APPENDIX C-1

FUEL A TEST DATA

Fuel A - 2800 rpm Data

Run #		116	117	118	119
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	2800	2800	2800	2800
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	2800	2799	2800	2801
Torque	(N-m)	457	349	234	120
Power	(kW)	134	102	69	35
Fuel Flow	(kg/hr)	33.6	27.9	21.5	14.2
Air Flow	(kg/hr)	793	670	527	343
Lambda		1.51	1.54	1.57	1.55
BSFC	(g/kW-hr)	5914	6555	7679	9770
BTE	(%)	31.0	28.5	24.8	19.2
Blowby (ref)	(liters/s)	1.4	1.3	1.0	0.6
Coolant In	(deg C)	84	84	85	86
Coolant Out	(deg C)	90	89	89	90
Oil Sump	(deg C)	112	112	110	108
Fuel Inlet	(deg C)	32	39	45	57
Inlet Air	(deg C)	26	26	26	25
Boost CO	(deg C)	117	109	101	76
Manifold	(deg C)	51	51	51	47
Ex 1	(deg C)	695	691	671	638
Ex 2	(deg C)	698	692	670	634
Ex 3	(deg C)	699	690	667	632
Ex 4	(deg C)	676	667	650	622
Ex 5	(deg C)	673	658	640	610
Ex 6	(deg C)	674	660	645	622
Ex Stack	(deg C)	645	641	621	597
Oil Press	(kPa)g	477.1	477.1	478.5	481.9
Fuel Press	(kPa)g	162.0	169.6	176.5	180.6
Inlet Restriction	(kPa)	1.13	0.93	0.73	0.47
Boost CO	(kPa)g	96.3	90.7	82.2	50.0
Boost IC	(kPa)g	90.2	86.0	78.7	48.1
Manifold	(kPa)g	83.8	57.0	25.8	-15.1
Barometer	(kPa)a	99.0	99.0	99.0	99.0
MAP	(kPa)a	182.9	156.0	124.8	83.9
PreTurbine	(kPa)g	58.8	48.0	37.0	21.4
Ex Back P	(kPa)g	12.4	8.8	5.2	2.2
Specific Humidity	(kg H2O/kg air)	0.0097	0.0097	0.0098	0.0098
Propane	(mole %)	94.3	94.3	94.3	94.3
Butane	(mole %)	1.9	1.9	1.9	1.9
Propylene	(mole %)	3.8	3.8	3.8	3.8
A/Fstoich		15.64	15.64	15.64	15.64
HCR		2.57	2.57	2.57	2.57
MWT		44.29	44.29	44.29	44.29
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	7.50	7.84	8.28	8.14
CO2	(%)	8.69	8.45	8.15	8.24
CO	(ppm)	586	643	678	753
THC	(ppm)	377	691	1601	2042
NOx	(ppm)	402	123	63	59
lambda emis		1.51	1.54	1.57	1.55
Avg Peak Press	(bar)	58.9	42.8	31.5	21.2
Avg Pk Press Loc	(CAD)	194.7	196.7	196.2	195.7
IMEP	(bar)	10.9	8.3	6.0	3.7
Std Dev IMEP	(kPa)	20.7	37.2	29.0	34.5
COV of IMEP	(%)	1.9	4.4	4.8	9.2
Ign Delay (0-10)	(CAD)	179.2	181.7	182.7	181.7
Comb Dur (10-90)	(CAD)	33.5	42.5	44.5	45.0
Max Press Rise	(kPa/deg)	193.1	108.2	68.3	46.9
Cum Heat Release	(J)	2409.8	1925.6	1442.3	942.2
Max Press Rise Loc	(CA)	183.7	184.7	185.7	185.7

Fuel A - 2600 rpm Data

Run #		120	121	122	123
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	2600	2600	2600	2600
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	2600	2600	2600	2601
Torque	(N-m)	533	405	266	139
Power	(kW)	145	110	73	38
Fuel Flow	(kg/hr)	35.3	28.6	21.5	14.1
Air Flow	(kg/hr)	830	682	530	346
Lambda		1.50	1.53	1.58	1.57
BSFC	(g/kW-hr)	5719	6180	7308	9146
BTE	(%)	32.0	30.0	26.2	20.9
Blowby (ref)	(liters/s)	1.6	1.3	1.1	0.6
Coolant In	(deg C)	83	84	84	84
Coolant Out	(deg C)	89	89	89	88
Oil Sump	(deg C)	112	110	108	107
Fuel Inlet	(deg C)	29	37	45	58
Inlet Air	(deg C)	26	26	29	28
Boost CO	(deg C)	132	118	110	79
Manifold	(deg C)	51	51	51	48
Ex 1	(deg C)	694	684	659	629
Ex 2	(deg C)	701	689	658	625
Ex 3	(deg C)	696	686	656	622
Ex 4	(deg C)	683	668	645	622
Ex 5	(deg C)	679	658	632	600
Ex 6	(deg C)	678	659	637	612
Ex Stack	(deg C)	638	633	607	593
Oil Press	(kPa)g	468.8	470.9	473.0	475.1
Fuel Press	(kPa)g	160.6	169.6	175.8	180.6
Inlet Restriction	(kPa)	1.20	0.96	0.75	0.48
Boost CO	(kPa)g	116.2	102.5	89.6	49.7
Boost IC	(kPa)g	109.8	98.0	86.5	47.7
Manifold	(kPa)g	103.4	68.8	33.7	-10.3
Barometer	(kPa)a	99.0	99.0	99.0	99.0
MAP	(kPa)a	202.4	167.8	132.7	88.7
PreTurbine	(kPa)g	67.7	51.7	39.7	21.3
Ex Back P	(kPa)g	13.7	9.0	5.2	2.2
Specific Humidity	(kg H2O/kg air)	0.0099	0.0100	0.0102	0.0103
Propane	(mole %)	94.3	94.3	94.3	94.3
Butane	(mole %)	1.9	1.9	1.9	1.9
Propylene	(mole %)	3.8	3.8	3.8	3.8
A/Fstoich		15.64	15.64	15.64	15.64
HCR		2.57	2.57	2.57	2.57
MWT		44.29	44.29	44.29	44.29
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	7.45	7.71	8.35	8.43
CO2	(%)	8.72	8.54	8.12	8.05
CO	(ppm)	541	595	654	720
THC	(ppm)	335	526	1547	2359
NOx	(ppm)	390	144	59	45
lambda emis		1.50	1.53	1.58	1.57
Avg Peak Press	(bar)	62.3	44.4	31.6	20.2
Avg Pk Press Loc	(CAD)	196.2	196.7	196.7	197.7
IMEP	(bar)	12.3	9.1	6.2	3.8
Std Dev IMEP	(kPa)	26.9	31.7	44.1	28.3
COV of IMEP	(%)	2.2	3.5	7.0	7.4
Ign Delay (0-10)	(CAD)	180.7	182.7	183.7	184.2
Comb Dur (10-90)	(CAD)	36.0	43.5	47.5	48.0
Max Press Rise	(kPa/deg)	186.2	106.9	55.8	33.8
Cum Heat Release	(J)	2723.2	2089.1	1506.7	978.1
Max Press Rise Loc	(CA)	184.7	186.2	187.2	185.7

Fuel A - 1640 rpm Data

Run #		150	151	152	153
Target Speed	(rpm)	1640	1640	1640	1640
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	1640	1641	1641	1640
Torque	(N-m)	579	435	292	146
Power	(kW)	100	75	50	25
Fuel Flow	(kg/hr)	21.9	17.0	12.3	7.7
Air Flow	(kg/hr)	503	387	274	162
Lambda		1.47	1.46	1.43	1.34
BSFC	(g/kW-hr)	5049	5183	5471	6475
BTE	(%)	35.3	34.2	31.8	25.2
Blowby (ref)	(liters/s)	1.4	1.2	0.9	0.5
Coolant In	(deg C)	83	84	84	86
Coolant Out	(deg C)	90	89	89	89
Oil Sump	(deg C)	105	102	101	99
Fuel Inlet	(deg C)	44	48	56	62
Inlet Air	(deg C)	26	27	27	27
Boost CO	(deg C)	108	92	68	46
Manifold	(deg C)	51	51	51	48
Ex 1	(deg C)	609	597	578	565
Ex 2	(deg C)	618	597	575	561
Ex 3	(deg C)	607	593	568	555
Ex 4	(deg C)	613	590	573	561
Ex 5	(deg C)	608	581	560	540
Ex 6	(deg C)	610	587	570	553
Ex Stack	(deg C)	592	576	564	540
Oil Press	(kPa)g	445.4	451.6	458.5	464.7
Fuel Press	(kPa)g	177.9	181.3	183.4	186.2
Inlet Restriction	(kPa)	0.72	0.54	0.38	0.22
Boost CO	(kPa)g	87.8	66.0	36.5	12.1
Boost IC	(kPa)g	85.2	63.9	35.1	11.4
Manifold	(kPa)g	81.6	43.9	6.3	-32.5
Barometer	(kPa)a	98.0	98.0	98.0	98.0
MAP	(kPa)a	179.6	141.9	104.4	65.5
PreTurbine	(kPa)g	36.5	25.6	14.9	6.3
Ex Back P	(kPa)g	4.6	2.7	1.4	0.5
Specific Humidity	(kg H2O/kg air)	0.0110	0.0111	0.0110	0.0111
Propane	(mole %)	94.3	94.3	94.3	94.3
Butane	(mole %)	1.9	1.9	1.9	1.9
Propylene	(mole %)	3.8	3.8	3.8	3.8
A/Fstoich		15.64	15.64	15.64	15.64
HCR		2.57	2.57	2.57	2.57
MWT		44.29	44.29	44.29	44.29
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	7.12	7.04	6.78	5.82
CO2	(%)	8.91	8.96	9.14	9.77
CO	(ppm)	468.4	487.9	537.8	676.2
THC	(ppm)	676.6	619.3	672	658.8
NOx	(ppm)	718.8	565.6	484.2	495.1
lambda emis		1.47	1.46	1.43	1.34
Avg Peak Press	(bar)	54.7	40.6	29.0	18.6
Avg Pk Press Loc	(CAD)	198.7	198.2	198.2	197.2
IMEP	(bar)	12.3	9.0	6.2	3.5
Std Dev IMEP	(kPa)	17.2	20.0	13.1	8.3
COV of IMEP	(%)	1.4	2.2	2.1	2.4
Ign Delay (0-10)	(CAD)	183.2	182.7	182.2	181.2
Comb Dur (10-90)	(CAD)	28.5	32.5	33.0	32.5
Max Press Rise	(kPa/deg)	149.6	104.1	73.1	50.3
Cum Heat Release	(J)	2515.4	1887.6	1337.9	801.9
Max Press Rise Loc	(CA)	188.2	186.2	186.2	185.7

Fuel A - 1460 rpm Data

Run #		124	125	126	127
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	1460	1460	1460	1460
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	1461	1461	1461	1461
Torque	(N-m)	570	425	286	144
Power	(kW)	87	65	44	22
Fuel Flow	(kg/hr)	19.3	15.0	10.8	6.8
Air Flow	(kg/hr)	437	340	239	136
Lambda		1.45	1.45	1.41	1.28
BSFC	(g/kW-hr)	5005	5224	5468	6165
BTE	(%)	35.1	33.7	31.3	25.2
Blowby (ref)	(liters/s)	1.3	1.1	0.8	0.4
Coolant In	(deg C)	81	82	86	83
Coolant Out	(deg C)	88	88	90	87
Oil Sump	(deg C)	103	101	99	98
Fuel Inlet	(deg C)	46	52	59	63
Inlet Air	(deg C)	27	28	27	27
Boost CO	(deg C)	103	85	62	44
Manifold	(deg C)	51	50	45	41
Ex 1	(deg C)	598	588	571	564
Ex 2	(deg C)	608	590	568	558
Ex 3	(deg C)	595	585	559	551
Ex 4	(deg C)	602	584	568	560
Ex 5	(deg C)	598	577	554	538
Ex 6	(deg C)	603	585	565	551
Ex Stack	(deg C)	586	579	561	538
Oil Press	(kPa)g	433.0	437.8	442.6	448.2
Fuel Press	(kPa)g	177.2	180.6	184.1	186.2
Inlet Restriction	(kPa)	0.61	0.47	0.37	0.20
Boost CO	(kPa)g	80.9	56.8	29.0	8.9
Boost IC	(kPa)g	78.4	54.9	28.5	8.1
Manifold	(kPa)g	75.8	39.9	3.2	-36.6
Barometer	(kPa)a	99.0	99.0	99.0	99.0
MAP	(kPa)a	174.8	138.9	102.1	62.3
PreTurbine	(kPa)g	32.0	22.5	12.3	5.4
Ex Back P	(kPa)g	3.4	2.1	1.1	0.5
Specific Humidity	(kg H2O/kg air)	0.0101	0.0101	0.0103	0.0102
Propane	(mole %)	94.3	94.3	94.3	94.3
Butane	(mole %)	1.9	1.9	1.9	1.9
Propylene	(mole %)	3.8	3.8	3.8	3.8
A/Fstoich		15.64	15.64	15.64	15.64
HCR		2.57	2.57	2.57	2.57
MWT		44.29	44.29	44.29	44.29
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	6.94	6.95	6.55	4.98
CO2	(%)	9.06	9.06	9.31	10.33
CO	(ppm)	453	470	514	632
THC	(ppm)	809	690	656	506
NOx	(ppm)	741	468	449	684
lambda emis		1.45	1.45	1.41	1.28
Avg Peak Press	(bar)	49.8	34.3	25.9	17.5
Avg Pk Press Loc	(CAD)	200.2	201.2	200.2	198.7
IMEP	(bar)	12.0	8.6	6.0	3.4
Std Dev IMEP	(kPa)	20.0	25.5	16.5	9.7
COV of IMEP	(%)	1.6	2.9	2.7	2.8
Ign Delay (0-10)	(CAD)	184.7	185.7	184.7	182.7
Comb Dur (10-90)	(CAD)	29.5	35.0	34.0	30.5
Max Press Rise	(kPa/deg)	123.4	63.4	53.1	46.2
Cum Heat Release	(J)	2480.5	1858.0	1313.6	790.3
Max Press Rise Loc	(CA)	189.2	189.7	188.7	187.2

APPENDIX C-2

FUEL B TEST DATA

Fuel B - 2800 rpm Data

Run #		128	129	130	131
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	2800	2800	2800	2800
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	2800	2800	2800	2801
Torque	(N-m)	443	336	229	113
Power	(kW)	130	98	67	33
Fuel Flow	(kg/hr)	33.3	27.7	21.4	14.0
Air Flow	(kg/hr)	791	670	528	338
Lambda		1.52	1.56	1.58	1.55
BSFC	(g/kW-hr)	6083	6812	7860	10213
BTE	(%)	30.3	27.7	24.4	18.4
Blowby (ref)	(liters/s)	1.4	1.2	0.9	0.6
Coolant In	(deg C)	83	84	85	86
Coolant Out	(deg C)	89	89	89	89
Oil Sump	(deg C)	112	111	110	108
Fuel Inlet	(deg C)	32	39	49	58
Inlet Air	(deg C)	25	25	26	26
Boost CO	(deg C)	116	110	102	76
Manifold	(deg C)	51	51	51	42
Ex 1	(deg C)	695	691	672	637
Ex 2	(deg C)	696	691	670	633
Ex 3	(deg C)	698	689	667	631
Ex 4	(deg C)	675	666	649	623
Ex 5	(deg C)	671	657	638	611
Ex 6	(deg C)	673	659	644	622
Ex Stack	(deg C)	644	639	619	595
Oil Press	(kPa)g	476.4	477.1	478.5	482.6
Fuel Press	(kPa)g	166.2	174.4	180.6	184.1
Inlet Restriction	(kPa)	1.13	0.95	0.71	0.47
Boost CO	(kPa)g	94.9	90.7	81.9	48.5
Boost IC	(kPa)g	89.4	86.2	79.2	46.6
Manifold	(kPa)g	82.7	56.7	25.9	-16.3
Barometer	(kPa)a	98.8	98.8	98.8	98.8
MAP	(kPa)a	181.6	155.5	124.6	82.5
PreTurbine	(kPa)g	59.1	48.0	38.5	20.2
Ex Back P	(kPa)g	12.2	8.6	5.2	2.1
Specific Humidity	(kg H2O/kg air)	0.0103	0.0103	0.0103	0.0103
Propane	(mole %)	85	85	85	85
Butane	(mole %)	5	5	5	5
Propylene	(mole %)	10	10	10	10
A/Fstoich		15.58	15.58	15.58	15.58
HCR		2.59	2.59	2.59	2.59
MWT		44.60	44.60	44.60	44.60
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	7.62	8.02	8.37	8.22
CO2	(%)	8.62	8.35	8.11	8.24
CO	(ppm)	636	673	699	773
THC	(ppm)	444	959	1795	2227
NOx	(ppm)	351	100	57	53
lambda emis		1.52	1.56	1.58	1.55
Avg Peak Press	(bar)	57.6	41.0	29.8	20.1
Avg Pk Press Loc	(CAD)	195.2	196.7	197.2	196.2
IMEP	(bar)	10.7	8.0	5.8	3.6
Std Dev IMEP	(kPa)	18.6	29.6	30.3	33.1
COV of IMEP	(%)	1.7	3.7	5.2	9.2
Ign Delay (0-10)	(CAD)	179.7	182.2	183.2	182.2
Comb Dur (10-90)	(CAD)	34.0	43.5	46.5	45.5
Max Press Rise	(kPa/deg)	184.1	97.2	55.2	42.1
Cum Heat Release	(J)	2382.4	1882.3	1419.1	920.0
Max Press Rise Loc	(CA)	184.2	185.2	185.7	186.2

Fuel B - 2600 rpm Data

Run #		132	133	134	135
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	2600	2600	2600	2600
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	2600	2601	2600	2600
Torque	(N-m)	526	398	266	134
Power	(kW)	143	109	72	37
Fuel Flow	(kg/hr)	35.3	28.4	21.5	13.7
Air Flow	(kg/hr)	835	683	530	335
Lambda		1.52	1.54	1.58	1.56
BSFC	(g/kW-hr)	5836	6296	7307	9151
BTE	(%)	31.6	29.7	26.3	20.7
Blowby (ref)	(liters/s)	1.5	1.3	1.1	0.6
Coolant In	(deg C)	84	85	85	86
Coolant Out	(deg C)	90	90	90	89
Oil Sump	(deg C)	112	110	109	106
Fuel Inlet	(deg C)	30	38	48	56
Inlet Air	(deg C)	25	26	26	27
Boost CO	(deg C)	132	119	108	76
Manifold	(deg C)	51	51	51	46
Ex 1	(deg C)	695	684	659	628
Ex 2	(deg C)	701	688	659	626
Ex 3	(deg C)	697	686	655	622
Ex 4	(deg C)	683	668	647	622
Ex 5	(deg C)	678	658	633	602
Ex 6	(deg C)	678	660	640	614
Ex Stack	(deg C)	637	632	609	595
Oil Press	(kPa)g	468.8	470.9	471.6	475.7
Fuel Press	(kPa)g	163.4	174.4	180.6	184.1
Inlet Restriction	(kPa)	1.21	0.97	0.75	0.46
Boost CO	(kPa)g	116.5	103.1	90.0	47.8
Boost IC	(kPa)g	110.3	98.5	86.5	45.9
Manifold	(kPa)g	103.7	68.8	33.1	-12.9
Barometer	(kPa)a	98.8	98.8	98.8	98.8
MAP	(kPa)a	202.5	167.6	131.9	85.9
PreTurbine	(kPa)g	67.8	51.5	38.3	20.5
Ex Back P	(kPa)g	13.8	9.1	5.1	2.1
Specific Humidity	(kg H2O/kg air)	0.0102	0.0102	0.0102	0.0103
Propane	(mole %)	85	85	85	85
Butane	(mole %)	5	5	5	5
Propylene	(mole %)	10	10	10	10
A/Fstoich		15.58	15.58	15.58	15.58
HCR		2.59	2.59	2.59	2.59
MWT		44.60	44.60	44.60	44.60
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	7.60	7.88	8.37	8.31
CO2	(%)	8.66	8.47	8.15	8.18
CO	(ppm)	585	625	665	730
THC	(ppm)	385	661	1533	2195
NOx	(ppm)	318	114	61	51
lambda emis		1.52	1.54	1.58	1.56
Avg Peak Press	(bar)	61.6	43.1	31.8	19.7
Avg Pk Press Loc	(CAD)	196.2	197.7	197.2	196.7
IMEP	(bar)	12.2	8.9	6.3	3.6
Std Dev IMEP	(kPa)	29.0	25.5	37.2	33.8
COV of IMEP	(%)	2.4	2.8	5.9	9.3
Ign Delay (0-10)	(CAD)	181.2	183.7	183.2	183.2
Comb Dur (10-90)	(CAD)	34.5	42.0	46.5	49.5
Max Press Rise	(kPa/deg)	182.7	92.4	60.0	33.1
Cum Heat Release	(J)	2689.4	2068.0	1513.0	933.8
Max Press Rise Loc	(CA)	185.2	186.7	185.2	182.7

Fuel B - 1640 rpm Data

Run #		145	146	147	148
Date		01/08/99	01/08/99	01/08/99	01/08/99
Target Speed	(rpm)	1640	1640	1640	1640
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	1641	1641	1641	1641
Torque	(N-m)	590	441	300	149
Power	(kW)	101	75	51	25
Fuel Flow	(kg/hr)	22.2	17.2	12.5	7.8
Air Flow	(kg/hr)	504	387	278	163
Lambda		1.46	1.45	1.42	1.34
BSFC	(g/kW-hr)	4970	5139	5400	6418
BTE	(%)	35.5	34.1	32.0	25.3
Blowby (ref)	(liters/s)	1.4	1.2	0.8	0.5
Coolant In	(deg C)	83	84	84	85
Coolant Out	(deg C)	89	89	89	89
Oil Sump	(deg C)	104	102	101	98
Fuel Inlet	(deg C)	44	51	56	61
Inlet Air	(deg C)	27	27	26	27
Boost CO	(deg C)	108	92	68	46
Manifold	(deg C)	51	51	51	47
Ex 1	(deg C)	611	599	581	567
Ex 2	(deg C)	618	599	577	562
Ex 3	(deg C)	608	596	570	557
Ex 4	(deg C)	614	592	576	562
Ex 5	(deg C)	610	582	562	542
Ex 6	(deg C)	611	588	571	554
Ex Stack	(deg C)	592	578	566	541
Oil Press	(kPa)g	447.5	453.7	458.5	465.4
Fuel Press	(kPa)g	178.6	182.0	184.8	184.1
Inlet Restriction	(kPa)	0.71	0.54	0.39	0.24
Boost CO	(kPa)g	88.3	65.5	37.2	12.4
Boost IC	(kPa)g	85.5	63.4	35.9	11.7
Manifold	(kPa)g	82.0	42.7	7.6	-32.4
Barometer	(kPa)a	98.0	98.0	98.0	98.0
MAP	(kPa)a	180.1	140.8	105.6	65.6
PreTurbine	(kPa)g	36.2	25.7	15.2	6.4
Ex Back P	(kPa)g	4.6	2.6	1.4	0.5
Specific Humidity	(kg H2O/kg air)	0.0110	0.0109	0.0111	0.0112
Propane	(mole %)	85	85	85	85
Butane	(mole %)	5	5	5	5
Propylene	(mole %)	10	10	10	10
A/Fstoich		15.58	15.58	15.58	15.58
HCR		2.59	2.59	2.59	2.59
MWT		44.60	44.60	44.60	44.60
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	6.99	6.88	6.68	5.73
CO2	(%)	9.06	9.15	9.26	9.87
CO	(ppm)	455.7	474.5	534.1	680.3
THC	(ppm)	641.4	587.2	634.9	637.9
NOx	(ppm)	903.9	783.1	619.7	571.8
lambda emis		1.46	1.45	1.42	1.34
Avg Peak Press	(bar)	55.1	40.7	29.6	18.6
Avg Pk Press Loc	(CAD)	199.2	199.2	197.7	197.2
IMEP	(bar)	12.4	9.1	6.3	3.6
Std Dev IMEP	(kPa)	24.1	22.8	17.9	9.0
COV of IMEP	(%)	1.9	2.5	2.8	2.5
Ign Delay (0-10)	(CAD)	183.2	182.7	182.2	181.2
Comb Dur (10-90)	(CAD)	28.0	32.0	33.0	33.5
Max Press Rise	(kPa/deg)	153.1	100.7	75.2	49.0
Cum Heat Release	(J)	2540.7	1899.2	1360.0	819.8
Max Press Rise Loc	(CA)	188.2	187.2	186.2	184.2

Fuel B - 1460 rpm Data

Run #		136	137	138	139
Date		12/31/98	12/31/98	12/31/98	12/31/98
Target Speed	(rpm)	1460	1460	1460	1460
Target % Load	(%)	100	75	50	25
Act Speed	(rpm)	1461	1461	1462	1461
Torque	(N-m)	574	430	292	145
Power	(kW)	88	66	45	22
Fuel Flow	(kg/hr)	19.5	15.1	11.0	6.8
Air Flow	(kg/hr)	439	341	242	136
Lambda		1.45	1.45	1.41	1.28
BSFC	(g/kW-hr)	4993	5185	5408	6160
BTE	(%)	35.1	33.8	31.6	25.1
Blowby (ref)	(liters/s)	1.3	1.2	0.8	0.4
Coolant In	(deg C)	81	86	86	84
Coolant Out	(deg C)	88	91	91	88
Oil Sump	(deg C)	104	101	99	98
Fuel Inlet	(deg C)	47	51	58	62
Inlet Air	(deg C)	25	26	25	24
Boost CO	(deg C)	101	84	60	42
Manifold	(deg C)	51	48	42	37
Ex 1	(deg C)	599	588	572	563
Ex 2	(deg C)	609	591	569	559
Ex 3	(deg C)	595	586	560	551
Ex 4	(deg C)	602	585	569	559
Ex 5	(deg C)	598	578	555	538
Ex 6	(deg C)	603	586	565	551
Ex Stack	(deg C)	588	580	562	535
Oil Press	(kPa)g	431.6	436.4	442.6	449.5
Fuel Press	(kPa)g	183.4	184.8	186.8	191.0
Inlet Restriction	(kPa)	0.61	0.47	0.32	0.20
Boost CO	(kPa)g	80.9	57.4	30.7	8.9
Boost IC	(kPa)g	78.4	55.5	29.2	8.0
Manifold	(kPa)g	76.0	40.0	3.5	-37.0
Barometer	(kPa)a	98.8	98.8	98.8	98.8
MAP	(kPa)a	174.8	138.8	102.3	61.8
PreTurbine	(kPa)g	32.7	21.8	13.2	5.6
Ex Back P	(kPa)g	3.4	2.0	1.1	0.5
Specific Humidity	(kg H2O/kg air)	0.0103	0.0103	0.0102	0.0103
Propane	(mole %)	85	85	85	85
Butane	(mole %)	5	5	5	5
Propylene	(mole %)	10	10	10	10
A/Fstoich		15.58	15.58	15.58	15.58
HCR		2.59	2.59	2.59	2.59
MWT		44.60	44.60	44.60	44.60
LHV	(MJ/kg)	46.3	46.3	46.3	46.3
O2	(%)	6.94	6.93	6.53	4.91
CO2	(%)	9.10	9.11	9.38	10.44
CO	(ppm)	474	490	525	635
THC	(ppm)	791	680	650	501
NOx	(ppm)	748	478	455	755
lambda emis		1.45	1.45	1.41	1.28
Avg Peak Press	(bar)	49.2	35.0	25.9	17.8
Avg Pk Press Loc	(CAD)	200.7	201.2	200.2	198.7
IMEP	(bar)	11.9	8.6	6.1	3.4
Std Dev IMEP	(kPa)	21.4	24.1	16.5	6.9
COV of IMEP	(%)	1.8	2.8	2.7	2.0
Ign Delay (0-10)	(CAD)	184.7	185.7	184.7	182.7
Comb Dur (10-90)	(CAD)	29.5	34.0	34.0	28.5
Max Press Rise	(kPa/deg)	116.5	68.3	51.0	49.6
Cum Heat Release	(J)	2453.1	1847.5	1329.4	790.3
Max Press Rise Loc	(CA)	189.2	188.7	188.2	187.2