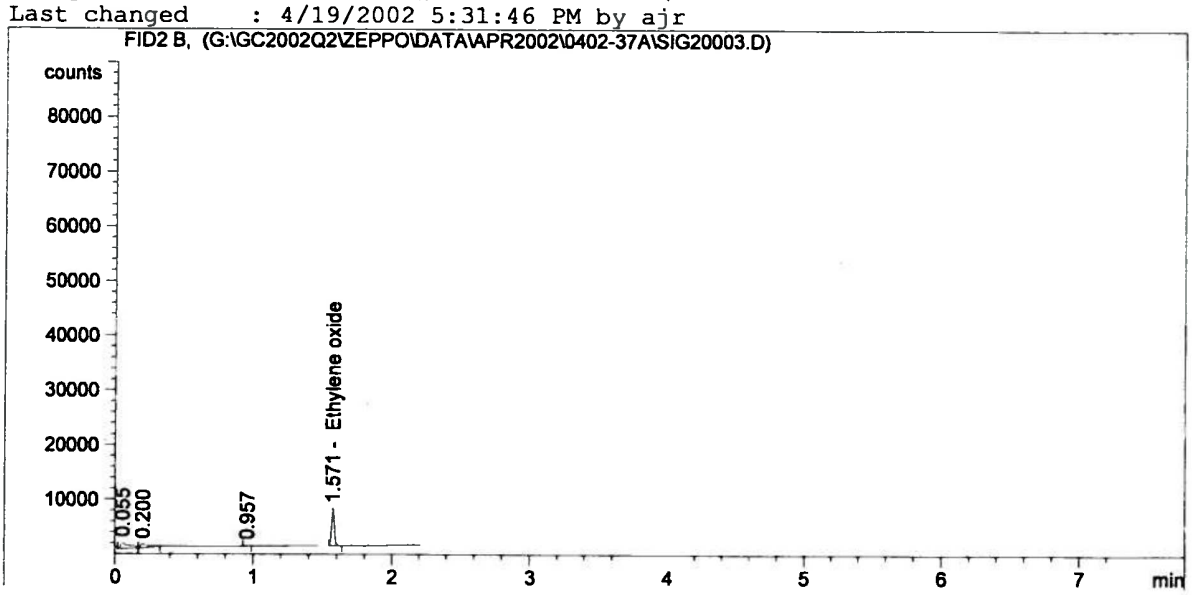
```
==========================================================================
Injection Date  : 4/16/2002 11:23:23 AM
Sample Name     : 202ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                      Inj Volume : External
Acq. Method     : G:\GC2002Q1\ZEPPO\METHODS\0302-48.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.571 BB     9876.39453 2.08266e-2  205.69126     Ethylene oxide

Totals :                               205.69126

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20003.D Sample Name: 202ppmv eo

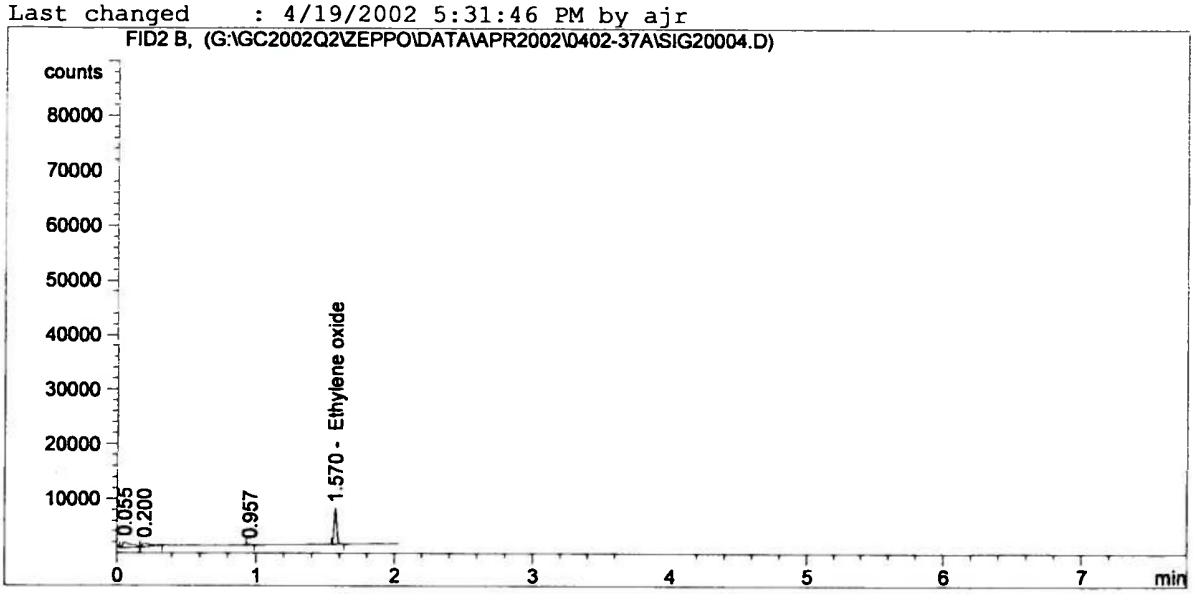
```
==============================================================================
Injection Date  : 4/16/2002 11:28:23 AM
Sample Name     : 202ppmv eo                        Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                          Inj Volume : External
Acq. Method     : G:\GC2002Q1\ZEPPO\METHODS\0302-48.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==============================================================================
                        External Standard Report
==============================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount    Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.571 BB     9799.89453 2.08293e-2  204.12532     Ethylene oxide

Totals :                               204.12532

 Results obtained with enhanced integrator!
==============================================================================
                          *** End of Report ***
```

ata File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20004.D Sample Name: 202ppmv eo

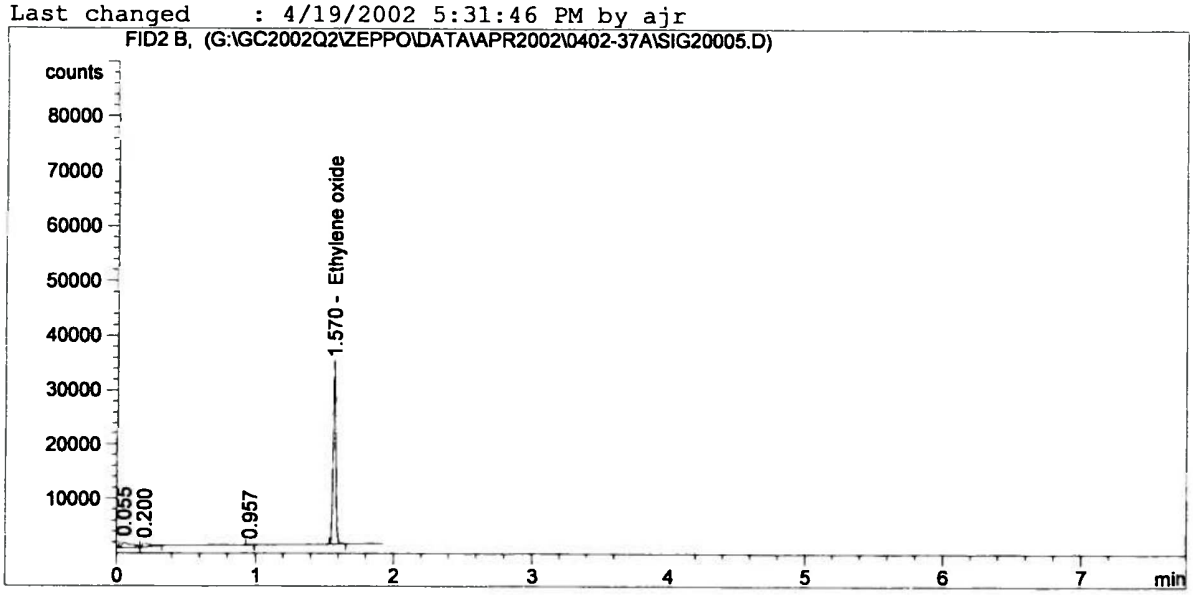
```
================================================================================
Injection Date  : 4/16/2002 11:33:14 AM
Sample Name     : 202ppmv eo                        Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                          Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
================================================================================
                        External Standard Report
================================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type      Area      Amt/Area     Amount    Grp   Name
 [min]          counts*s                  [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 BB      9537.84277 2.08392e-2  198.76118     Ethylene oxide

Totals :                                198.76118

 Results obtained with enhanced integrator!
================================================================================
                           *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20005.D Sample Name: 1010ppmv eo

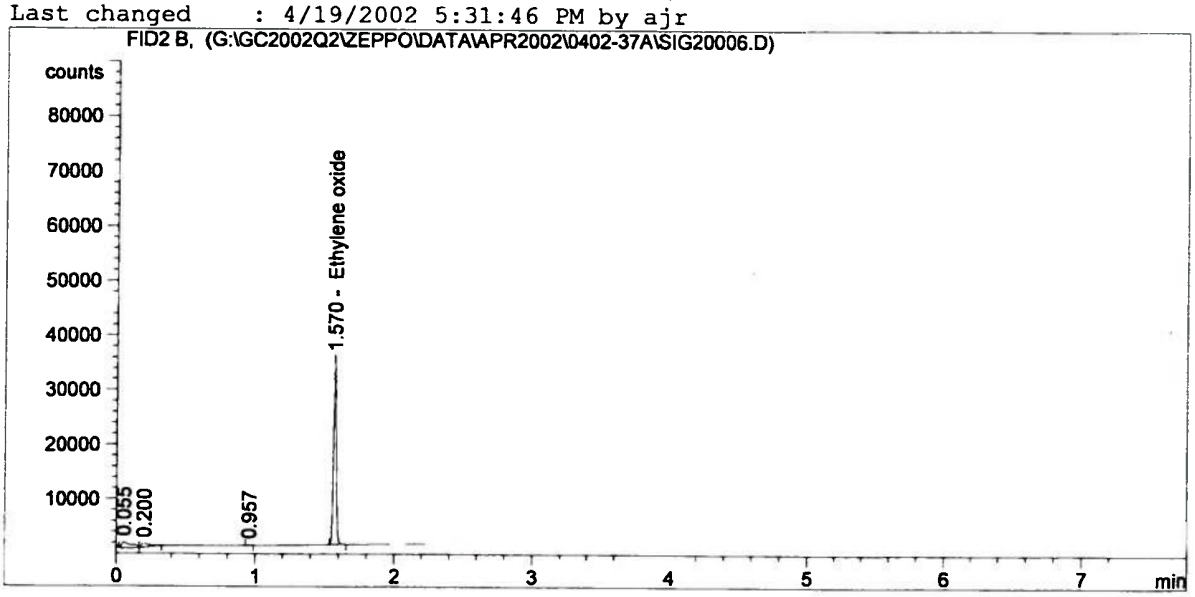
```
==================================================================
Injection Date  : 4/16/2002 11:38:34 AM
Sample Name     : 1010ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==================================================================
                    External Standard Report
==================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     4.77196e4  2.05436e-2  980.33236    Ethylene oxide

Totals :                               980.33236

 Results obtained with enhanced integrator!
==================================================================
                        *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20006.D Sample Name: 1010ppmv eo

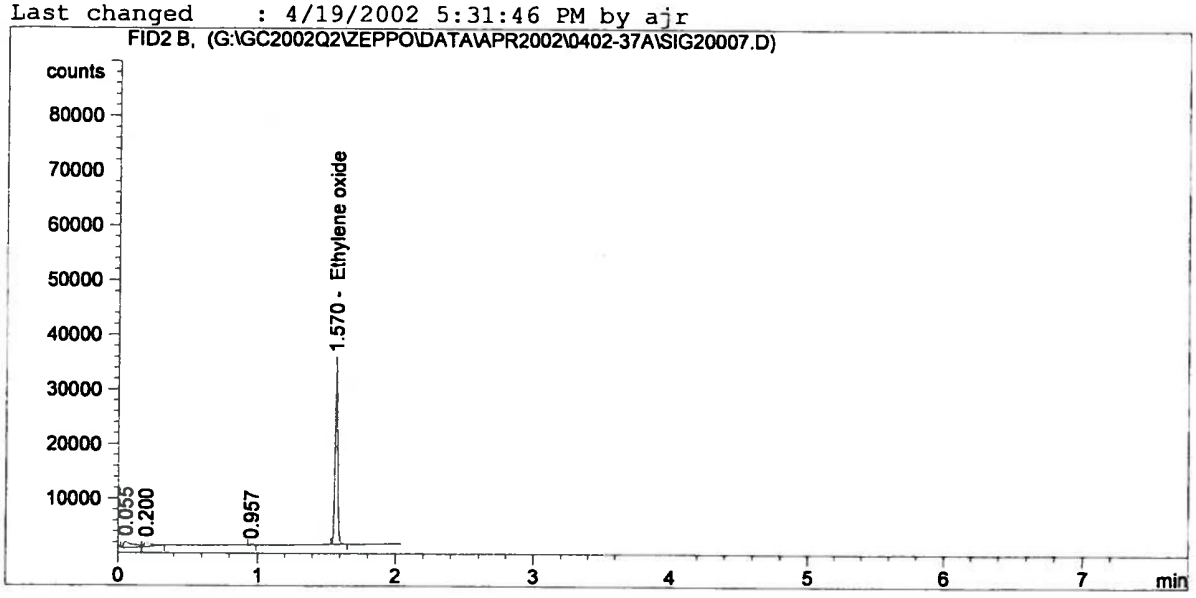
```
==========================================================================
Injection Date  : 4/16/2002 11:42:09 AM
Sample Name     : 1010ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==========================================================================
                        External Standard Report
==========================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     4.93945e4  2.05411e-2 1014.61827     Ethylene oxide

Totals :                               1014.61827

 Results obtained with enhanced integrator!
==========================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20007.D Sample Name: 1010ppmv eo

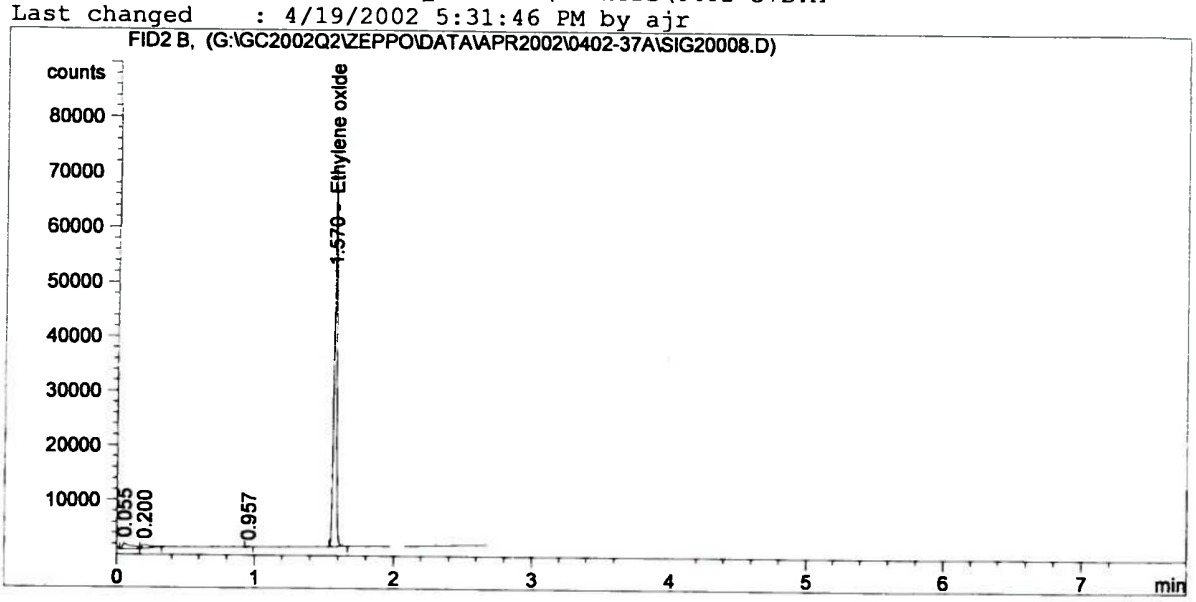
```
==============================================================================
Injection Date  : 4/16/2002 11:46:11 AM
Sample Name     : 1010ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==============================================================================
                        External Standard Report
==============================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     4.88118e4  2.05420e-2 1002.69007    Ethylene oxide

Totals :                               1002.69007

 Results obtained with enhanced integrator!
==============================================================================
                          *** End of Report ***
```

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20008.D Sample Name: 2020ppmv eo

```
Injection Date  : 4/16/2002 11:50:42 AM
Sample Name     : 2020ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```



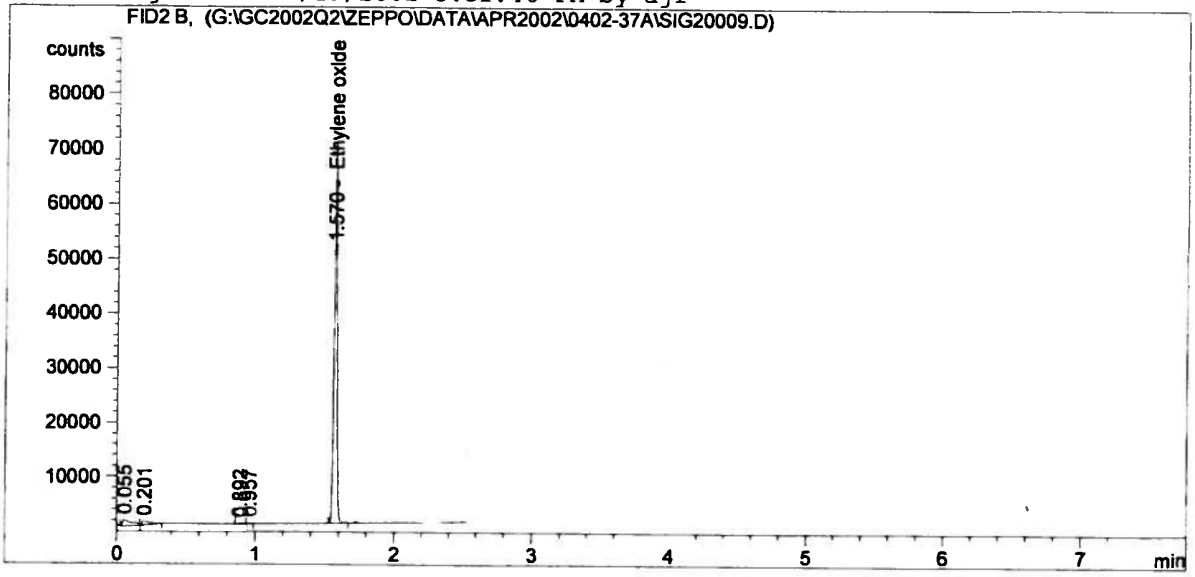
External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 BB     9.85076e4  2.05055e-2 2019.95189    Ethylene oxide

Totals :                               2019.95189

 Results obtained with enhanced integrator!
```

*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20009.D Sample Name: 2020ppmv eo

Injection Date : 4/16/2002 11:55:17 AM
Sample Name : 2020ppmv eo Location : -
Acq. Operator : jrc
Acq. Instrument : Zeppo Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed : 4/19/2002 5:31:46 PM by ajr



External Standard Report

Sorted By : Signal
Calib. Data Modified : Friday, April 19, 2002 5:31:45 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	PB	9.90766e4	2.05053e-2	2031.60015		Ethylene oxide

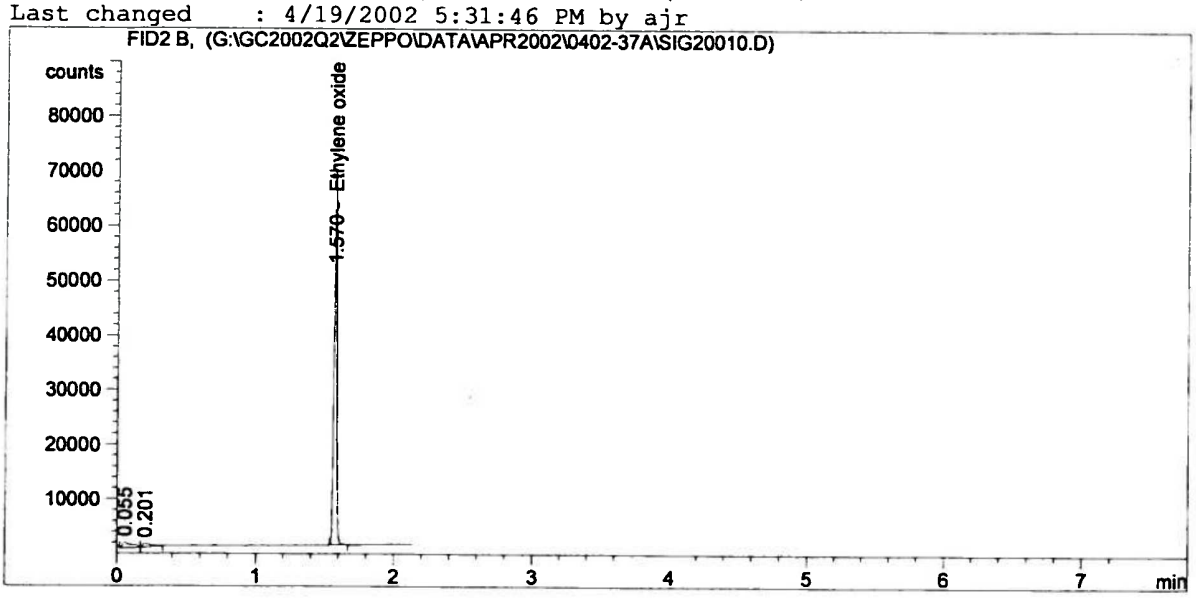
Totals : 2031.60015

Results obtained with enhanced integrator!

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20010.D Sample Name: 2020ppmv eo

```
Injection Date  : 4/16/2002 11:59:55 AM
Sample Name     : 2020ppmv eo                    Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                       Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 11:24:43 AM by jrc
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```



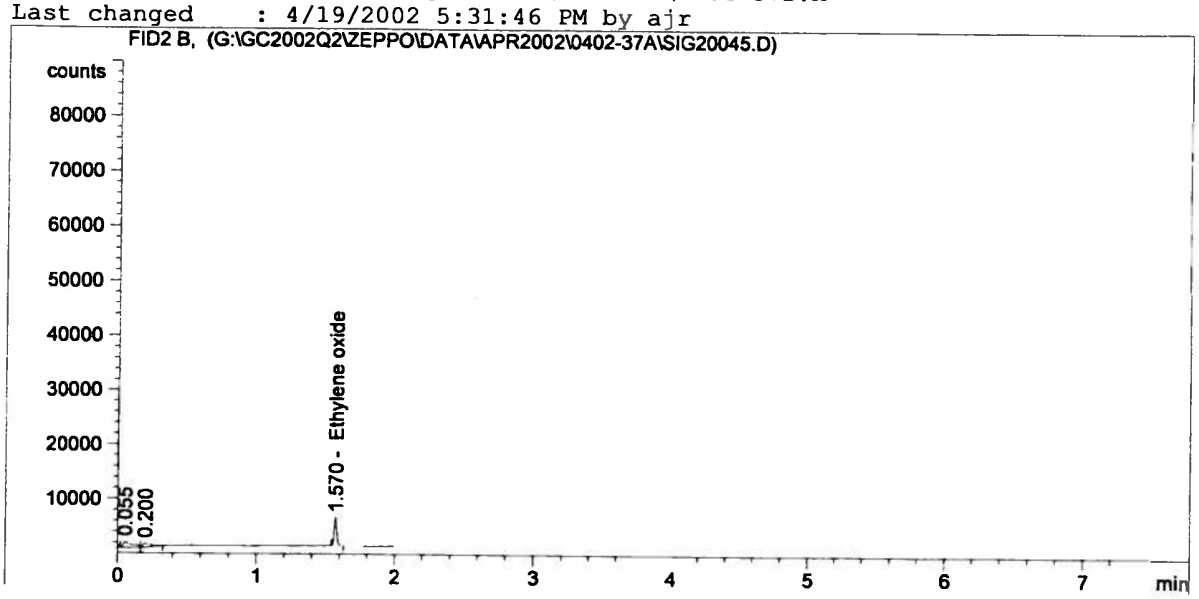
External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     9.86687e4  2.05055e-2 2023.25008     Ethylene oxide

Totals :                               2023.25008

 Results obtained with enhanced integrator!
```

*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20045.D Sample Name: 151ppmv eo

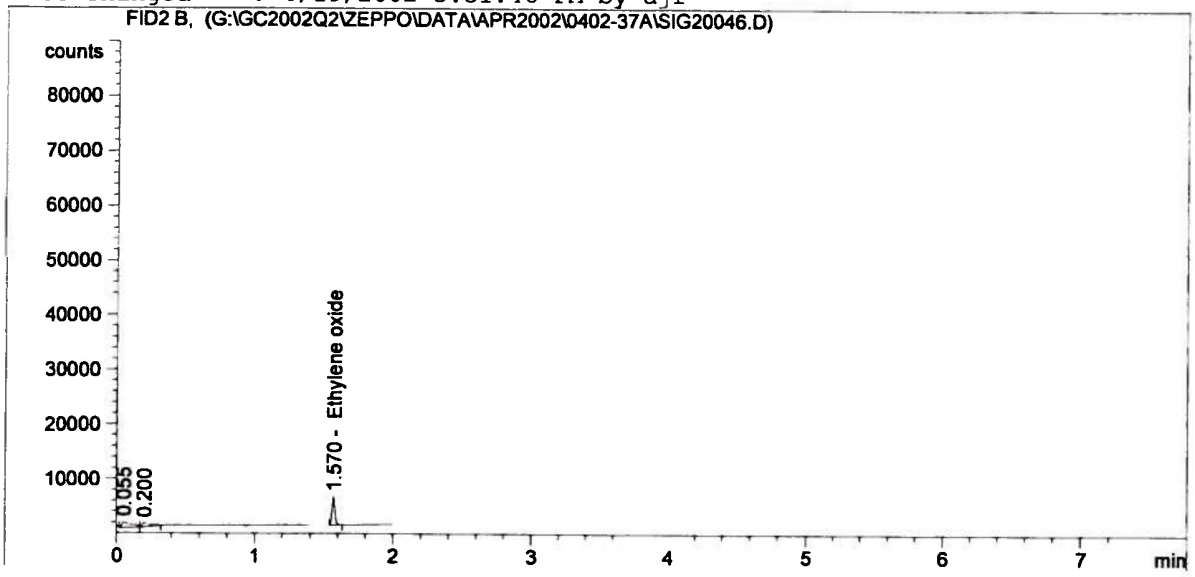
```
==============================================================================
Injection Date  : 4/16/2002 5:01:13 PM
Sample Name     : 151ppmv eo                        Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                          Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 4:55:59 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```




```
==============================================================================
                        External Standard Report
==============================================================================

Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 BB     7403.42920 2.09457e-2  155.07022     Ethylene oxide

Totals :                               155.07022

 Results obtained with enhanced integrator!
==============================================================================
                          *** End of Report ***
```

ta File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20046.D Sample Name: 151ppmv eo

```
Injection Date  : 4/16/2002 5:08:40 PM
Sample Name     : 151ppmv eo                        Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                          Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 4:55:59 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```



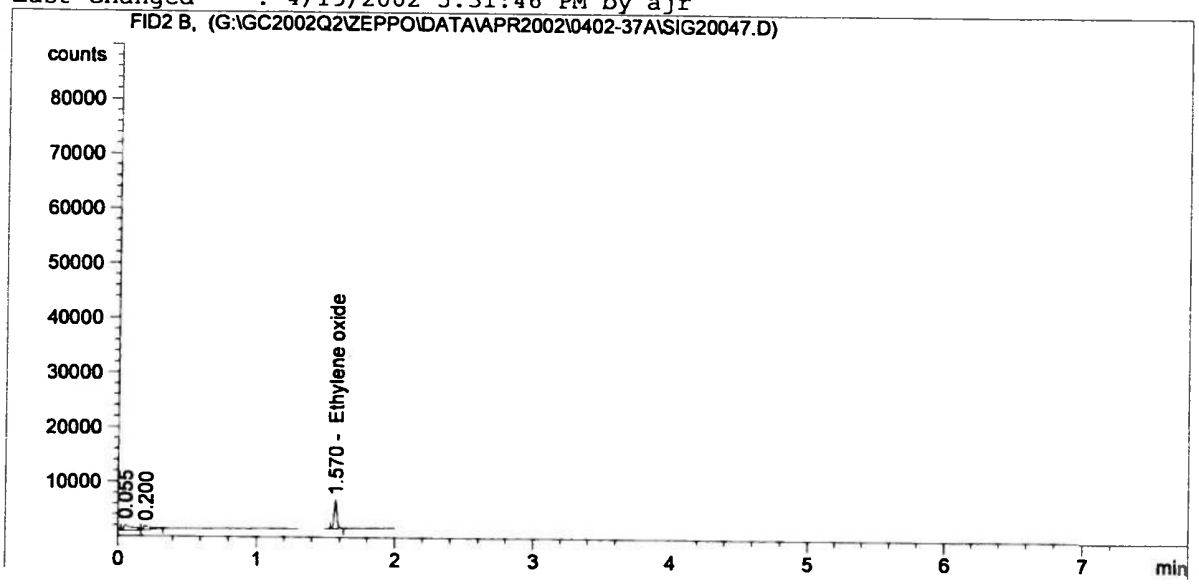
External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]          counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 BB     7490.01855 2.09402e-2  156.84268     Ethylene oxide

Totals :                               156.84268

 Results obtained with enhanced integrator!
```

*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20047.D Sample Name: 151ppmv eo

```
Injection Date  : 4/16/2002 5:13:10 PM
Sample Name     : 151ppmv eo                        Location :   -
Acq. Operator   : jrc
Acq. Instrument : Zeppo                          Inj Volume : External
Acq. Method     : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed    : 4/16/2002 4:55:59 PM by jrc
                  (modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37B.M
Last changed    : 4/19/2002 5:31:46 PM by ajr
```



External Standard Report

```
Sorted By             :      Signal
Calib. Data Modified  :      Friday, April 19, 2002 5:31:45 PM
Multiplier            :      1.0000
Dilution              :      1.0000

Signal 1: FID2 B,

RetTime  Type     Area      Amt/Area    Amount   Grp   Name
 [min]         counts*s                 [ppmv]
-------|------|----------|----------|----------|--|------------------
  1.570 PB     7452.10107 2.09426e-2  156.06652     Ethylene oxide

Totals :                               156.06652

 Results obtained with enhanced integrator!
```

*** End of Report ***

thod G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M

==========
Calibration Table
==========

Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM

Calculate : External Standard
Based on : Peak Area

Rel. Reference Window : 5.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 5.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

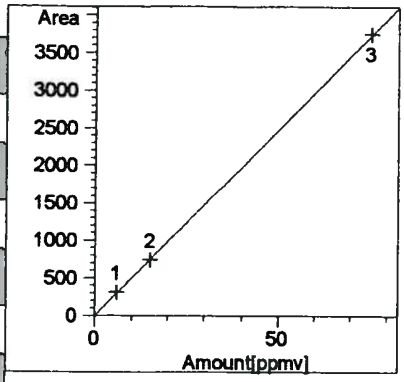
RetTime [min]	Sig	Lvl	Amount [ppmv]	Area	Amt/Area	Ref Grp	Name
1.571	1	1	6.04000	307.57238	1.96377e-2		Ethylene oxide
		2	15.10000	733.45176	2.05876e-2		
		3	75.50000	3744.16479	2.01647e-2		

==========
Peak Sum Table
==========

No Entries in table
==========

hod G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M

Calibration Curves

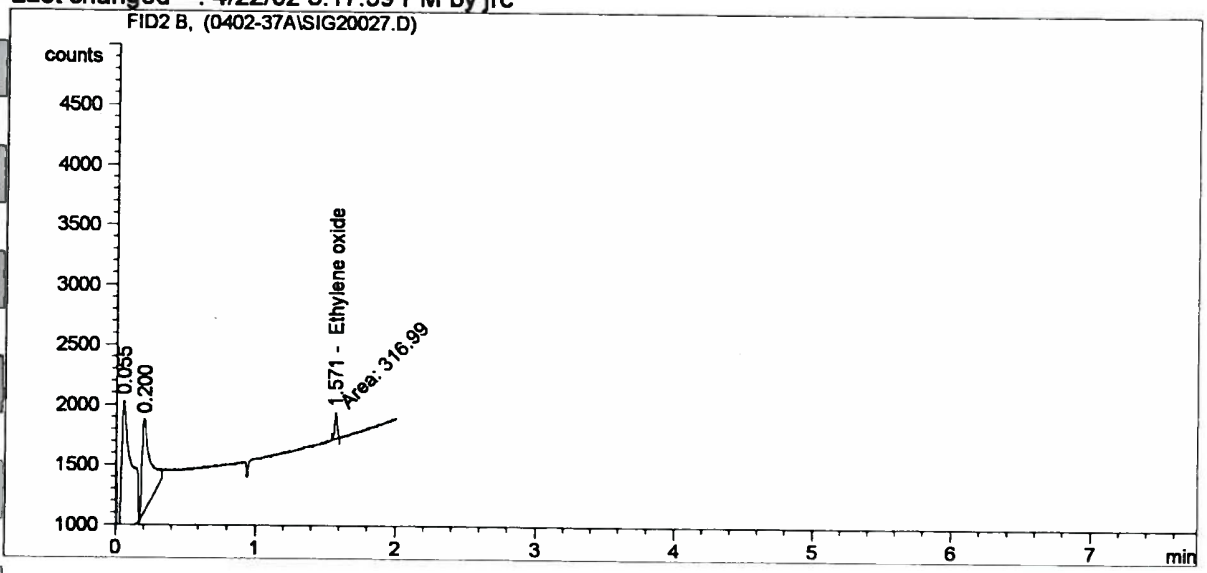


Ethylene oxide at exp. RT: 1.571
FID2 B,
Correlation: 0.99998
Residual Std. Dev.: 16.80070
Formula: y = mx + b
m: 49.61011
b: -3.04391
x: Amount[ppmv]
y: Area

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20027.D Sample Name: 6.04ppmv ec

==========

Injection Date : 4/16/02 3:27:00 PM
Sample Name : 6.04ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	MM	316.98975	2.03507e-2	6.45098		Ethylene oxide

Totals : 6.45098

Results obtained with enhanced integrator!

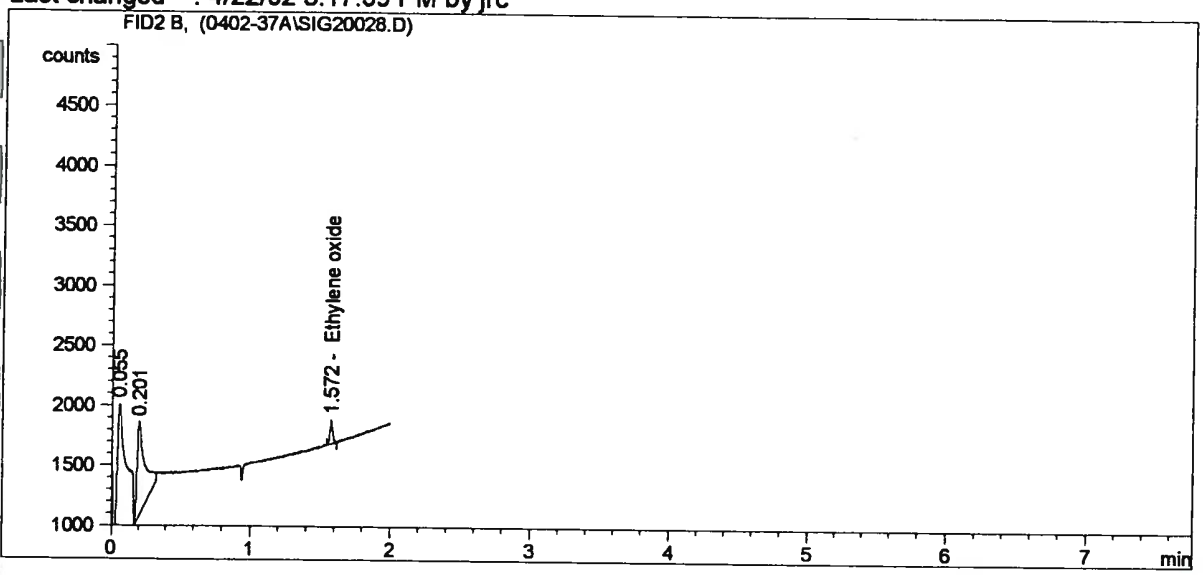
==========

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20028.D Sample Name: 6.04ppmv ec

==========

Injection Date : 4/16/02 3:32:18 PM
Sample Name : 6.04ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.572	BP	303.73572	2.03592e-2	6.18381		Ethylene oxide

Totals : 6.18381

Results obtained with enhanced integrator!

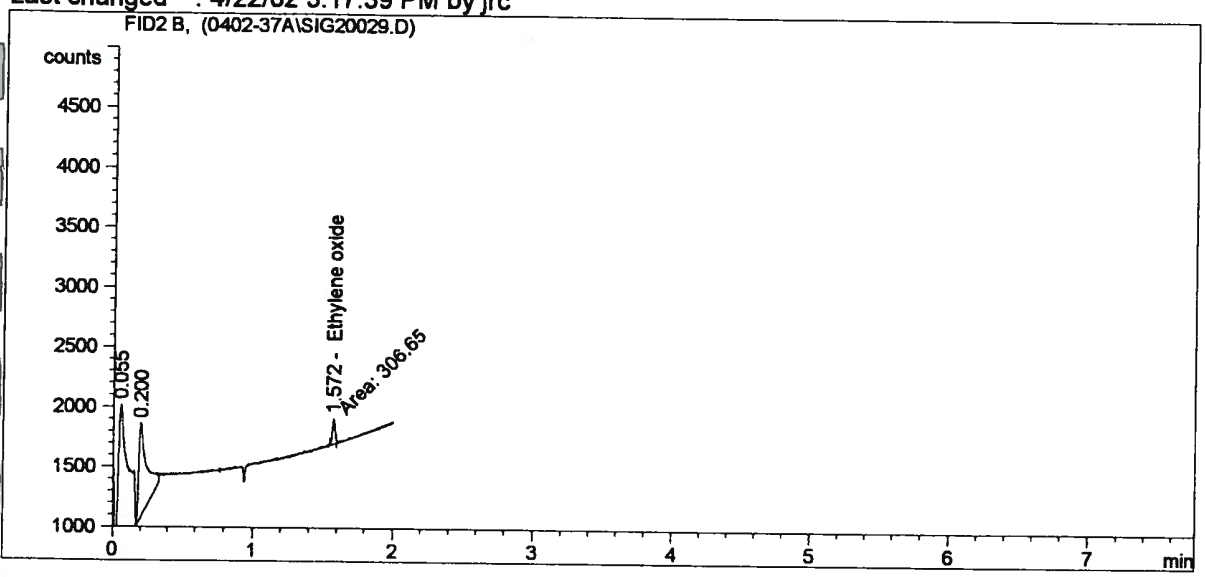
==========

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20029.D Sample Name: 6.04ppmv ec

==========

Injection Date : 4/16/02 3:37:33 PM
Sample Name : 6.04ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.572	MM	306.65033	2.03573e-2	6.24256		Ethylene oxide

Totals : 6.24256

Results obtained with enhanced integrator!

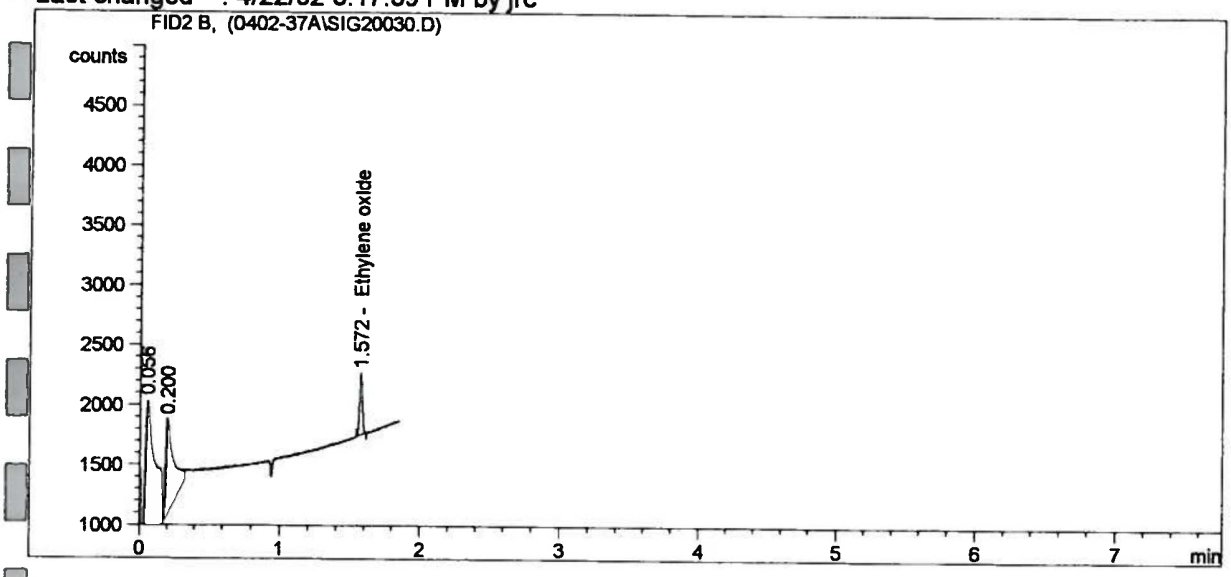
==========

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20030.D Sample Name: 15.1ppmv ec

==========

Injection Date : 4/16/02 3:44:04 PM
Sample Name : 15.1ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area [ppmv]	Amount	Grp	Name
1.572	BB	730.23010	2.02412e-2	14.78074		Ethylene oxide

Totals : 14.78074

Results obtained with enhanced integrator!

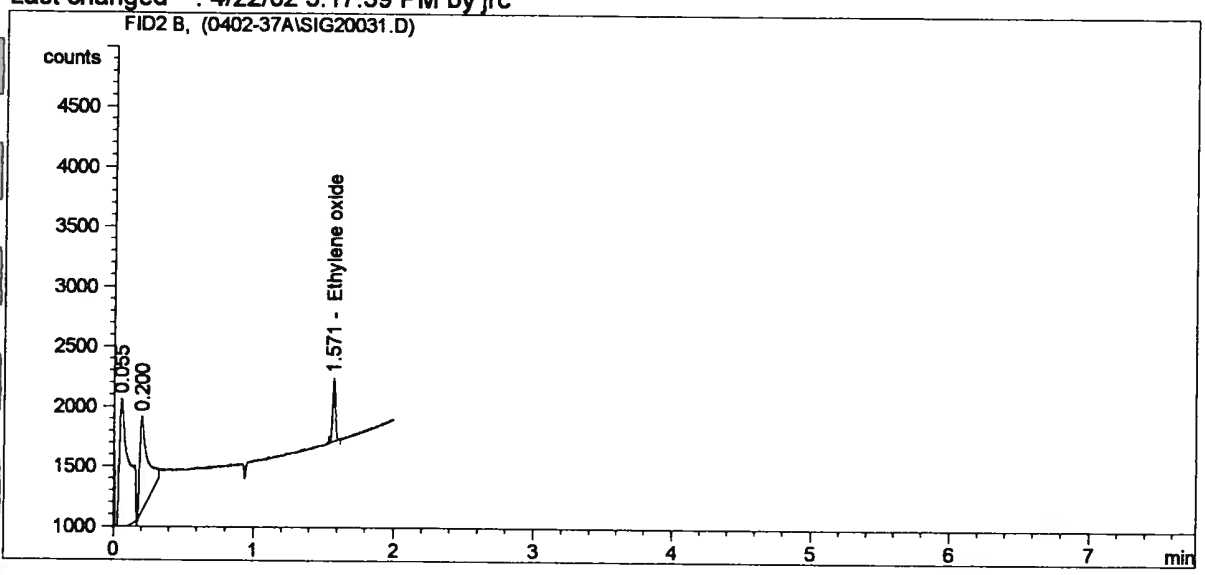
==========

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20031.D Sample Name: 15.1ppmv ec

==========

Injection Date : 4/16/02 3:47:26 PM
Sample Name : 15.1ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area [ppmv]	Amount	Grp	Name
1.571	PB	758.61908	2.02381e-2	15.35298		Ethylene oxide

Totals : 15.35298

Results obtained with enhanced integrator!

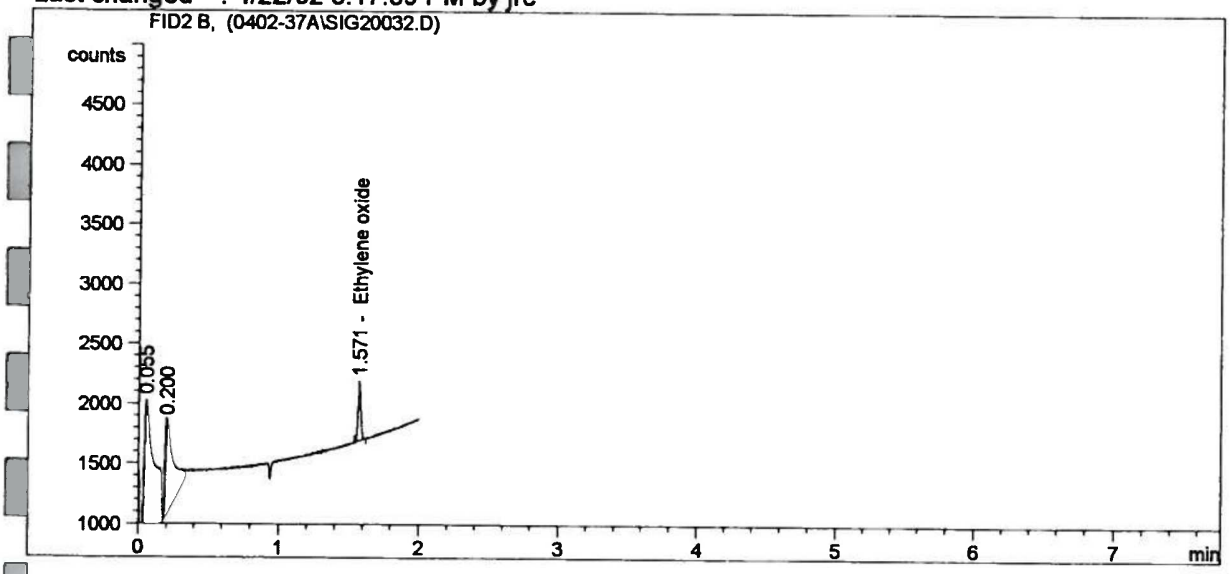
==========

*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20032.D Sample Name: 15.1ppmv ec

==========

Injection Date : 4/16/02 3:51:39 PM
Sample Name : 15.1ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



==========

External Standard Report

==========

Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	BB	711.50610	2.02434e-2	14.40332		Ethylene oxide

Totals : 14.40332

Results obtained with enhanced integrator!

==========

*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20033.D Sample Name: 75.5ppmv ec

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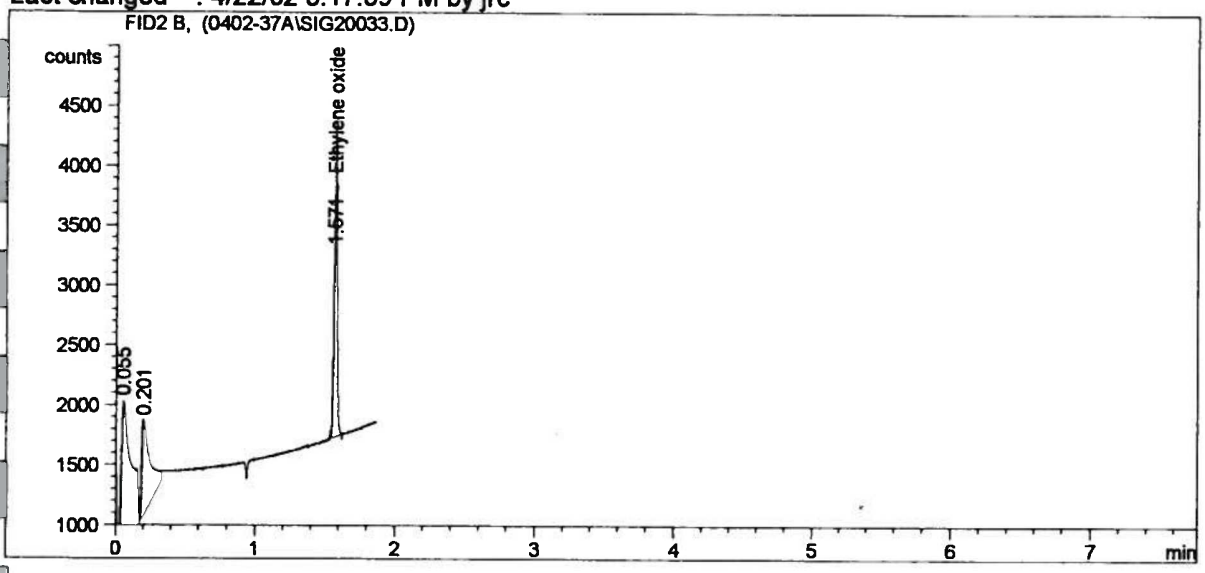
Injection Date : 4/16/02 3:57:20 PM
Sample Name : 75.5ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	BB	3744.16479	2.01736e-2	75.53317		Ethylene oxide

Totals : 75.53317

Results obtained with enhanced integrator!

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*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20034.D Sample Name: 75.5ppmv ec

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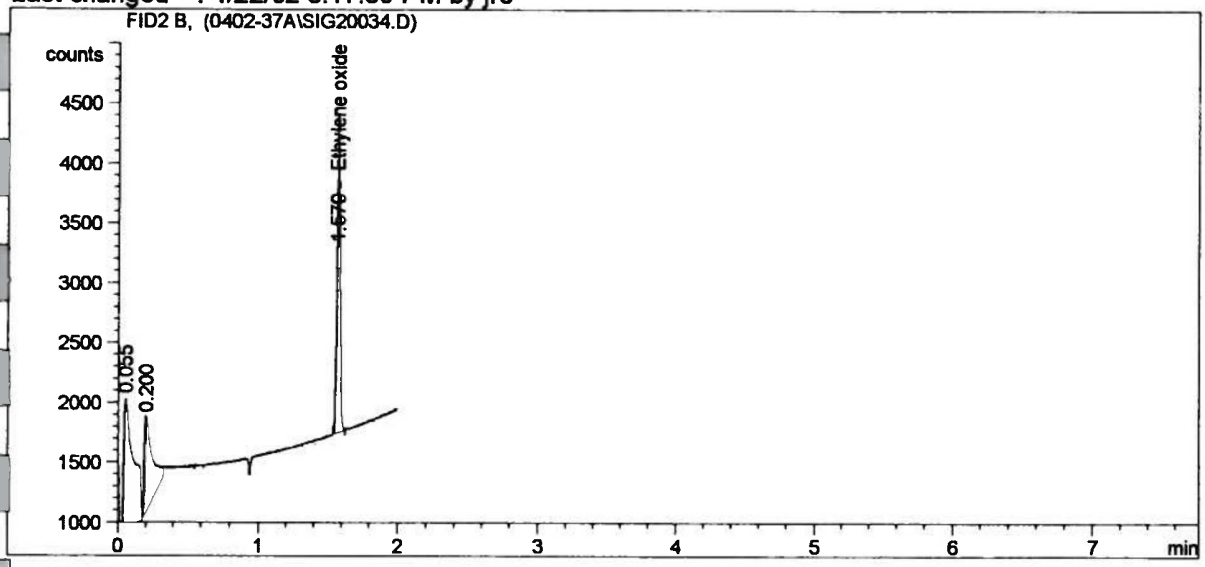
Injection Date : 4/16/02 4:01:42 PM
Sample Name : 75.5ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	BB	3754.75708	2.01735e-2	75.74668		Ethylene oxide

Totals : 75.74668

Results obtained with enhanced integrator!

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*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20035.D Sample Name: 75.5ppmv ec

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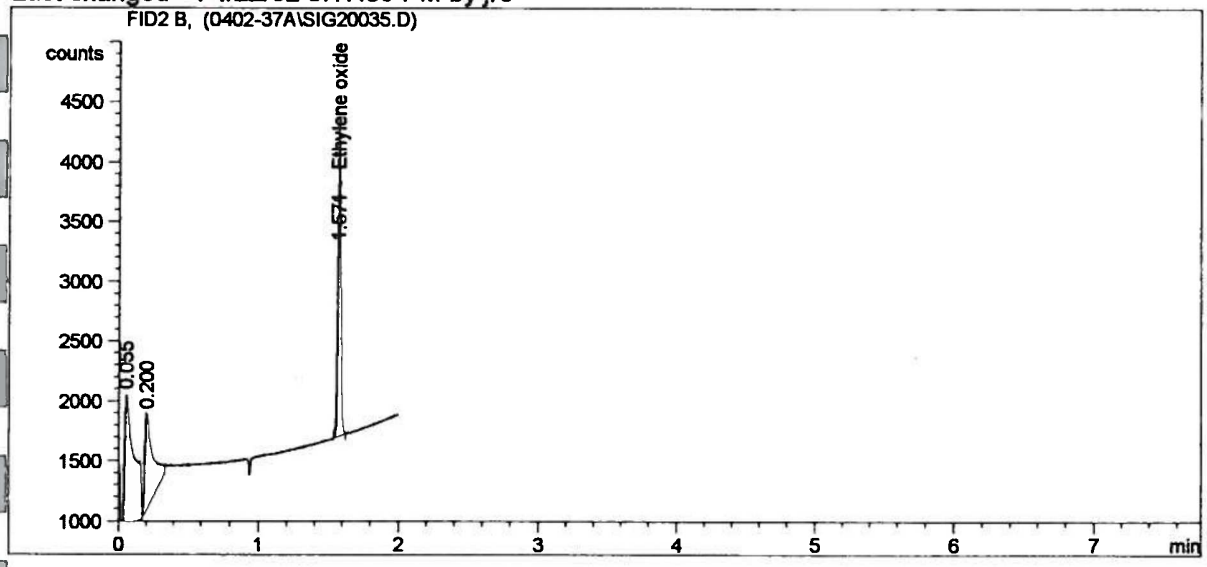
Injection Date : 4/16/02 4:05:23 PM
Sample Name : 75.5ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 3:12:06 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.571	BB	3801.48145	2.01733e-2	76.68851		Ethylene oxide

Totals : 76.68851

Results obtained with enhanced integrator!

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*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20045.D Sample Name: 151ppmv eo

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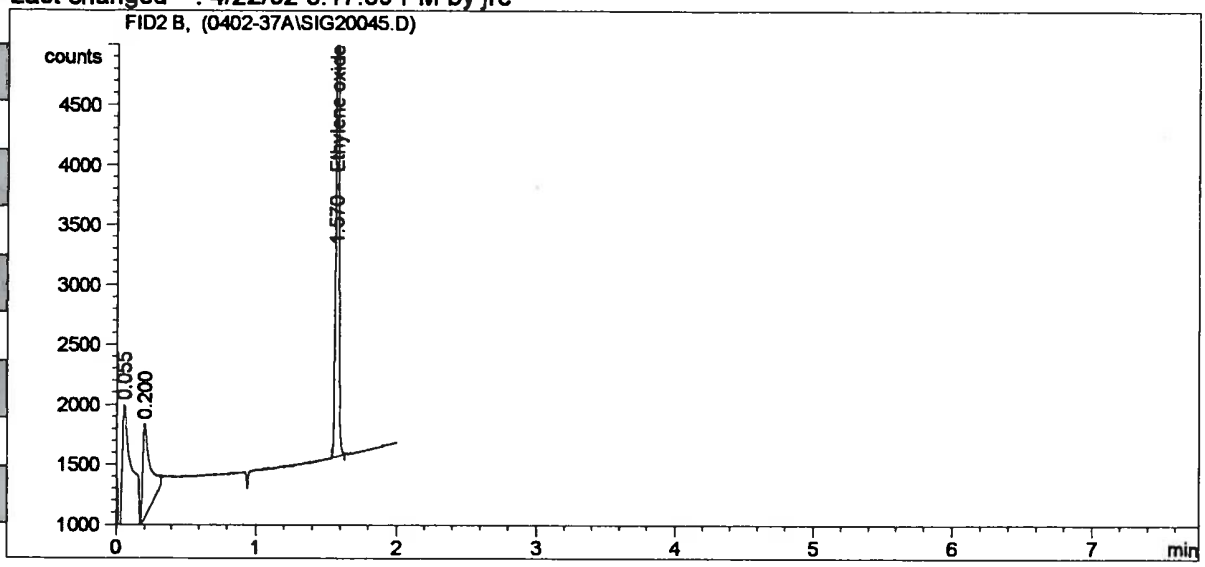
Injection Date : 4/16/02 5:01:13 PM
Sample Name : 151ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:55:59 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area [ppmv]	Amount	Grp	Name
1.570	BB	7403.42920	2.01655e-2	149.29364		Ethylene oxide

Totals : 149.29364

Results obtained with enhanced integrator!

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*** End of Report ***

a File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20046.D Sample Name: 151ppmv ec

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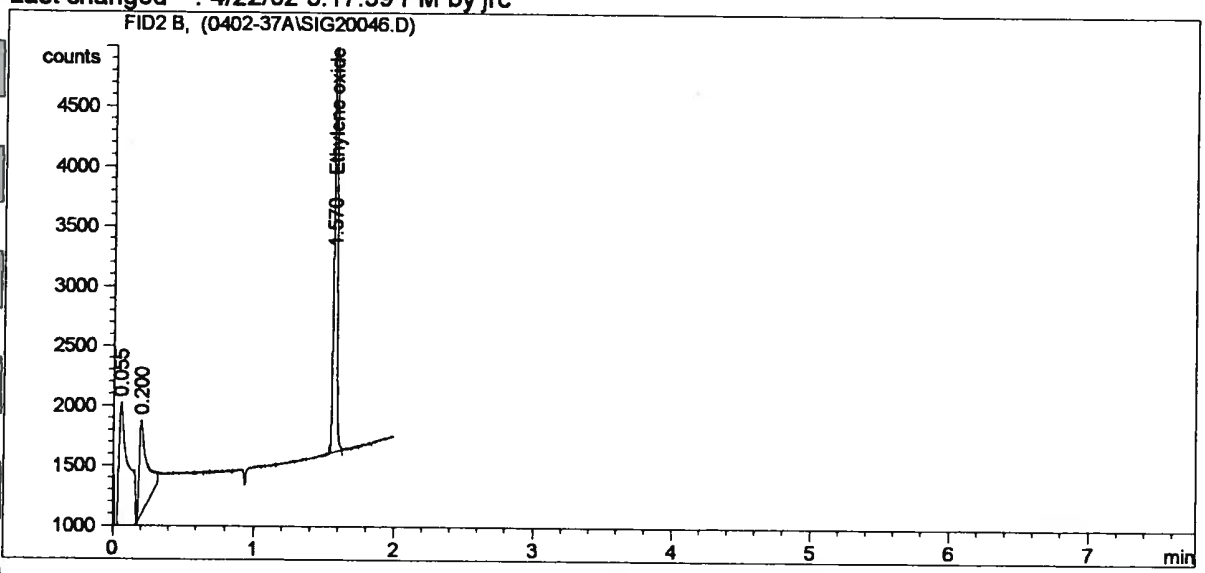
Injection Date : 4/16/02 5:08:40 PM
Sample Name : 151ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:55:59 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	BB	7490.01855	2.01654e-2	151.03903		Ethylene oxide

Totals : 151.03903

Results obtained with enhanced integrator!

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*** End of Report ***

Data File G:\GC2002Q2\ZEPPO\DATA\APR2002\0402-37A\SIG20047.D Sample Name: 151ppmv eo

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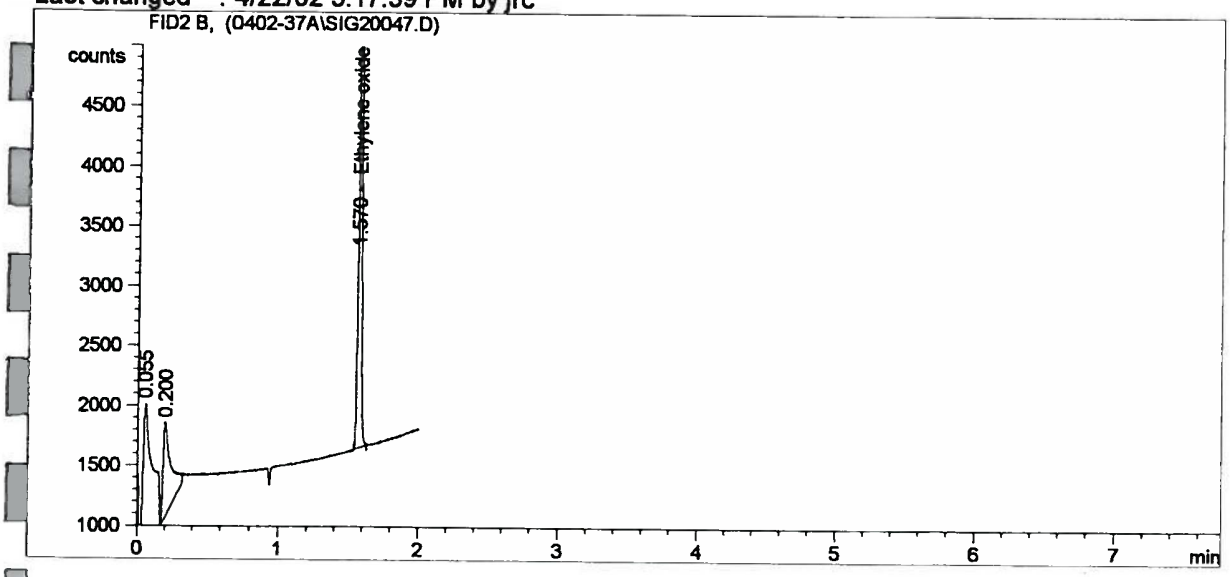
Injection Date : 4/16/02 5:13:10 PM
Sample Name : 151ppmv eo Vial : -
Acq. Operator : jrc
Inj Volume : External
Acq. Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37.M
Last changed : 4/16/02 4:55:59 PM by jrc
(modified after loading)
Analysis Method : G:\GC2002Q2\ZEPPO\METHODS\0402-37C.M
Last changed : 4/22/02 3:17:39 PM by jrc



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : Monday, April 22, 2002 3:17:38 PM
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: FID2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.570	PB	7452.10107	2.01654e-2	150.27472		Ethylene oxide

Totals : 150.27472

Results obtained with enhanced integrator!

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*** End of Report ***