Appendix E
Test Data
9/12/11 – 11/17/11

Testing Calendar

			Blend Fuel Underway Day				Blend Fuel Pierside Day					
		Test Day Description	Description	Days Remaing	Engine Hours	Fuel Consumed	Description	Days Remaining	Engine Hours	Fuel Consumed	Total Hours	Total Fuel
	10	ULSD Emission Test		Starting 17 days				Starting 31				10507
	11	Blend Emission Test	Emission Test	16	11	305					11	10202
	12	Underway Day	75% MCR Load	15	9	227.5					20	9974.5
	13	Pierside Day					Shorepower ~200 Amps	30	7	125	27	9849.5
	14	Pierside Day					Shorepower ~200 Amps	29	8.5	146.43	35.5	9703.07
	15	Pierside Day					Shorepower ~200 Amps	28	8.9	148.46	44.4	9554.61
S	16	Underway Day	Endurance Run	14	12.7	352.7					57.1	9201.91
e	17	Underway Day	75% MCR Load	13	13	372.7					70.1	8829.21
p	18	Underway Day	75% MCR Load	12	11.9	305.7					82	8523.51
t	19	Underway Day	Endurance Run	11	11.1	302.6					93.1	8220.91
e	20	Underway Day	75% MCR Load	10	10.9	333.1					104	7887.81
m	21	Pierside Day					Shorepower ~200 Amps	27	8.8	151.5	112.8	7736.31
b	22	Underway Day	75% MCR Load	9	10.4	328					123.2	7408.31
e	23	Underway Day	75% MCR Load	8	10.6	327.8					133.8	7080.51
r	24	Underway Day	75% MCR Load	7	16.1	432.3					149.9	6648.21
	25	Underway Day	75% MCR Load	6	7.2	217.4					157.1	6430.81
	26	Pierside Day					Shorepower ~200 Amps	26	8.6	141	165.7	6289.81
	27	Underway Day	75% MCR Load	5	11	333.1					176.7	5956.71
	28	Underway Day	75% MCR Load	4	10.8	327.2					187.5	5629.51
	29	Pierside Day					Shorepower ~200 Amps	25	8.8	162.9	196.3	5466.61
	30	Pierside Day					Shorepower ~200 Amps	24	8.6	142.1	204.9	5324.51
	1	Bad Weather Day - No Running									204.9	5324.51
	2	Underway Day	75% MCR Load	3	11	329.8					215.9	4994.71
	3	Underway Day	75% MCR Load	2	10.4	327.6					226.3	4667.11
	4	Underway Day	75% MCR Load	1	10.9	339.5					237.2	4327.61
	5	Underway Day	Special Run - 3 Gens 400 amps - Full Speed	Final Day Underway	11.1	293.7					248.3	4033.91
	6	Maintenance Day									248.3	4033.91
	7	Maintenance Day									248.3	4033.91
	8										248.3	4033.91
	9										248.3	4033.91
	10	Maintenance Day									248.3	4033.91
	11	Pierside Day					Shorepower ~200 Amps	23	8.8	150.3	257.1	3883.61
	12	Pierside Day					Shorepower ~200 Amps	22	8.9	149.3	266	3734.31
	13	Pierside Day					Shorepower ~200 Amps	21	8.5	152	274.5	3582.31
	14	Pierside Day					Shorepower ~200 Amps	20	8.6	145.4	283.1	3436.91
	15										283.1	3436.91
	16										283.1	3436.91
	17	Pierside Day					Shorepower ~200 Amps	19	8.5	146.6	291.6	3290.31
	18	Pierside Day					Shorepower ~200 Amps	18	8.4	146	300	3144.31
	19	Pierside Day					Shorepower ~200 Amps	17	8.4	144.3	308.4	3000.01
	20	Pierside Day	Bad Weather Day Caused Early Shutdown				Shorepower ~200 Amps	16	5.5	80.3	313.9	2919.71
	21	Pierside Day					Shorepower ~200 Amps	15	8.5	147.1	322.4	2772.61
	22											
	23											
	24	Down - Schoolship mtg										
	25	Down - Schoolship mtg										
	26	Down - Schoolship mtg										
	27	Down - Schoolship mtg										
	28	Pierside Day					Shorepower ~200 Amps	14	8.5	146.3	330.9	2626.31
	29											
	30											
	31	Pierside Day					Shorepower ~200 Amps	13	8.5	149.1	339.4	2477.21
	1	Pierside Day					Shorepower ~200 Amps	12	8.6	150	348	2327.21
	2	Pierside Day					Shorepower ~200 Amps	11	8.4	144.7	356.4	2182.51
	3	Pierside Day					Shorepower ~200 Amps	10	8.5	148.6	364.9	2033.91
	4	Pierside Day					Shorepower ~200 Amps	9	8.4	149.6	373.3	1884.31
	5											
	6											
	7	Pierside Day					Shorepower ~200 Amps	8	8.5	144.3	381.8	1740.01
	8	Pierside Day					Shorepower ~200 Amps	7	8.5	149.4	390.3	1590.61
	9	Pierside Day					Shorepower ~200 Amps	6	8.5	144.3	398.8	1446.31
	10	Pierside Day					Shorepower ~200 Amps	5	9	153.9	407.8	1292.41
	11	Pierside Day					Shorepower ~200 Amps	4	8.4	155.1	416.2	1137.31
N	12											
o	13											
v	14	Pierside Day					Shorepower ~200 Amps	3	8.4	145.3	424.6	992.01
e	15	Pierside Day					Shorepower ~200 Amps	2	8.5	151	433.1	841.01
m	16	Pierside Day					Shorepower ~200 Amps	1	8.5	155.7	441.6	685.31
b	17	Pierside Day					Shorepower ~200 Amps	Final Day Pierside	8.1	134.5	449.7	550.81
e	18											
r	19											
	20											
	21											
	22											
	23											
	24	THANKSGIVING										
	25											
	26											
	27											
	28	Tentative Caterpillar Inspection										
	29	Tentative Caterpillar Inspection										
	30	Tentative Caterpillar Inspection										

DAY 1 Date 9/10/11

#2 [illegible] Sulfur Diesel

MARAD Alternative Fuel Test Protocol
T/S STATE OF MICHIGAN
Day 1, Saturday, September 10

UNDERWAY TEST – Day 1 – September 11

Underway ULSD Performance and Emissions Test – Port Service Tank will be secured

Hour 1 through 2 - Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. After reaching safe channel ship test team will begin by calibrating the SSDG #4 ammeter transducer. Also testing will be performed to establish the maximum allowable loads with one and two SSDG's online. Specifically, ship will increase speed until SSDG #4 reaches maximum allowable loading (control system function). This SDDG load point will be considered "Maximum Load" for all testing, but the two emission tests when the anti-blackout control will be purposely disabled to conduct the tests [NOTE: This still needs to be established by MARAD/ChEng]. The 25% Load Point will be achieved through use of hotel loading and either bow thruster or slight ship throttle.

Hours 3-8, perform emissions profile testing (repeat 3 times same profile on SSDG #4 and using #1 or #3 as noted:

Step	Load (1) (percent)	Speed (percent)	Stabilization Time (minutes)	Sampling Time (minutes)
1	100(5)	100	30(3)	7
2	75	100	10	7
3	50	100	10	7
4	25(4)	100	10	7
5	10(5)	100	10	7

#1: 0737 0750 0807 0820 0838

#2: 0925 0937 0955 1008 1021

#3: 111[illegible] 112[illegible] 1134 1146 1155

Notes: (1) load is based on full rating of generator
(2) time to stabilize engine temperatures and 10 minutes to take measurements
(3) test point requires starboard SSDG to be brought on line with some propulsive load
(4) point to be determined underway during hours 2 and 3.[or is anti-blackout limiter approval is received then it will be nearly full rating of engine]
(5) test point requires starboard SSDG to be brought on line to achieve as close to 10 percent.

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure – perform fuel service tank level measurement and fuel consumption estimate.

#2 Diesel

Load	RPM	Amps	KW	
100 %	124	720	550	
	RPM	AMPS	KW	
75 %	113	620	460	
	RPM	AMPS	KW	
50 %	75	460	330	
	RPM	Amps	KW	Add
25 %	65	200	150	Generator
10/16 %	RPM	AMPS	KW	Add Generator AC - off
	0	100	100	

DAY 2 Date 9/11/11
Blend Fuel

MARAD Alternative Fuel Test Protocol
T/S STATE OF MICHIGAN
Day 1, Saturday, September 10

UNDERWAY TEST – Day 1 – September 11

Underway ULSD Performance and Emissions Test – Port Service Tank will be secured

Hour 1 through 2 - Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. After reaching safe channel ship test team will begin by calibrating the SSDG #4 ammeter transducer. Also testing will be performed to establish the maximum allowable loads with one and two SSDG's online. Specifically, ship will increase speed until SSDG #4 reaches maximum allowable loading (control system function). This SDDG load point will be considered "Maximum Load" for all testing, but the two emission tests when the anti-blackout control will be purposely disabled to conduct the tests [NOTE: This still needs to be established by MARAD/ChEng]. The 25% Load Point will be achieved through use of hotel loading and either bow thruster or slight ship throttle.

Hours 3-8, perform emissions profile testing (repeat 3 times same profile on SSDG #4 and using #1 or #3 as noted:

1st RUN	Step	Load (1) (percent)	Speed (percent)	Stabilization Time (minutes)	Sampling Time (minutes)	2ND RUN	3RD RUN
0550	1	100(5)	100	30(3)	7	0733	0900
0610	2	75	100	10	7	0745	0911
0625	3	50	100	10	7	0757	0921
0637	4	25(4)	100	10	7	0808	0932
0650	5	10(5)	100	10	7	0819	0942

Notes: (1) load is based on full rating of generator
(2) time to stabilize engine temperatures and 10 minutes to take measurements
(3) test point requires starboard SSDG to be brought on line with some propulsive load
(4) point to be determined underway during hours 2 and 3.[or is anti-blackout limiter approval is received then it will be nearly full rating of engine]
(5) test point requires starboard SSDG to be brought on line to achieve as close to 10 percent.

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure – perform fuel service tank level measurement and fuel consumption estimate.

Blend fuel

LOAD	RPM	AMPS	KW	
100 %	130	720	550	
	RPM	AMPS	KW	
75 %	117	625	460	
	RPM	AMPS	KW	Add Generator
50 %	90	465	330	
	RPM	AMPS	KW	Add Generator
25 %	76	200	150	
	RPM	AMPS	KW	Add Generator AC off
10/16 %	0	100	100	

Pierside Day
9/13/11

Missing Data Sheet

Pierside Day
9/14/11

Pierside Blend Fuel Test

Trip No: 2 ~~9/14/11~~

Record Engine Hours: 1119.6 Reset/start fuel meter – set to 0

Start engines and warm up. 0650

Turn off shore power breaker - record 0730 FUEL 2.75

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)
0830	1	195	20.00-2.75=17.25
0930	2	189	38.88-20.00=18.88
1030	3	190	56.52-38.88=17.64
1130	4	187	74.19-56.52=17.67
1230	5	182	92.26-74.19=18.07
1330	6	195	109.60-92.26=17.34
1430	7	185	128.8-109.6=19.20
1530	8	190	144.67-128.8 15.87

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1128.1 Final fuel consumption reading: 146.43

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	11'11"	4130
4-52-4	12'2"	4243
4-72-1		

Date: 8/14/11 Name: W. HEITMAN

Pierside Day
9/15/11

Pierside Blend Fuel Test

Trip No: 3

Record Engine Hours: 1128.2 Reset/start fuel meter – set to 0

Start engines and warm up. 0645

Turn off shore power breaker - record 0715 FUEL METER 2.42

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)
0815	1	212	19.62 - 2.42 = 17.2
0915	2	211	38.18 - 19.62 = 18.56
1015	3	191	56.35 - 38.18 = 18.17
1115	4	165	72.98 - 56.35 = 16.63
1215	5	190	89.90 - 72.98 = 16.92
1315	6	215	107.57 - 89.9 = 17.67
1415	7	195	125.41 - 107.57 = 17.84
1515	8	202	143.05 - 125.41 = 17.64

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1137.1 Final fuel consumption reading: 148.46

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	11' 11"	4130
4-52-4	11' 11"	4130
4-72-1		

Date: 9/15/11

Name: SEDLACEK

Underway Day
9/16/11

Underway Blend Fuel Load Profile Test

Trip No: 3

Record Engine Hours: 1137.1 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run the following load profile on SSDG #4:

	Step	Load [1] (percent)	Amp Load	Time (minutes)	Recorded Amps	Total Time (minutes)	Fuel Consumed (beginning – ending of each step)	METER READING
630-0830	1	75	600	120	600	120	86.04	86.04
830-0930	2	50	400	60	400	60	25.26	111.30
930-0940	3	25	200	10	200	10	2.48	113.78
940-1130	4	75	600	110	600	110	68.04	181.82
50-1200	5	25	200	10	200	10	2.90	192.87
00-1230	6	50	400	30	400	30	12.43	205.30
30-1240	7	25	200	10	200	10	2.50	207.80
40-1250	8	50	400	10	400	10	4.20	212.00
50-1450	9	75	600	120	600	120	74.00	286.00

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1149.8 Final fuel consumption reading: 352.7

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	11' 7"	3980
4-52-4	11' 1"	3755
4-72-1		

Date: 9/16/11 Name: SPS

Underway Day
9/17/11

Underway Blend Fuel Same Speed Test

Trip No: 4

Record Engine Hours: 1149.0 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: STARTED @ 0445 @ 600 AMPS @ 0630

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
0730	1	75	600	115	598	38.26	57.54
0830	2	75	600	115	613	37.24	94.78
0930	3	75	600	115	609	38.22	133.0
1030	4	75	600	115	592	38.20	171.20
1130	5	75	600	115	601	30.5	201.7
1230	6	75	600	113	593	37.3	239.0
1330	7	75	600	113	603	37.3	276.3
1430	8	75	600	116	615	37.1	313.4

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1162.1 Final fuel consumption reading: 372.7

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	11'2"	3793
4-52-4	10'4"	3418
4-72-1		

Date: 9/17/11 Name: SEDLACEK

Underway Day
9/18/11

Underway Blend Fuel Same Speed Test

Trip No: 5

Record Engine Hours: 1162.1 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: START @ 0440 @ ±600 AMPS @ 0630

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
0730	1	75	600	115	607	39.7	54.1
0830	2	75	600	110	585	35.6	89.7
0930	3	75	600	105	562	33.2	122.9
1030	4	75	600	105	555	32.1	155.0
1130	5	75	600	50	347	34.4	189.4
1230	6	75	600	105	552	31.9	221.3
* 1330	7	75	600	139	381	12.9	234.2 **
1430	8	75	600	159	472	30.8	30.8

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1174.0 Final fuel consumption reading: 71.5 + 234.2
(ESTIMATE METER WAS OFF APPROX 10 GAL.)

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	10'9"	3605
4-52-4	9'5"	3017
4-72-1		

Date: 9/18/11 Name: SEDLACEK

* TWO GENERATORS ON LINE
** FUEL METER STOPPED – READING "Err." RESET & STARTED AGAIN.

Underway Day
9/19/11

Underway Blend Fuel Load Profile Test

Trip No: 6

Record Engine Hours: 1174.0 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run the following load profile on SSDG #4: STARTED @ 0640 @ 600 AMP LOAD @ 0830

	Step	Load (1) (percent)	Amp Load	Time (minutes)	Recorded Amps	Total Time (minutes)	Fuel Consumed (beginning – ending of each step)	FUEL METER READING
30 - 1030	1	75	600	120	595	120	74.3	16.4/90.7
30 - 1130	2	50	400	60	404	60	24.8	115.5
30 - 1140	3	25	200	10	197	10	2.8	118.3
40 - 1330	4	75	600	110	606	110	68.0	186.3
30 - 1340	5	25	200	10	202	10	2.7	189.0
340 - 1410	6	50	400	30	403	30	12.7	201.7
410 - 1420	7	25	200	10	198	10	2.7	204.4
420 - 1430	8	50	400	10	395	10	4.1	208.5
430 - 1630	9	75	600	120	598	120	74.2	282.7

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1185.1 Final fuel consumption reading: 302.6

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	10'7"	3531
4-52-4	8'10"	2771
4-72-1		

Date: 9/19/11 Name: SPS

Underway Day
9/20/11

Underway Blend Fuel Same Speed Test

Trip No: 7

Record Engine Hours: 1185.1 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: START UP @ 540 @ 600 AMP LOAD @ 0730

TIME	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
							20.6
0830	1	75	600	111	566	37.5	58.1
0930	2	75	600	113	590	37.5	95.6
1030	3	75	600	113	598	36.9	132.5
1130	4	75	600	113	604	35.9	168.4
1230	5	75	600	113	615	38.4	206.8
1330	6	75	600	113	592	35.5	242.3
1430	7	75	600	113	612	38.8	281.1
1530	8	75	600	113	590	37.1	318.2

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1196.0 Final fuel consumption reading: 333.1

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	10'4"	3418
4-52-4	8'1"	2467
4-72-1		

Date: 9/20/11 Name: SPG

Pierside Day
9/21/11

Pierside Blend Fuel Test

Trip No: 4

Record Engine Hours: 1196.0 Reset/start fuel meter – set to 0

Start engines and warm up.

Turn off shore power breaker - record

Hour	*Recorded Amps*	*Fuel Consumed (beginning – ending of each hour)*
1	196	18.2
2	221	18.2
3	203	18.7
4	203	18.2
5	244	18.2
6	203	18.7
7	193	18.1
8	201	17.9

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1204.8 Final fuel consumption reading: 151.5

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	10'4"	3418
4-52-4	7'7"	2271
4-72-1		

Date: 9/21/11

Name: SPS

Underway Day
9/22/11

Underway Blend Fuel Same Speed Test

Trip No: 8

Record Engine Hours: 1204.9 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: STARTED @ 0645 @ 600 AMP LOAD @ 0815

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING 12.0 GAL @ 0815
0915	1	75	600	108	588	37.9	49.90
1015	2	75	600	116	614	38.1	88.0
1115	3	75	600	116	606	39.1	127.1
1215	4	75	600	116	599	36.1	163.2
1315	5	75	600	114	583	36.9	200.1
1415	6	75	600	114	594	36.5	236.6
1515	7	75	600	114	609	38.1	274.7
1615	8	75	600	114	597	37.2	311.9

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1215.3 Final fuel consumption reading: 326.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	10' 1"	3307
4-52-4	6' 8"	2303
4-72-1		

Date: 9/22/11 Name: SPS

Underway Day
9/23/11

Underway Blend Fuel Same Speed Test

Trip No: 9

Record Engine Hours: 1215.3 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4:

Hour	*Load (percent)*	*Amp Load*	*Propeller Speed*	*Recorded Amps*	*Fuel Consumed (beginning – ending of each hour)*
1	75	600	117/116	620	38.2
2	75	600	116/116	603	37.2
3	75	600	117/116	595	37.0
4	75	600	116/116	602	37.1
5	75	600	116/116	594	37.7
6	75	600	116/115	585	38.2
7	75	600	116/115	586	35.5
8	75	600	115/115	582	36.9

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:

Read engine hours: 1225.9 Final fuel consumption reading: 327.8

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	9'10"	3197
4-52-4	5'10"	1628
4-72-1		

Date: 9/23/11 Name: SPS

Underway Day
9/24/11

Fuel transfer from 4-72-1 to 4-52-4

T/S State of Michigan

Fuel Tank Soundings

Date: 9/24/11

Time: NOTE #1 Pumped approximately 190 Gallons of Blended fuel to 4-80-1 to flush out Transfer pump and lines

TANK	95% CAPACITY	SOUNDINGS	START SOUNDING +6"	FINISH SOUNDING +6"	START GALLONS	FINISH GALLONS	TOTAL GALLONS CHANGE
4-12-0	24,636	19'-8"					
4-18-0	25,575	19'-6"					
4-52-3	6,657	17'-4"					
4-52-4	6,657	17'-4"	5'10"	13'3"	1628	4730	3102
4-72-1	14,566	17'-5"	8'10"	6'1"	7248	4250	2998
4-72-2	24,539	17'-9"					
4-80-1	10,404	13'-6"					
4-80-2	10,404	13'-5"					
01-6-0	285	Emerg. Dsl.					

	SOUNDINGS + 6"	GALLONS
WASTE OIL		
4-66-1		
4-66-2		
LUBE OIL		
4-60-1		
4-60-2		
EFFLUENT HOLDING		
4-24-0		
4-72-3		
4-72-4		

	GALLONS
TOTAL DAY TANK CHANGE	

Cadet: _____

_____

TOTAL GALLONS _____

Underway Blend Fuel Same Speed Test

Trip No: 10

Record Engine Hours: 1225.9 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: STARTED @ 0540 @ 600 AMP LOAD @ 0730

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
							@0730 13.5
0830	1	75	600	115	622	38.2	51.7
0930	2	75	600	115	610	38.8	90.5
1030	3	75	600	115	625	38.2	128.7
1130	4	75	600	114	603	37.9	166.6
1700	5	75	600	114	602	39.0	284.4
1800	6	75	600	114	639	39.4	323.8
1900	7	75	600	114	620	38.7	362.5
2000	8	75	600	114	618	38.7	401.2

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1242.0 Final fuel consumption reading: 432.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	9'4"	2981
4-52-4	12'3"	4280
4-72-1	6'1"	4250

Date: 9/24/11 Name: SPS

9/24

— GAL @ START OF TEST

TWO GENERATOR TEST LOG

END TIME	AMP LOAD	FUEL @ START	FUEL @ END	FUEL USED	SPEED
1230	100 A	166.6	189.6	22.0	122 V
1330	186 A	189.6	205.0	15.4	-
1430	200 A	205.0	223.1	18.1	-
1530	75 A	223.1	239.1	16	-

Underway Day
9/25/11

Underway Blend Fuel Same Speed Test

Trip No: 11

Record Engine Hours: 1242.0 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. STARTED @ 0640

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: PIERSIDE LOAD UNTIL 0800
0800 – 600 AMP LOAD

TIME	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
							0800 15.0
0900	1	75	600	112/113	625	37.4	52.4
1000	2	75	600	112/113	620	38.1	90.5
1100	3	75	600	111/110	610	39.0	129.5
1200	4	75	600	111/110	622	38.2	167.7
1300	5	75	600	111/110	628	38.1	205.8
	6	75	600				
	7	75	600				
	8	75	600				

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1249.2 Final fuel consumption reading: 217.4

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	9'3"	2946
4-52-4	11'9"	4055
4-72-1		

Date: 9/25/11 Name: JPJ

Pierside Day
9/26/11

Pierside Blend Fuel Test

Trip No: 5

Record Engine Hours: 1249.2 Reset/start fuel meter – set to 0

Start engines and warm up.

Turn off shore power breaker - record ON SHORE POWER @ 0715

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.9 GAL. @ 0715
0815	1	203	17.2	19.1
0915	2	200	17.4	36.5
1015	3	204	17.1	53.6
1115	4	189	16.5	70.9
1215	5	185	17.3	88.2
1315	6	196	17.3	105.5
1415	7	188	17.5	123.0
1515	8	195	17.2	

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1257.8 Final fuel consumption reading: 141.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	9' 3"	2946
4-52-4	11' 5"	3905
4-72-1		

Date: 9/26/11 Name: SPS

Underway Day
9/27/11

Underway Blend Fuel Same Speed Test

Trip No: 12

Record Engine Hours: 1257.8 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: START @ 0545 @ 600 AMP LOAD @ 0715

TIME	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
							13.6 @ 0715
0815	1	75	600	115/115	602	37.7	51.3
0915	2	75	600	115/114	608	37.5	88.8
1015	3	75	600	115/114	599	37.8	126.6
1115	4	75	600	115/114	590	37.3	163.9
1215	5	75	600	114/114	598	37.6	201.5
1315	6	75	600	114/114	598	37.3	238.8
1415	7	75	600	114/113	602	37.2	276.0
1515	8	75	600	114/113	599	37.5	313.5

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1268.8 Final fuel consumption reading: 333.1

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8'11"	2806
4-52-4	10'8"	3568
4-72-1		

Date: 9/27/11 Name: WGH

Underway Day
9/28/11

Underway Blend Fuel Same Speed Test

Trip No: 13

Record Engine Hours: 1268.8 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. START @ 0540

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: @600 AMP LOAD @ 0720

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING 12.8 gal. @07
0820	1	75	600	115	607		50.5
0920	2	75	600	115	612		88.3
1020	3	75	600	114	602		126.1
1120	4	75	600	114	605		164.0
1220	5	75	600	114	601		201.7
1320	6	75	600	114	596		238.9
1420	7	75	600	114	592		275.8
1520	8	75	600	114	606		312.8

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1279.6 Final fuel consumption reading: 327.2

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8'9"	2737
4-52-4	9'10"	3197
4-72-1		

Date: 9/28/11 Name: SPS

Pierside Day
9/29/11

Pierside Blend Fuel Test **Trip No:** 6

Record Engine Hours: 1279.6 Reset/start fuel meter – set to 0

Start engines and warm up.

STARTED @ 0545

Turn off shore power breaker - record

ON NORMAL SHORE POWER @ 0615

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				3.4 gal @ 0615
0715	1	217	19.9	23.3
0815	2	210	20.2	43.5
0915	3	226	20.9	64.4
1015	4	208	20.5	84.9
1115	5	228	19.8	104.7
1215	6	202	19.6	124.3
1315	7	199	19.0	143.3
1415	8	210	18.7	162.0

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1288.4 Final fuel consumption reading: 162.9

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8' 8"	2703
4-52-4	9' 8"	3124
4-72-1		

Date: 09/29/2011 Name: SPS

Pierside Day
9/30/11

Pierside Blend Fuel Test

Trip No: 7

Record Engine Hours: 1288.4 Reset/start fuel meter – set to 0

Start engines and warm up. FUEL METER 1.5 GAL @ START OF 1ST HR (0600)

Turn off shore power breaker - record

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER
0700	1	167	13.6	15.1
0800	2	178	15.9	31.0
0900	3	212	17.3	48.3
1000	4	213	17.9	66.2
1100	5	208	18.9	85.1
1200	6	~~218~~ 218	19.3	104.4
1300	7	220	18.2	122.6
1400	8	214	18.2	140.8

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1297.0 Final fuel consumption reading: 142.1

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8'7"	2668
4-52-4	9'2"	2911
4-72-1		

Date: 9/30/11

Name: WGH

Underway Day
10/2/11

Underway Blend Fuel Same Speed Test

Trip No: 14

Record Engine Hours: 1297.0 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. STARTED @ 0545

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: @ 600 AMP LOAD @ 0745

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	FUEL READING ~~SPEED~~
0845	1	75	600	110/112	580	35.1	~~107~~ 58.6
0945	2	75	600	112/111	598	36.1	95.5
1045	3	75	600	112/112	596	36.5	132.0
1145	4	75	600	112/111	600	36.3	168.3
1245	5	75	600	112/111	594	36.7	205.0
1345	6	75	600	115/115	625	36.6	241.6
1445	7	75	600	115/116	595	37.9	279.5
1545	8	75	600	115/115	618	37.5	317.0

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:

Read engine hours: _____ Final fuel consumption reading: 329.8

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8'6"	2634
4-52-4	8'6"	2634
4-72-1		

Date: 10/2/11 Name: WGH

Underway Day
10/3/11

Underway Blend Fuel Same Speed Test

Trip No: 15

Record Engine Hours: 1308.0 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: START AT 0630 AT 600 AMP LOAD 0730

	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING 10.0gal@0730
0830	1	75	600	115	597	37.4	47.4
0930	2	75	600	115	619	37.3	84.7
1030	3	75	600	116	613	37.8	122.5
1130	4	75	600	116	593	37.9	160.4
1230	5	75	600	116	582	37.2	197.6
1330	6	75	600	116	584	36.6	234.2
1430	7	75	600	116	625	36.8	271.0
1530	8	75	600	116	610	37.2	308.2

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1318.4 Final fuel consumption reading: 327.6

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	8'3"	2533
4-52-4	7'7"	2271
4-72-1		

Date: 10/3/11 Name: SPS

Underway Day
10/4/11

Underway Blend Fuel Same Speed Test

Trip No: 16

Record Engine Hours: 1318.4 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected.

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: STARTED @ 0540 @ 600 AMP LOAD @ 072

TIME	Hour	Load (percent)	Amp Load	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	FUEL METER READING 13.4 gal. @ 07
0820	1	75	600	114/115	587	36.8	50.2
0920	2	75	600	114/115	607	37.0	87.2
1020	3	75	600	114/115	626	37.8	125.0
1120	4	75	600	114/115	612	39.5	164.5
1220	5	75	600	114/112	622	39.5	204.0
1320	6	75	600	115/112	613	39.0	243.0
1420	7	75	600	115/112	613	38.8	281.8
1520	8	75	600	114/112	627	38.8	320.6

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1329.3 Final fuel consumption reading: 339.5

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	7'11"	2401
4-52-4	6'8"	1926
4-72-1		

Date: 10/4/11 Name: SPS

Underway Day
10/5/11

Underway Blend Fuel Same Speed Test

Trip No: 17

Record Engine Hours: 1329.3 Reset/start fuel meter – set to 0. Start engines and warm up

Hour 1 Engine Startup 3 engines – SSDG #1, #3, and #4. Maneuvering out of berth and into bay; secure either SSDG #1 or #3 and keep the other idling and electrically disconnected. STARTED @ 0540

Hours 2 through 9, run as nearly constant load as possible on SSDG #4: @ 380 AMP LOAD @ 0730

TIME	Hour	Load (percent) 48	Amp Load 380 (3 GENERATORS)	Propeller Speed	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING 14.4 GAL @ 0730
0830	1	75	600	180	382	31.4	45.8
0930	2	75	600	179	383	31.8	77.6
1030	3	75	600	179	386	32.2	109.8
1130	4	75	600	179	388	32.6	142.4
1230	5	75	600	180	395	32.7	175.1
1330	6	75	600	180	397	32.7	207.8
1430	7	75	600	180	391	33.5	241.3
1530	8	75	600	180	390	32.2	273.5

Hour 10 – Return to Pier - Engine Startup 2 engines – SSDG #1, #3. Use those and #4 to maneuver into pier and into berth; secure all engines as per regular protocol.

After engines secure:
Read engine hours: 1340.4 Final fuel consumption reading: 293.7

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	5'10"	1628
4-72-1		

Date: _____ Name: SPS

* NOTE: Full speed 180 RPM, 3 Generators
Reason to run #1 + #3 SSDG At load
to counter act Hours of Idle time

Pierside Day
10/11/11

Pierside Blend Fuel Test

Trip No: 8

Record Engine Hours: 1340.4 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0705

Turn off shore power breaker - record "ON SHORE POWER LOAD" @ 0730

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				0.0 @ 0730
0830	1	196	17.0	17.0
0930	2	195	18.0	35.0
1030	3	190	18.2	53.2
1130	4	192	17.9	71.1
1230	5	188	17.9	89.0
1330	6	218	19.4	108.4
1430	7	216	19.2	127.6
1530	8	214	18.7	146.3

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1349.2 Final fuel consumption reading: 150.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	5'4"	1457
4-72-1		

Date: 10/11/11

Name: SPS

Pierside Day
10/12/11

Pierside Blend Fuel Test

Trip No: 9

Record Engine Hours: 1349.2 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON SHORE POWER LOAD @ 0700

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.3 gal. @ 0700
0800	1	188	16.0	17.3
0900	2	190	17.2	34.5
1000	3	209	17.8	52.3
1100	4	203	18.7	71.0
1200	5	210	18.6	89.6
1300	6	205	18.6	108.2
1400	7	201	18.3	126.5
1500	8	204	18.4	144.9

Restore Shorepower and secure engine

After engines secure: 1358.1

Read engine hours: ~~149.3~~ SPS Final fuel consumption reading: 149.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	4'11"	1319
4-72-1		

Date: 10/12/11 Name: SPS

Pierside Day
10/13/11

Pierside Blend Fuel Test **Trip No:** 10

Record Engine Hours: 1358.1 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.3 gal. @ 0700
0800	1	175	18.3	19.6
0900	2	201	18.4	38.0
1000	3	202	19.2	57.2
1100	4	203	18.9	76.1
1200	5	205	18.9	95.0
1300	6	213	18.6	113.6
1400	7	205	18.7	132.3
1500	8	202	18.8	151.1

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1366.6 Final fuel consumption reading: 152.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	4'4"	1132
4-72-1		

Date: 10/13/11 Name: SPS

Pierside Day
10/14/11

Pierside Blend Fuel Test

Trip No: 11

Record Engine Hours: 1366.6 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				3.2 gal. @ 0700
0800	1	192	14.2	17.4
0900	2	202	17.9	35.2
1000	3	203	18.0	53.3
1100	4	194	18.2	71.5
1200	5	202	17.9	89.4
1300	6	183	17.8	107.2
1400	7	192	18.1	125.3
1500	8	203	18.1	143.4

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1375.2 Final fuel consumption reading: 145.4

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	3'11"	1003
4-72-1		

Date: 10/14/11 Name: SPS

Pierside Day
10/17/11

Pierside Blend Fuel Test

Trip No: 12

Record Engine Hours: 1375.2 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0650

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0710

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)
0810	1	220	18.4
0910	2	224	19.2
1010	3	187	17.8
1110	4	185	17.6
1210	5	186	17.7
1310	6	184	17.8
1410	7	188	18.0
1510	8	189	17.9

METER READING 1.3 gal @ 0710

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1383.7 Final fuel consumption reading: 146.6

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	3'5"	853
4-72-1		

Date: 10/17/11

Name: SPS

Pierside Day
10/18/11

Pierside Blend Fuel Test

Trip No: 13

Record Engine Hours: 1383.7 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0750

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0810

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.0 gal. @ 0810
0910	1	186	18.0	19.0
1010	2	186	17.9	36.9
1110	3	189	18.1	55.0
1210	4	196	18.2	73.2
1310	5	205	18.2	91.4
1410	6	198	18.1	109.5
1510	7	192	18.0	127.5
1610	8	197	18.0	145.5

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1392.1 Final fuel consumption reading: 146.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	8'0"	2434
4-72-1		

Date: 10/18/11 Name: SPS

Pierside Day
10/19/11

Pierside Blend Fuel Test

Trip No: 14

Record Engine Hours: 1392.1 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0650

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				.6 gal @ 0700
0800	1	177	17.6	18.2
0900	2	207	16.2	34.4
1000	3	185	18.4	52.8
1100	4	160	17.6	70.4
1200	5	191	17.8	88.2
1300	6	195	18.4	106.6
1400	7	205	18.2	124.8
1500	8	197	18.3	143.1

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1400.5 Final fuel consumption reading: 144.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	7'7"	2271
4-72-1		

Date: 10/19/11 Name: SPS

Pierside Day
10/20/11

Pierside Blend Fuel Test

Trip No: 15

Record Engine Hours: 1400.5 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0645

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
0800	1	193	16.4	.9 gal. @ 0700
* 0925	2	143	22.4	17.5
1000	3	224	9.2	39.9
1100	4	153	15.8	49.1
1200	5	136	13.8	64.9
**	6			78.7
	7			
	8			

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1406.0 Final fuel consumption reading: 80.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3		
4-52-4		
4-72-1		

Date: 10/20/11 Name: [signature]

* READING TAKEN LATE

** TESTING TERMINATED DUE TO INABILITY TO KEEP COOLING WATER COMING INTO VESSEL. STRAINERS PLUGGING W/ STORM DEBRIS.

Pierside Day
10/21/11

Pierside Blend Fuel Test

Trip No: 16

Record Engine Hours: 1406.0 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.0 gal. @ 0700
0800	1	196	16.9	17.9
0900	2	196		35.8
1000	3	195		54.4
1100	4	197		72.6
1200	5	200		90.8
1300	6	218		109.4
1400	7	201		127.8
1500	8	209		146.4

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1414.5 Final fuel consumption reading: 147.1

LATE
~~Next~~ day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	7'0"	2049
4-72-1		

Date: 10/21/11 Name: _____

Pierside Day
10/28/11

Pierside Blend Fuel Test **Trip No:** 17

Record Engine Hours: 1414.5 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.1 gal. @ 0700
0800	1	202	17.5	18.6
0900	2	203	18.1	36.7
1000	3	191	18.2	54.9
1100	4	196	18.5	73.4
1200	5	203	18.2	91.6
1300	6	192	18.0	109.6
1400	7	197	18.0	127.6
1500	8	187	17.7	145.3

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1423.0 Final fuel consumption reading: 146.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	6'7"	1895
4-72-1		

Date: 10/28/11 Name: SPS

Pierside Day
10/31/11

Pierside Blend Fuel Test

Trip No: 18

Record Engine Hours: 1423.0 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record AT "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.0 gal. @ 0700
0800	1	206	17.8	18.8
0900	2	217	17.9	36.7
1000	3	213	18.6	55.3
1100	4	201	18.5	73.8
1200	5	207	18.6	92.4
1300	6	206	18.9	111.3
1400	7	202	18.4	129.7
1500	8	203	18.7	148.5

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1431.5 Final fuel consumption reading: 149.1

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	6'2"	1745
4-72-1		

Date: 10/31/11 Name: JPS

Pierside Day
11/1/11

Pierside Blend Fuel Test **Trip No:** 19

Record Engine Hours: 1431.5 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0645

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				.8 gal. @ 0700
0800	1	210	17.7	18.5
0900	2	206	18.3	36.8
1000	3	196	18.4	55.2
1100	4	208	18.5	73.7
1200	5	208	18.5	92.2
1300	6	202	18.4	110.6
1400	7	198	18.7	129.3
1500	8	198	18.3	147.6

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1440.1 Final fuel consumption reading: 150.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	5'9"	1599
4-72-1		

Date: 11/1/11 Name: SPS

Pierside Day
11/2/11

Pierside Blend Fuel Test **Trip No:** 20

Record Engine Hours: 1440.1 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING
				1.0 gal. @ 0700
0800	1	203	16.0	17.0
0900	2	204	17.9	34.9
1000	3	208	17.9	52.8
1100	4	211	18.0	70.8
1200	5	202	18.1	88.9
1300	6	200	18.5	107.4
1400	7	198	18.2	125.6
1500	8	210	18.7	144.3

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1448.5 Final fuel consumption reading: 144.7

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	5'4"	1457
4-72-1		

Date: 11/2/11 Name: SPS

Pierside Day
11/3/11

Pierside Blend Fuel Test

Trip No: 21

Record Engine Hours: 1448.5 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)
0800	1	206	18.2
0900	2	180	17.3
1000	3	210	18.5
1100	4	203	18.8
1200	5	200	18.6
1300	6	215	18.7
1400	7	201	18.3
1500	8	194	18.6

METER READING 1.0 gal. @ 0700

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1457.0 Final fuel consumption reading: 148.6

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	4'10"	1292
4-72-1		

Date: 11/3/11

Name: SPS

Pierside Day
11/4/11

Pierside Blend Fuel Test

Trip No: 22

Record Engine Hours: 1457.0 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0645

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (0.8 gal. @ 0700)
0800	1	205	17.8	18.6
0900	2	199	18.6	37.2
1000	3	211	19.0	56.2
1100	4	191	18.8	75.0
1200	5	205	18.6	93.6
1300	6	193	18.3	111.9
1400	7	210	18.3	130.2
1500	8	191	18.7	148.9

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1465.4 Final fuel consumption reading: 149.6

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	4'4"	1132
4-72-1		

Date: 11/4/11 Name: SPS

Pierside Day
11/7/11

Pierside Blend Fuel Test

Trip No: 23

Record Engine Hours: 1465.4 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1) gal @ 0700
0800	1	194	17.3	18.4
0900	2	192	17.9	36.3
1000	3	195	17.4	53.7
1100	4	197	18.1	71.8
1200	5	197	18.1	89.9
1300	6	199	18.0	107.9
1400	7	199	17.8	125.7
1500	8	196	18.1	143.8

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1473.9 Final fuel consumption reading: 144.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	3'11"	1003
4-72-1		

Date: 11/7/11 Name: SPS

Pierside Day
11/8/11

Pierside Blend Fuel Test

Trip No: 24

Record Engine Hours: 1473.9 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1 gal. @ 0700)
0800	1	203	17.6	18.7
0900	2	196	18.0	36.7
1000	3	199	18.7	55.4
1100	4	200	18.4	73.8
1200	5	217	18.7	92.5
1300	6	213	18.5	111.0
1400	7	198	18.6	129.6
1500	8	191	18.5	148.1

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1482.4 Final fuel consumption reading: 149.4

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	3'4"	828
4-72-1		

Date: 11/8/11

Name: _____

Pierside Day
11/9/11

Pierside Blend Fuel Test

Trip No: 25

Record Engine Hours: 1482.4 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" AMPS @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1 gal. @ 0700)
0800	1	195	14.6	15.7
0900	2	196	18.0	33.7
1000	3	192	18.0	51.7
1100	4	203	18.2	69.9
1200	5	206	18.3	88.2
1300	6	206	18.3	106.5
1400	7	201	18.3	124.8
1500	8	202	19.0	143.8

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1490.9 Final fuel consumption reading: 144.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	2'11"	709
4-72-1		

Date: 11/9/11

Name: SPS

Pierside Day
11/10/11

Pierside Blend Fuel Test **Trip No:** 26

Record Engine Hours: 1490.9 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.0 gal. @ 0700)
0800	1	200	17.8	18.8
0900	2	204	19.1	37.9
1000	3	201	18.8	56.7
1100	4	215	19.2	75.9
1200	5	199	19.1	95.0
1300	6	210	19.1	114.1
1400	7	208	19.3	133.4
1500	8	198	19.3	152.7

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1499.9 Final fuel consumption reading: 153.9

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	2'4"	548
4-72-1		

Date: 11/10/11 Name: SPS

Pierside Day
11/11/11

Pierside Blend Fuel Test **Trip No:** 27

Record Engine Hours: 1499.4 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700
* FUEL METER NOT STARTED UNTIL 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (0.0 gal. @ 0700)
0800	1	211	18.1	18.1
0900	2	211	19.5	37.6
1000	3	220	19.4	57.0
1100	4	211	19.7	76.7
1200	5	203	19.8	96.5
1300	6	206	19.5	116.0
1400	7	206	19.1	136.1
1500	8	208	18.5	154.6

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1507.8 Final fuel consumption reading: 155.1

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	1'9"	394
4-72-1		

Date: 11/11/11 Name: SPS

Pierside Day
11/14/11

Pierside Blend Fuel Test **Trip No:** 28

Record Engine Hours: 1507.8 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0645

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (6.8 gal. @ 0700)
0800	1	187	17.0	17.8
0900	2	201	17.4	35.2
1000	3	189	17.8	53.0
1100	4	204	18.2	71.2
1200	5	195	18.1	89.3
1300	6	198	18.5	107.8
1400	7	195	18.1	125.9
1500	8	185	18.6	144.5

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1516.2 Final fuel consumption reading: 145.3

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	1'11"	437 *
4-72-1		

Date: 11/14/11 Name: SPS

* TRANSFERRED APPROXIMATELY 200 GALLONS FROM 4-72-1 TO 4-52-4 @ 1000 HRS.

Pierside Day
11/15/11

Pierside Blend Fuel Test **Trip No:** 29

Record Engine Hours: 1516.2 Reset/start fuel meter – set to 0

Start engines and warm up. START @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1 gal. @ 0700)
0800	1	204	17.9	19.0
0900	2	194	18.5	37.5
1000	3	198	18.6	56.1
1100	4	196	18.5	74.6
1200	5	210	18.7	93.3
1300	6	201	18.7	112.0
1400	7	201	19.3	131.3
1500	8	184	19.1	150.4

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1524.7 Final fuel consumption reading: 151.0

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	1'3"	268
4-72-1		

Date: 11/15/11 Name: SPS

Pierside Day
11/16/11

Pierside Blend Fuel Test **Trip No:** 3D

Record Engine Hours: 1524.7 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" LOAD @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1 gal. @ 0700)
				19.4
0800	1	198	18.3	38.4
0900	2	193	19.0	57.6
1000	3	215	19.2	76.6
1100	4	206	19.0	96.3
1200	5	209	19.7	115.9
1300	6	229	19.6	135.8
1400	7	218	19.9	155.2
1500	8	190	19.4	

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1533.2 Final fuel consumption reading: 155.7

Next day tanks soundings:

Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	1'2"	248 *
4-72-1		

Date: 11/16/11 Name: SPS

TRANSFERRED APPROXIMATELY 150 gal. FROM 4-72-1 TO 4-52-4 @ 1000 HRS 11/16/11.

Pierside Day
11/17/11

Pierside Blend Fuel Test **Trip No:** 31

Record Engine Hours: 1533.2 Reset/start fuel meter – set to 0

Start engines and warm up. STARTED @ 0640

Turn off shore power breaker - record ON "SHORE POWER" @ 0700

TIME	Hour	Recorded Amps	Fuel Consumed (beginning – ending of each hour)	METER READING (1.1 gal. @ 0700)
0800	1	196	18.7	19.8
0900	2	190	18.3	38.1 *
1000	3	180	17.0	16.3
1100	4	178	17.4	33.7
1200	5	170	18.0	51.7
1300	6	164	17.8	69.5
1400	7	173	17.5	87.0
** 1440	8	178	9.4 ***	96.4 ***

Restore Shorepower and secure engine

After engines secure:
Read engine hours: 1541.3 Final fuel consumption reading: 134.5

LATE ~~Next~~ day tanks soundings:

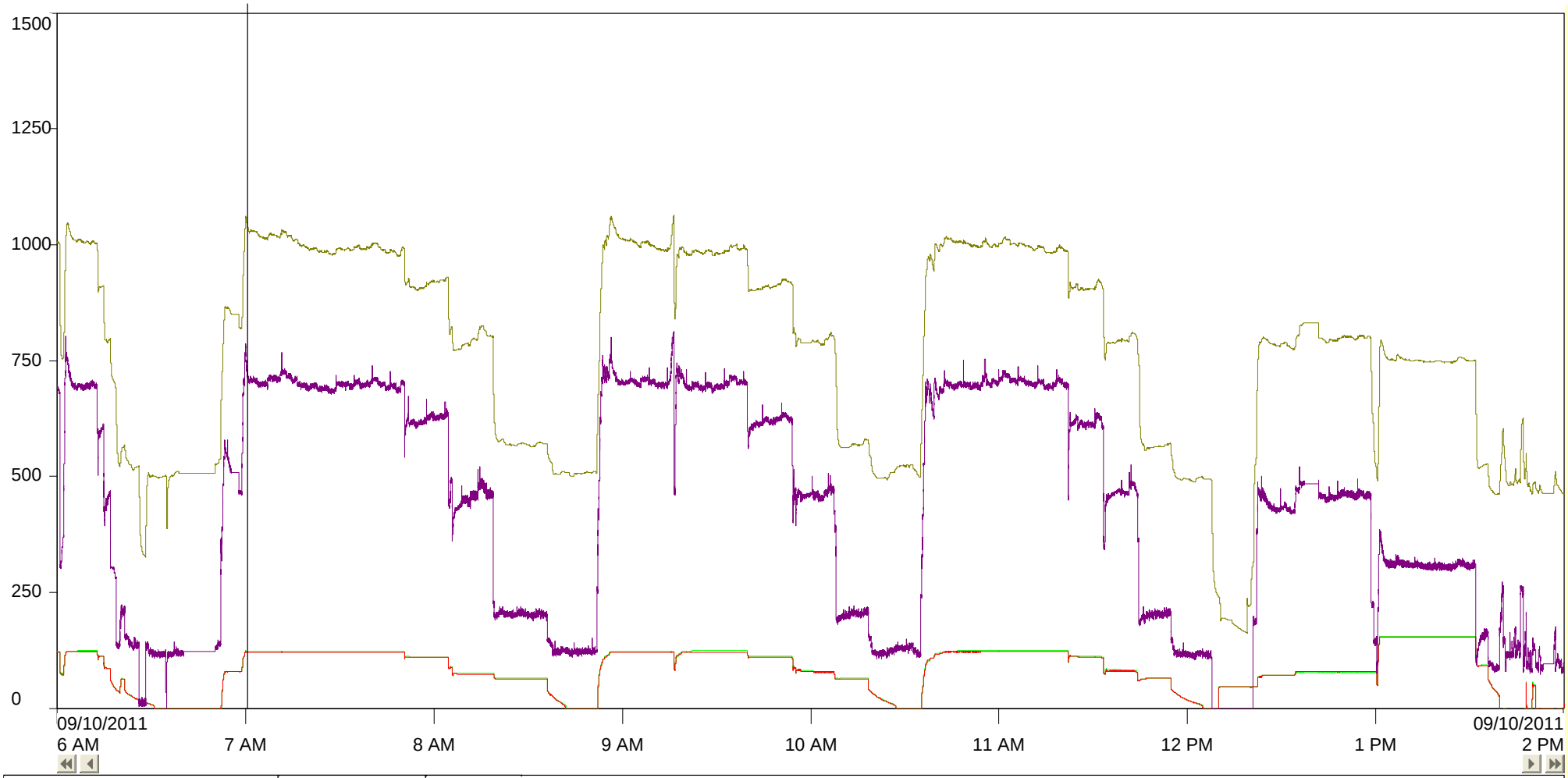
Tank	Tank Level	Gallons
4-52-3	6'6"	1865
4-52-4	1'0"	207
4-72-1		

– TRANSFERRED ANOTHER 90 GALS ± TO TRY & FINISH TEST

Date: 11/17/11 Name: SPS

* ESTIMATED – FUEL METER STOPPED WORKING
** TEST TERMINATED 20 MINUTES EARLY – ENGINE RAN OUT OF FUEL @ 1'0" IN DAY TANK
*** METER STOPPED AGAIN BEFORE ENGINE STOPPED.

Test Data Plots

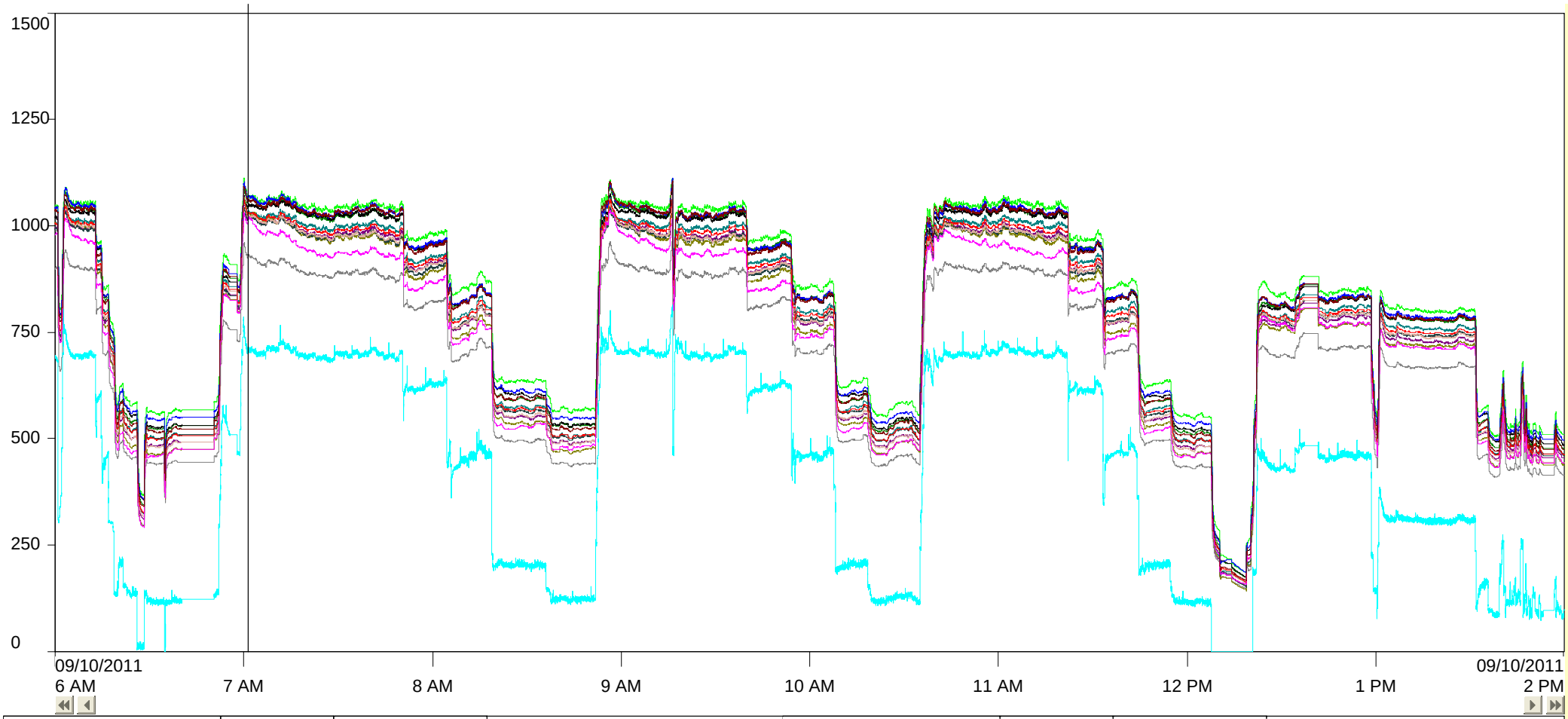


Line ID	Slider Value	Slider Value
PRPM_R	120	7:00:02.170
SRPM_R	122	7:00:11.157
DG4_AMPS	726	7:00:30.063
DG4_AVG_EXH_TEMP	1045	7:00:30.077

7:00:38 AM

Diesel Generator # 4 on Regular Low Sulphur Diesel Fuel

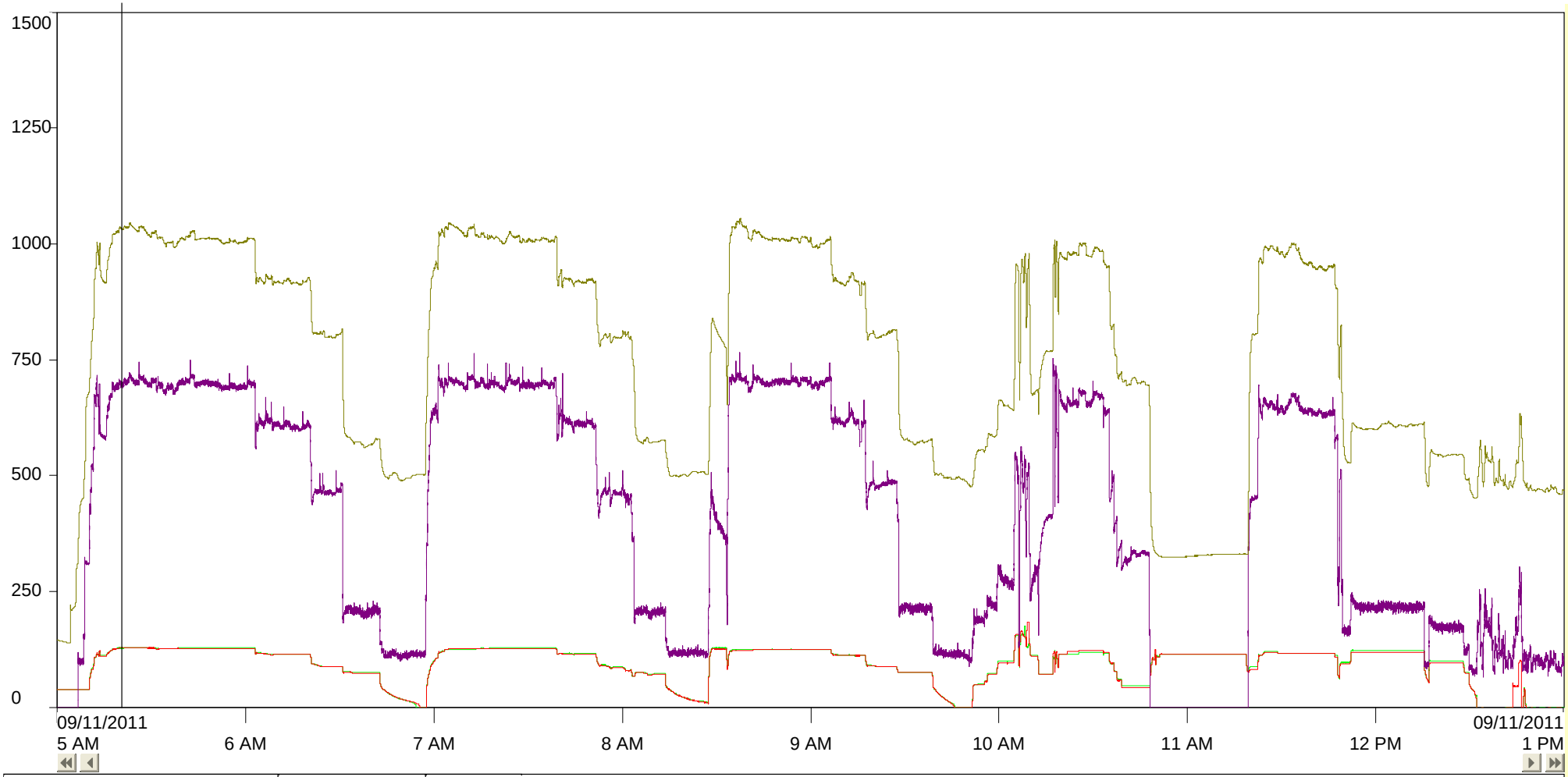
C:\Program Files\GE Fanuc\Proficy CIMPLICITY\SOMI\screens\Trend_DG4_A.cim
2:17:27 PM 9/14/2011



Line ID	Slider Value	Slider Value Time	Line ID	Slider Value	Slider Value Time
DG4_AVG_EXH_TEMP	1026	7:01:15.313 AM	DG4_TC07	1029	7:01:17.280 AM
DG4_TC01	1067	7:01:15.313 AM	DG4_TC08	926	7:01:15.313 AM
DG4_TC02	1063	7:01:15.313 AM	DG4_TC09	1024	7:01:15.313 AM
DG4_TC03	1057	7:01:15.313 AM	DG4_TC10	1015	7:01:16.360 AM
DG4_TC04	1055	7:01:15.313 AM	DG4_TC11	1023	7:01:15.313 AM
DG4_TC05	1016	7:01:15.313 AM	DG4_TC12	1005	7:01:15.313 AM
DG4_TC06	1042	7:01:15.313 AM	DG4_AMPS	708	7:01:15.313 AM

Diesel Generator # 4 on Regular Low Sulphur Diesel Fuel

C:\Program Files\GE Fanuc\Proficy CIMPLICITY\SOMI\screens\Trend_DG4_B.cim
1:58:59 PM 9/14/2011

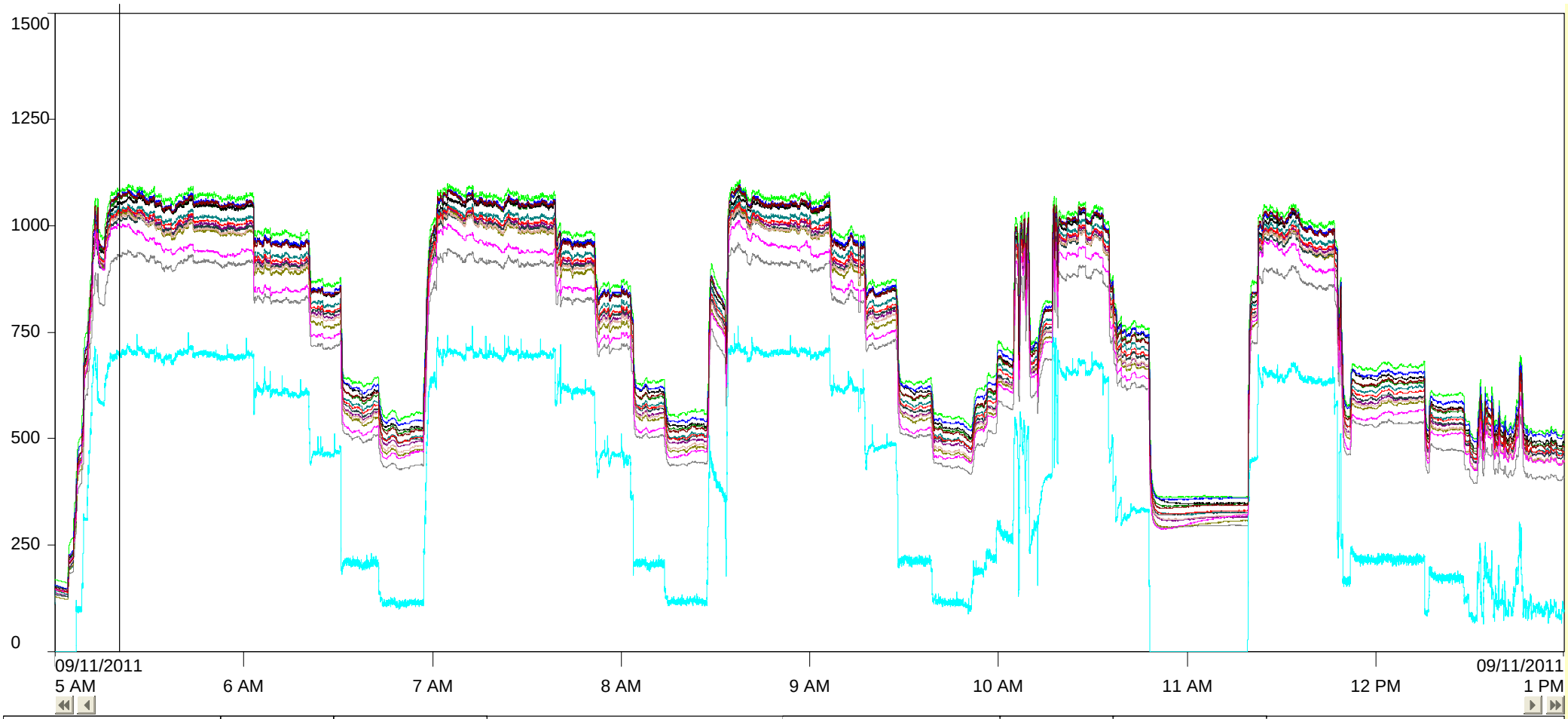


Line ID	Slider Value	Slider Value
PRPM_R	129	5:19:40.717
SRPM_R	127	5:20:33.093
DG4_AMPS	698	5:20:28.063
DG4_AVG_EXH_TEMP	1033	5:20:28.063

5:20:37 AM

Diesel Generator # 4 on 50/50 Blend Alternate Fuel

C:\Program Files\GE Fanuc\Proficy CIMPLICITY\SOMI\screens\Trend_DG4_C.cim
2:25:56 PM 9/14/2011

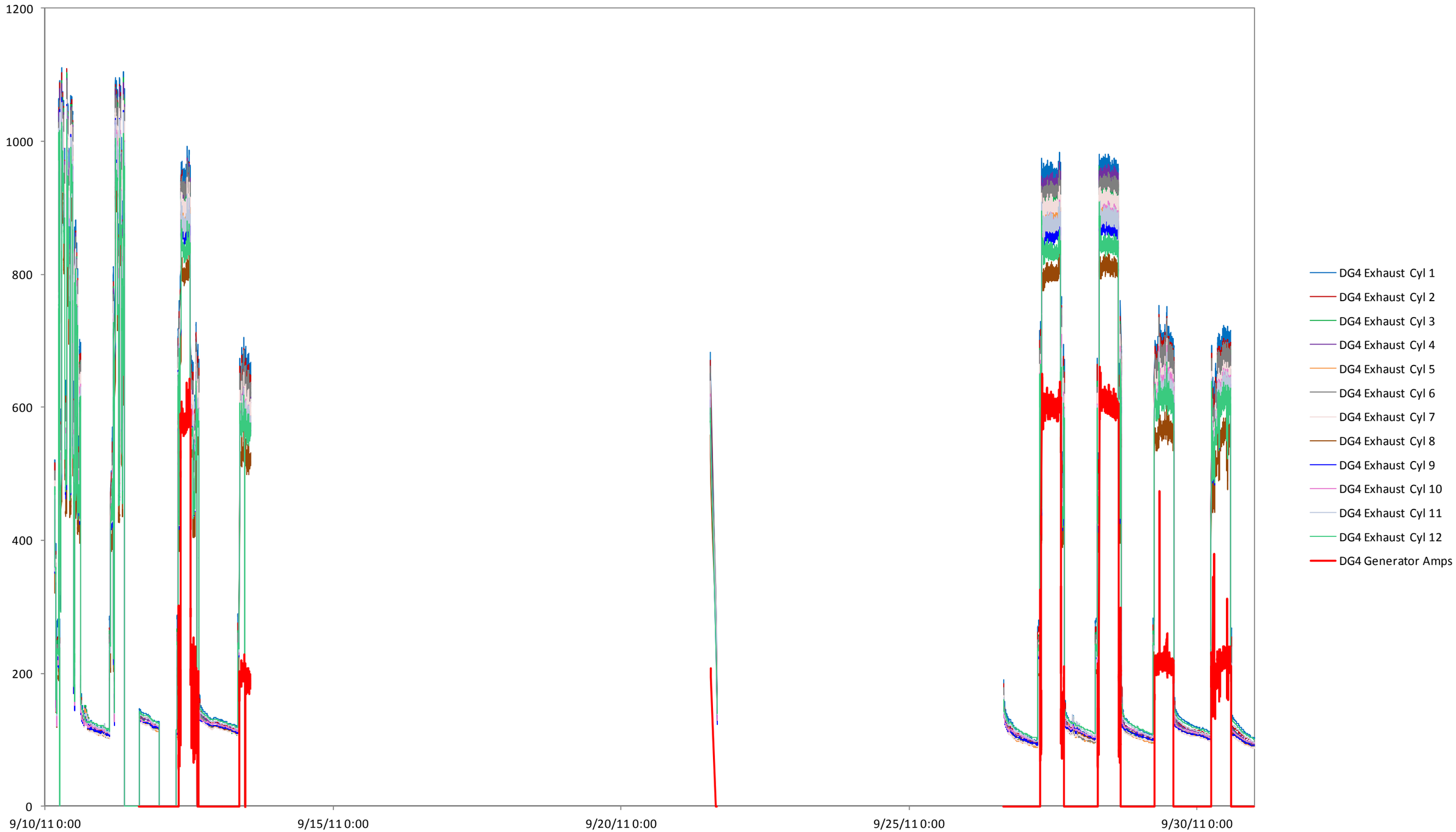


Line ID	Slider Value	Slider Value Time	Line ID	Slider Value	Slider Value Time
DG4_AVG_EXH_TEMP	1035	5:20:24.187 AM	DG4_TC07	1038	5:20:19.017 AM
DG4_TC01	1083	5:20:19.017 AM	DG4_TC08	931	5:20:19.017 AM
DG4_TC02	1073	5:20:20.953 AM	DG4_TC09	1029	5:20:20.953 AM
DG4_TC03	1073	5:20:20.953 AM	DG4_TC10	1015	5:20:20.953 AM
DG4_TC04	1065	5:20:19.017 AM	DG4_TC11	1026	5:20:20.953 AM
DG4_TC05	1027	5:20:19.967 AM	DG4_TC12	999	5:20:23.017 AM
DG4_TC06	1054	5:20:21.953 AM	DG4_AMPS	690	5:20:19.017 AM

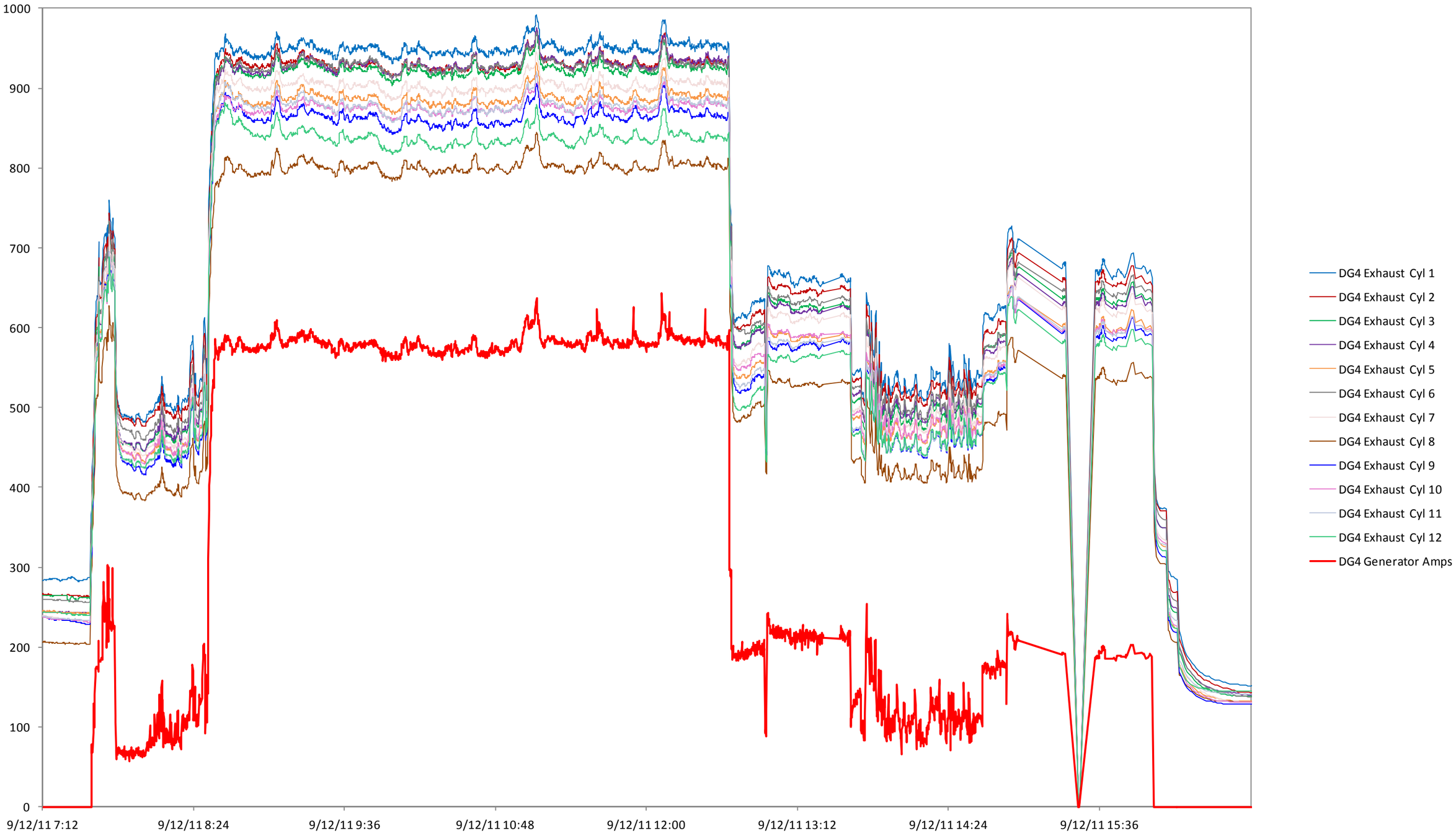
Diesel Generator # 4 on 50/50 Blend Alternate Fuel

C:\Program Files\GE Fanuc\Proficy CIMPLICITY\SOMI\screens\Trend_DG4_D1.cim
12:18:40 PM 9/12/2011

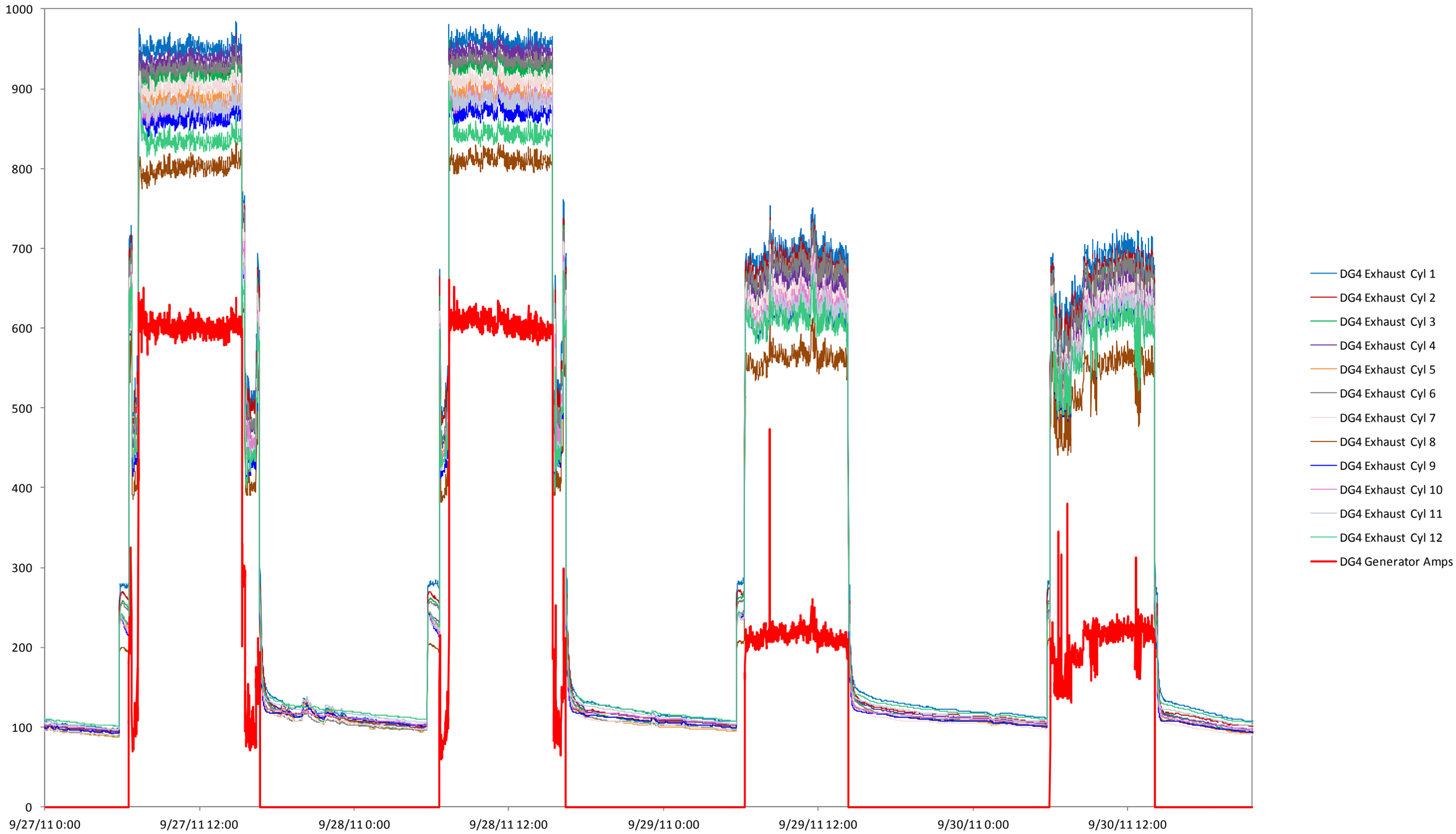
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – September 2011 Test Data



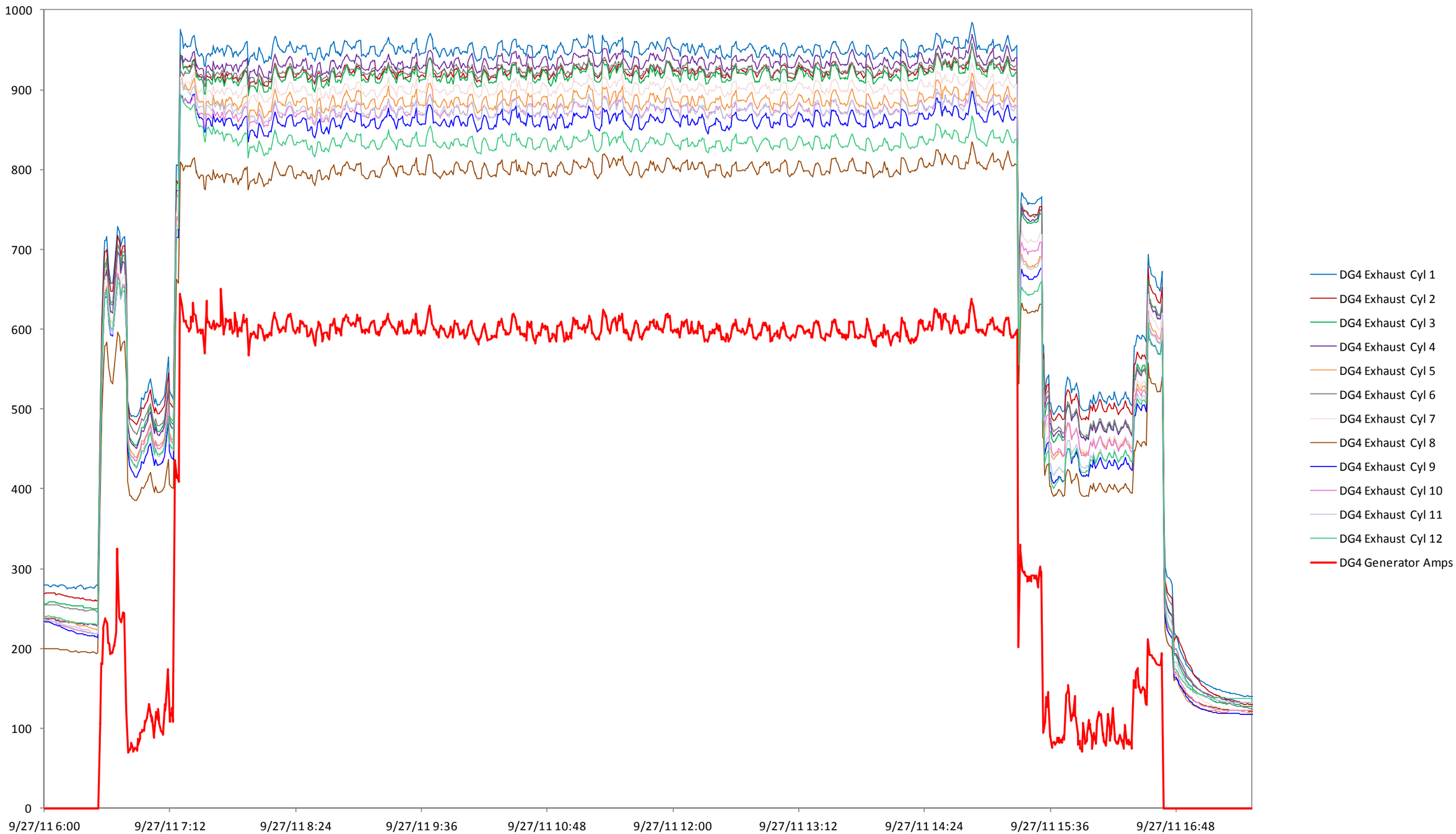
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – September 12, 2011 Test Data Close-Up



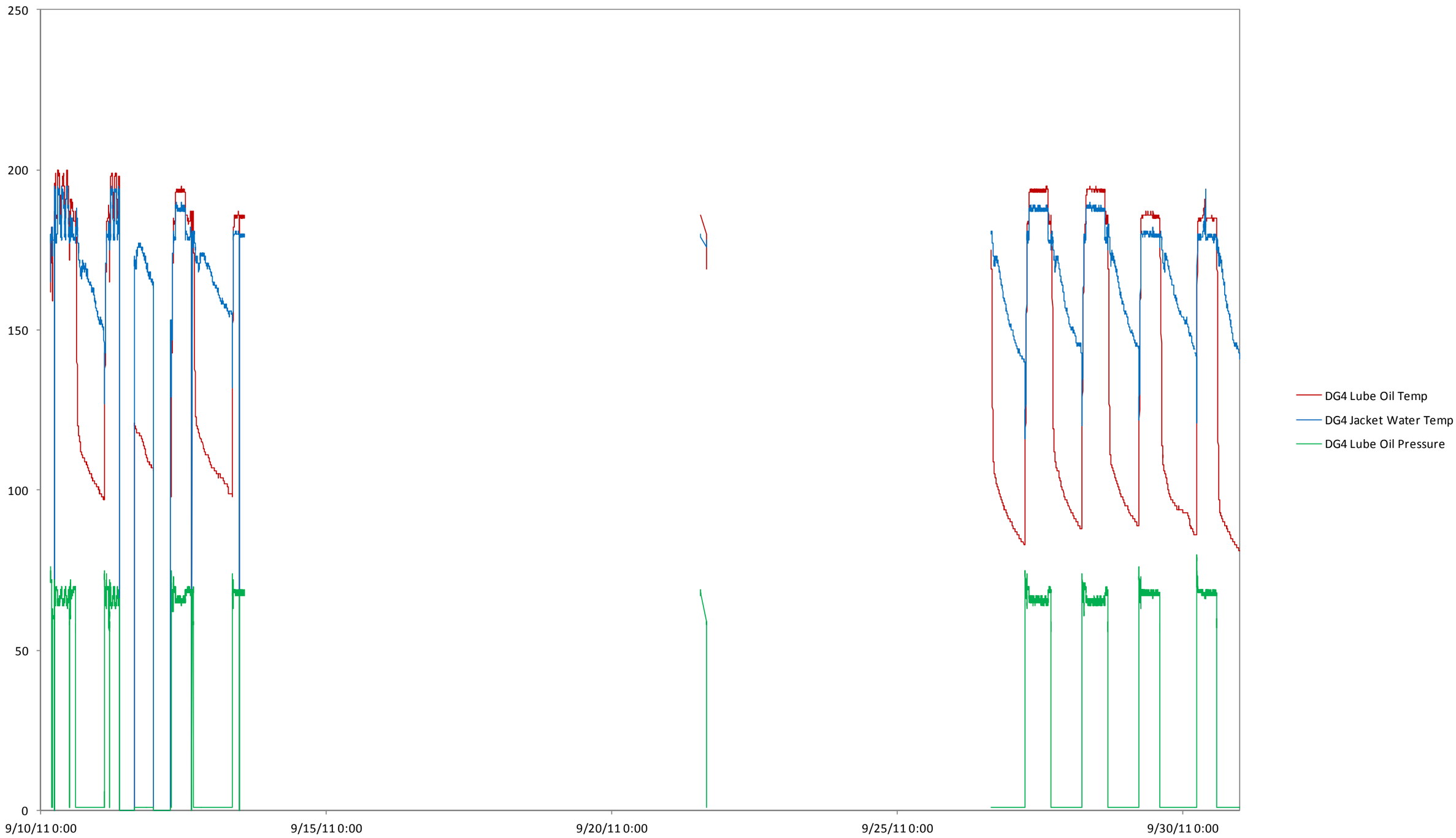
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – September 27-30, 2011 Test Data Close-Up



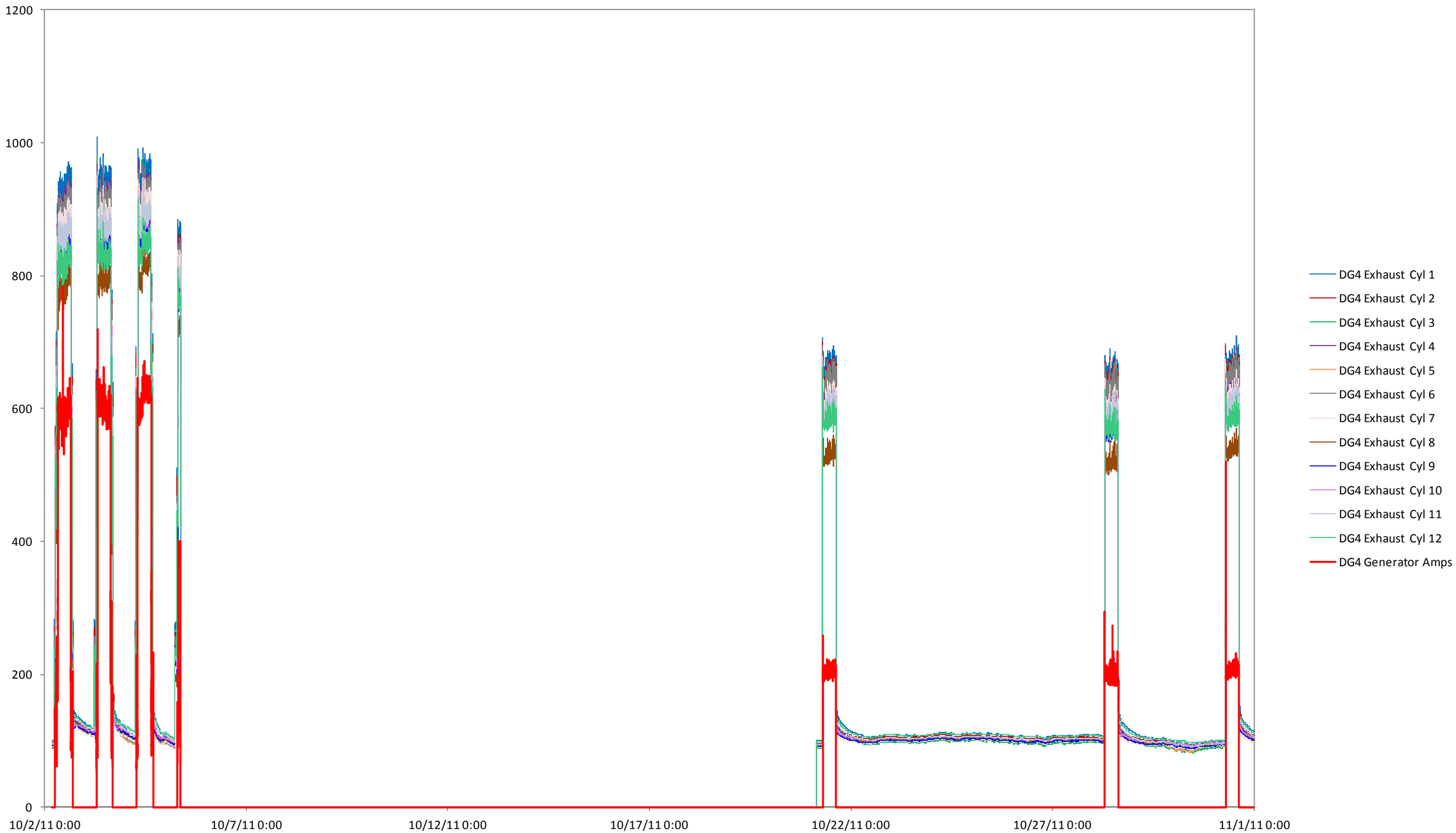
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – September 27, 2011 Test Data Close-Up



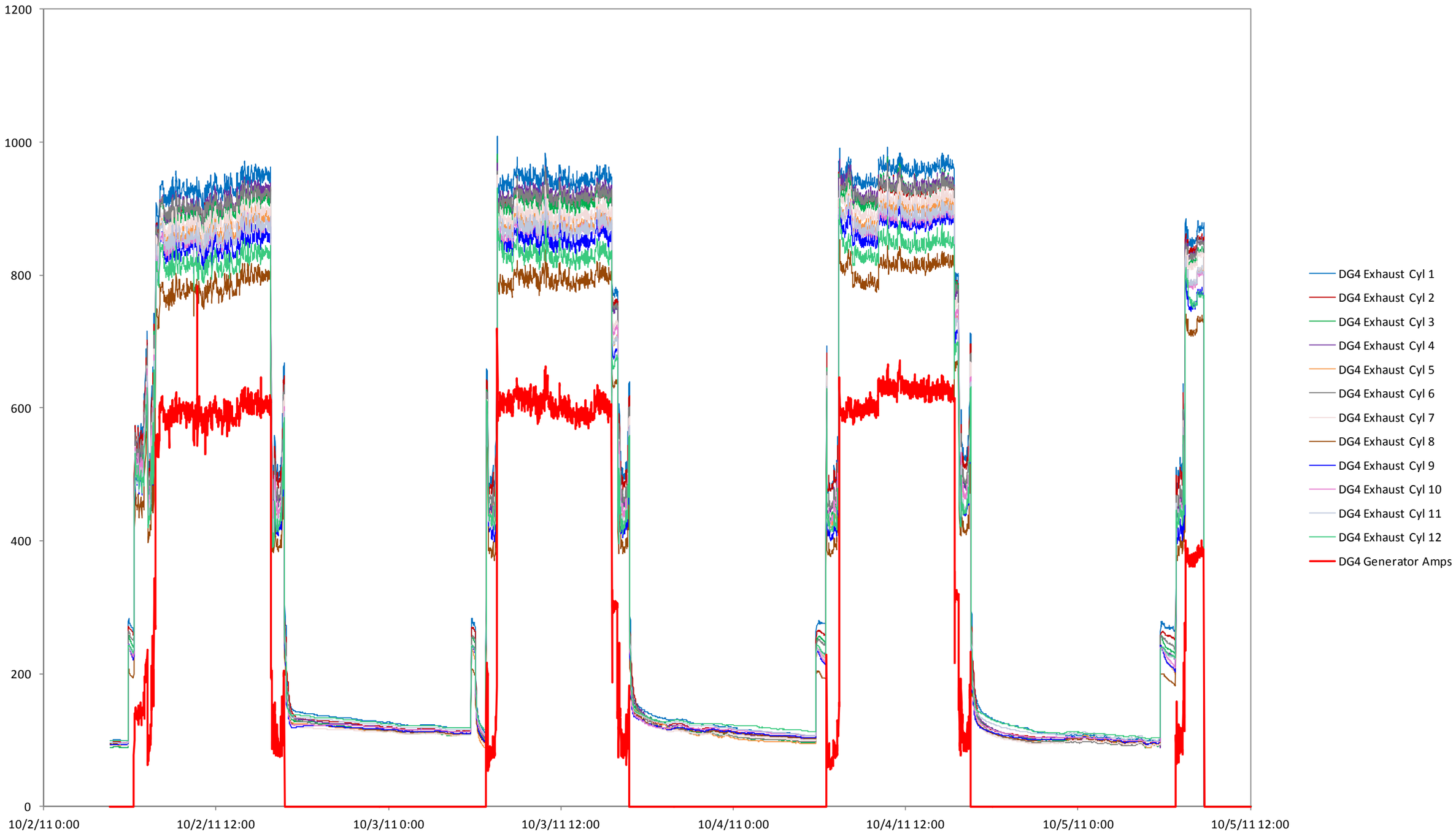
Diesel Generator #4 Miscellaneous Data – September 2011 Test Data



Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – October 2011 Test Data

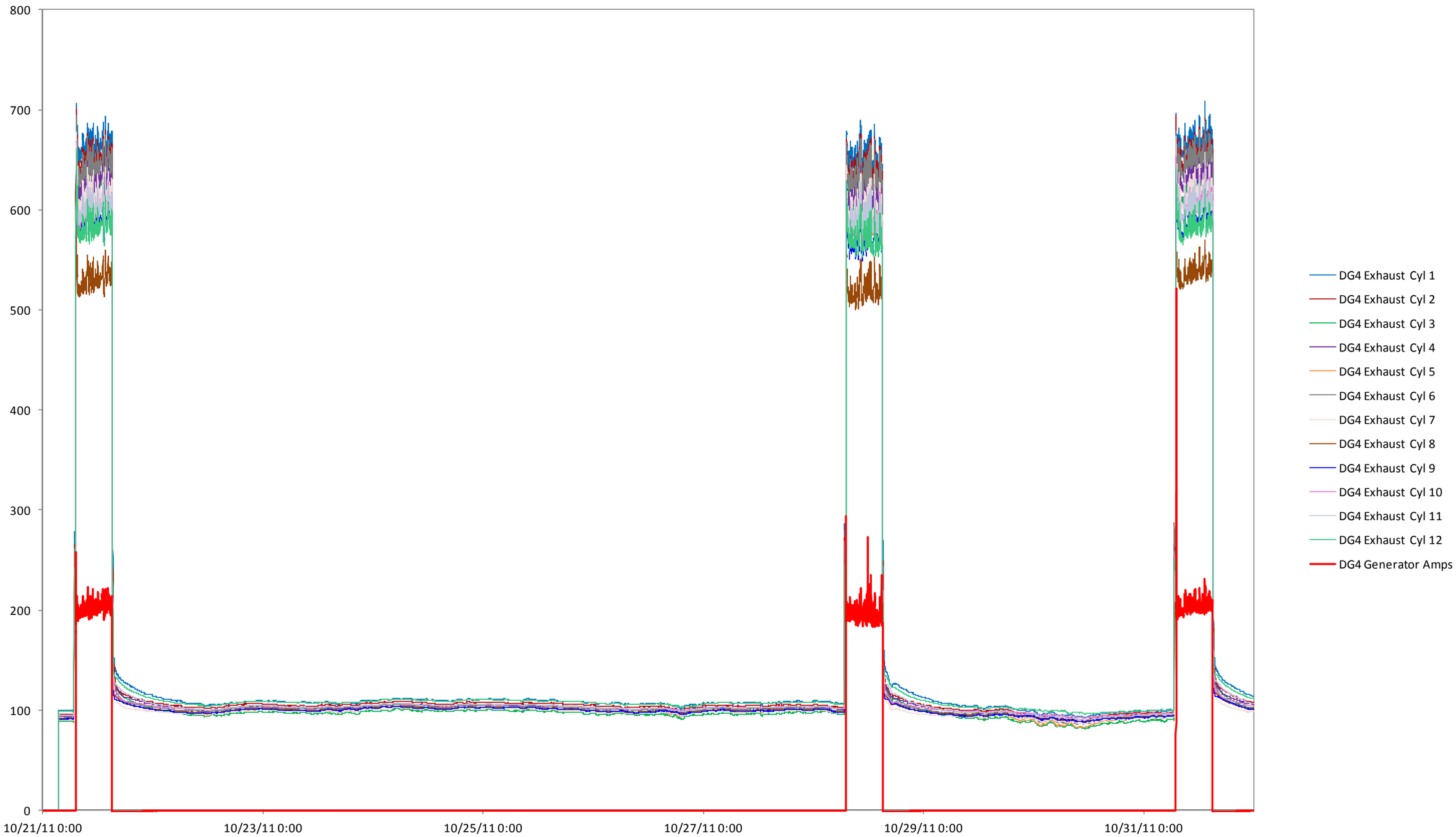


Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – October 2-5, 2011 Test Data Close-Up



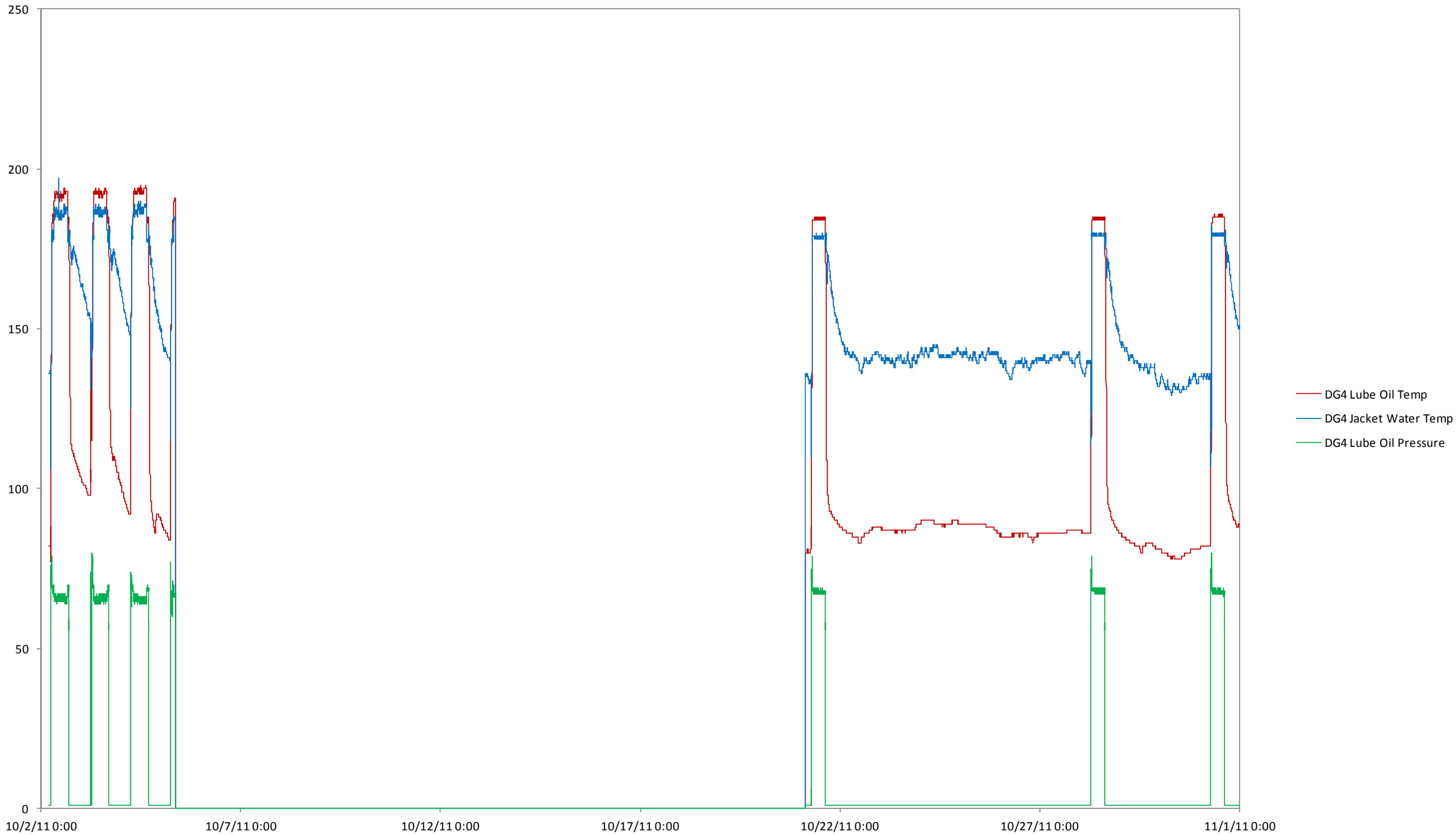
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – October 3, 2011 Test Data Close-Up

Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – October 21-31, 2011 Test Data Close-Up

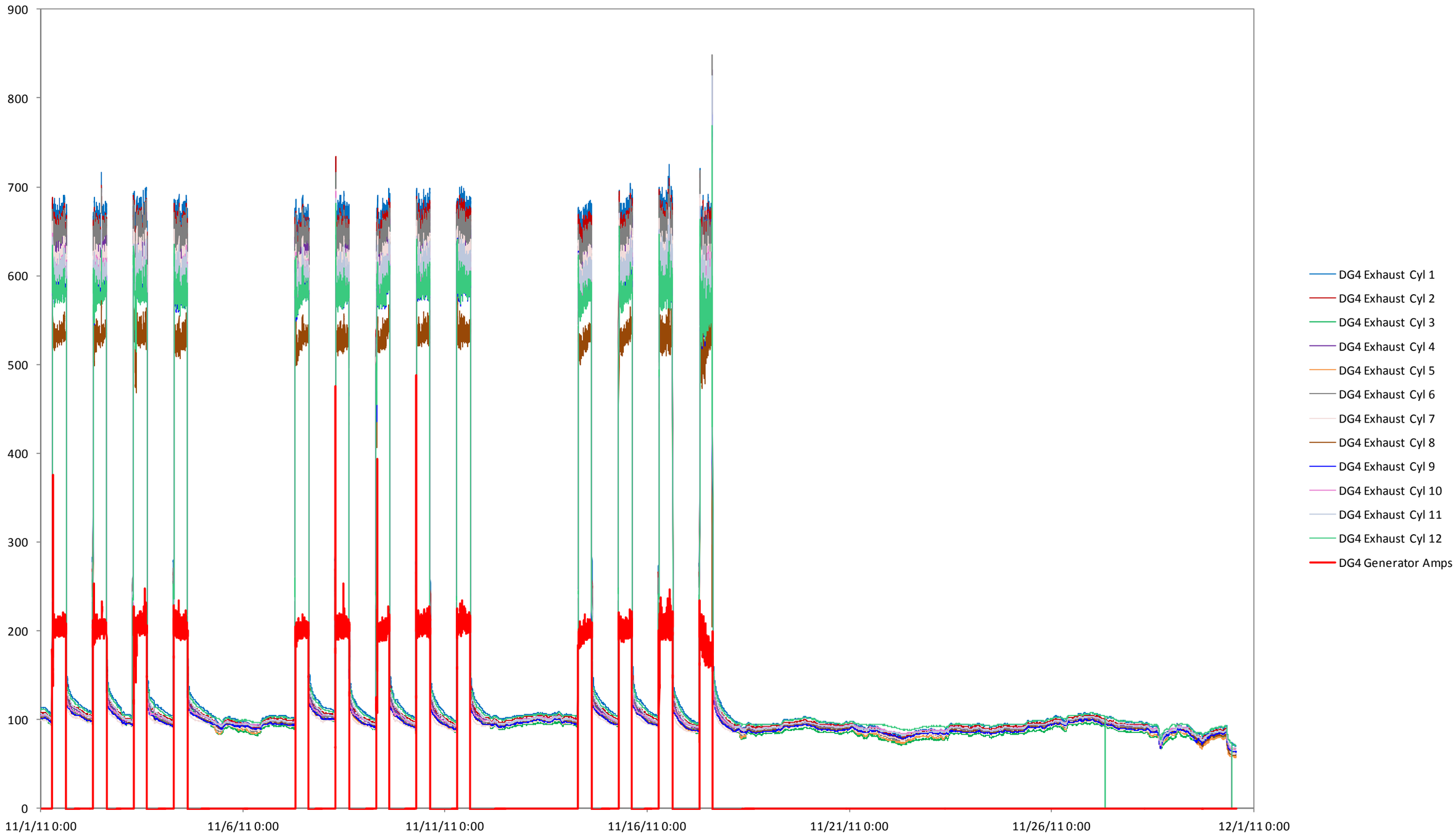


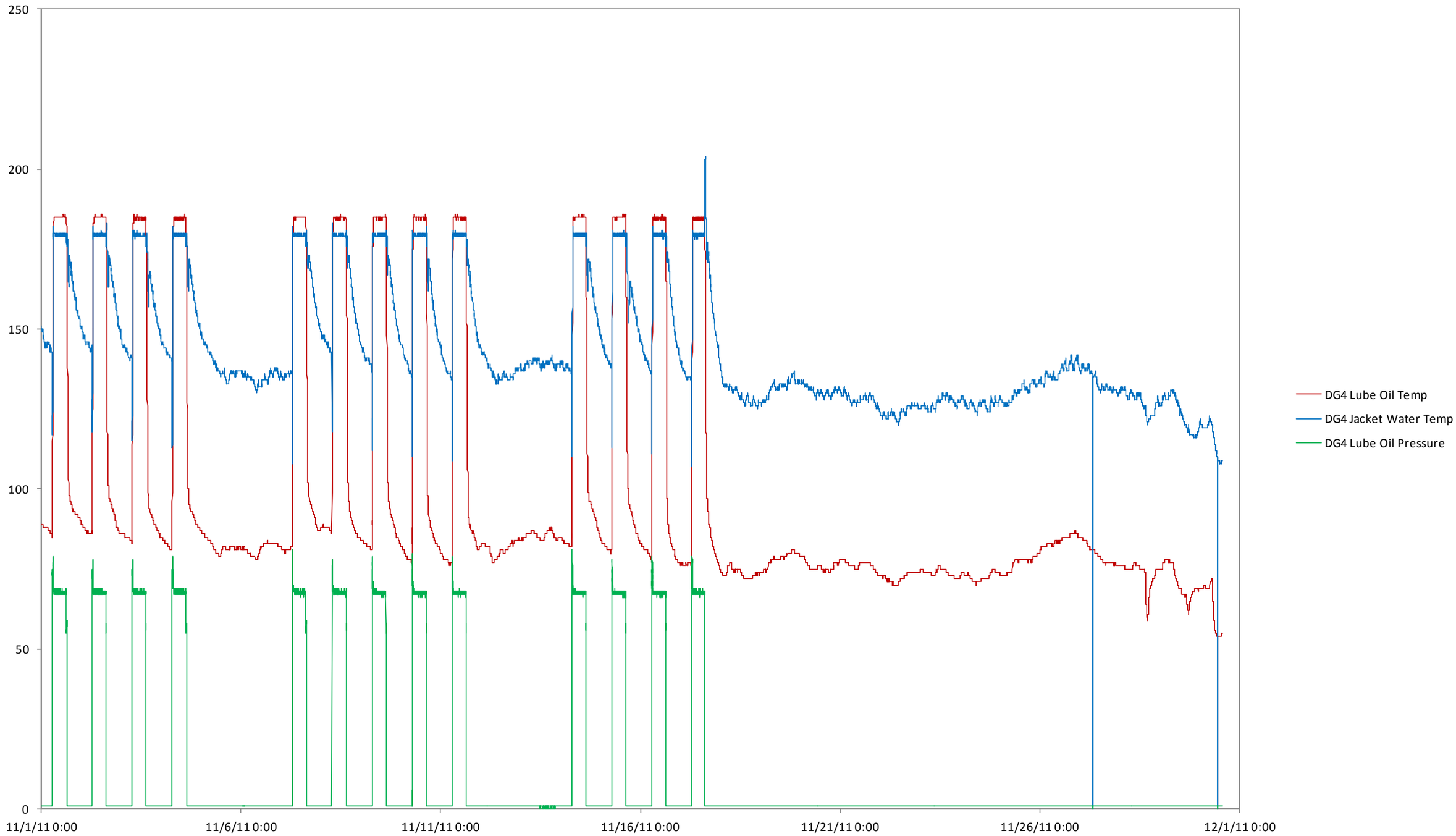
Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – October 28, 2011 Test Data Close-Up

Diesel Generator #4 Miscellaneous Data – October 2011 Test Data



Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – November 2011 Test Data



Diesel Generator #4 Exhaust Cylinder Temperatures and Generator Amps – November 1, 2011 Test Data Close-Up

Diesel Generator #4 Miscellaneous Data – November 2011 Test Data