Date	06 March 2019
Time	13:32:22
Test Number	HRSG Test 59
Mixture Composition	40% CH4 60% H2
Ambient Temperature	7.8 °C
Ambient Pressure	937 mbar
Wind Speed	4.5m/s
Wind direction	S
Relative Humidity	98.00%
Mass Flow	9.4110 kg/s
Equivalence Ratio	0.41

General Comments: (weather, rig configuration)

Weather: Misty but cleared by time of test. Overcast.

Rig configuration: 4 x 3m circular duct; expansion section and HRSG attached. End Plate attached. Igniter 258mm from beginning of 2nd circular duct section

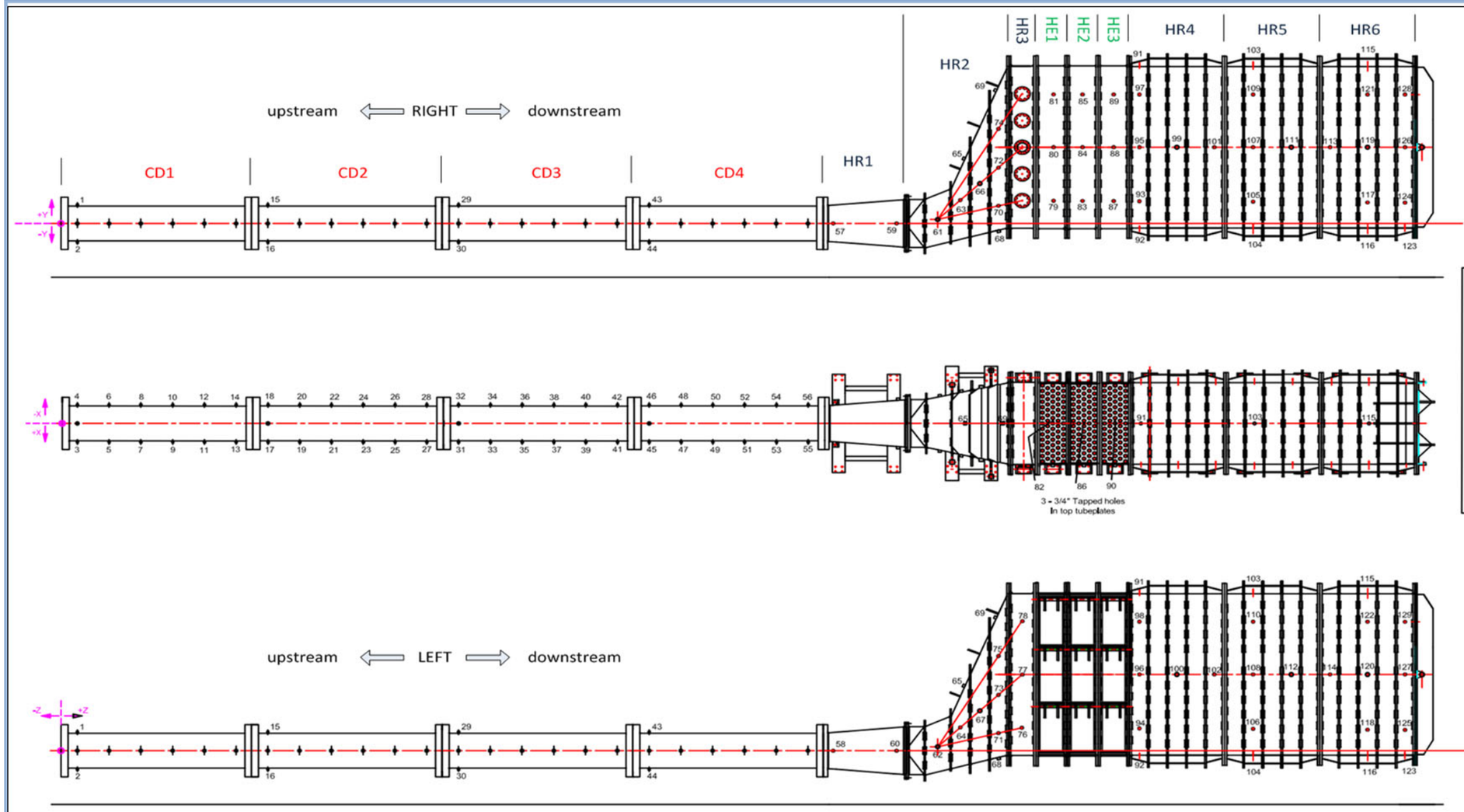
Engine Speed: 12%; 8,100 rpm

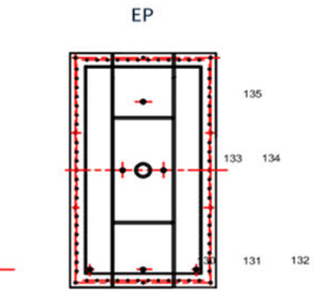
Test on 40% CH4 60% H2 at an intended EQR of 0.4
LOW TEMPERATURE TESTS (NOMINAL 320 oC).

Test gave a weak combustion event with many sensors providing a good response.

		Ionisation Probes	Ionisation Rakes	Optical Probes
Max overpressure	Max. gas temperature	Max. flame speed	Max. flame speed	Max. flame speed
64 mbar	1102 °C	75 m/s	81 m/s	115 m/s
	Initial gas temperature			
	715 °C			

Location of Max. Overpressure		Location of Max. Temperature		Location of Max. Flame Speed		Location of Max. Flame Speed		Location of Max. Flame Speed	
sensor	KU4	sensor	TC20	sensor	IP0	sensor	RA1	sensor	OP2
label	HE1-R1U	label	HE2-R1L	label	CD4-L6	label	HR2-R2M	label	HR1-R1
distance	15600 mm	distance	16090 mm	distance	11758 mm	distance	13785 mm	istance	12152 mm





INSTRUMENT PORTS

76 - INSTRUMENT PORTS IN ST ST 40mm HIGH TAPPED THROUGH (50 - 3/4" BSPP, 15 - 1" BSPP & 11 - 1 1/4" BSPP) HOLES THROUGH PLATE W.B.L. BE 19mm & 25MM) ON EACH HEAT EXCHANGER THERE IS 1 - 3/4" TAPPED HOLE IN THE TOP TUBEPLATE

SECTION 1:	2 - 3/4" ON EACH SIDE OF SECTION 1
SECTION 2:	2 - 1" ON TOP, 1 - 1" ON BASE, 2 - 1 1/4" ON EACH SIDE, 4 - 3/4" ON EACH SIDE
SECTION 3:	1 - 1 1/4" ON CENTRE & 2 - 3/4" ALL ON REAR SIDE
HEAT EXCHANGERS:	3 - 3/4" ON ONE SIDE & 1 - 3/4" BSPP TAPPED HOLE IN TOP TUBEPLATE
SECTION 4:	1 - 1" ON TOP, 1 - 1" ON BASE, 1 - 1 1/4" ON CENTRE OF EACH SIDE, 4 - 3/4" ON EACH SIDE
SECTION 5:	1 - 1" ON TOP, 1 - 1" ON BASE, 1 - 1 1/4" ON EACH SIDE 3 - 3/4" ON EACH SIDE
SECTION 6:	1 - 1" ON TOP, 2 - 1" ON BASE, 1 - 1 1/4" ON EACH SIDE 6 - 3/4" ON EACH SIDE
END PLATE:	1 - 1" & 1 - 3/4" ON VERTICAL CENTRELINE 2 - 1" ON HORIZONTAL CENTRELINE 2 - 1" ON LOWER CORNERS (50mm in from corners)

Naming Convention

Section Identifier i.e. HE, HR, CD or EP

Section Number (1-6) Numbered from downstream to upstream

H R 1 - R 1 U

Side i.e. R, L, T or B

Vertical position in section (sides only) i.e. U, M or L. Absence of letter denotes centreline

Longitudinal position in section (numbered from 1)

Key

CD	Circular duct	**U**	Upper
HR	HRSG	**M**	Middle
HE	Heat Exchanger	**L**	Lower
EP	End Plate	**R**	Right Side (when viewed downstream from engine)
		L	Left Side
		T	Top
		B	Bottom

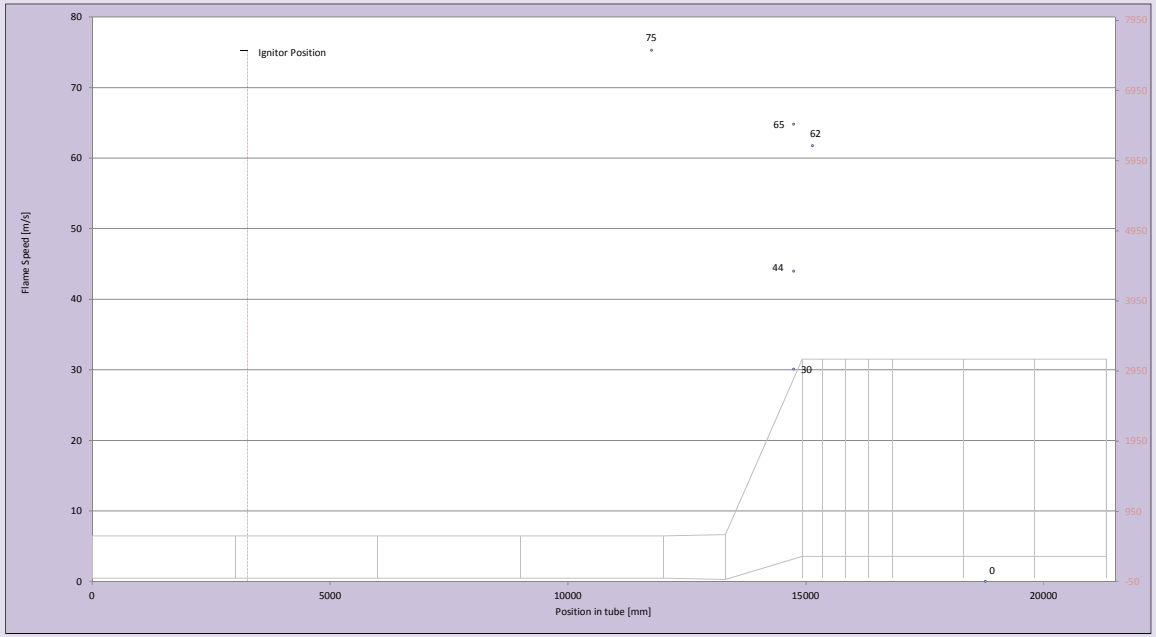
There are 13 sections on the rig

4	circular duct sections	(CD1 to CD4)
6	HRSG sections	(HR1 to HR6)
3	heat exchanger sections	(HE1 to HE3)
	located between HR3 and HR4	

Location of igniter 3258 mm

Time of ignition 22.17560 seconds

IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
IP0	CD4-L6	Ionisation probe 0	11758	22.28857	75
IP1	HR2-L5L	Ionisation probe 1	14745	22.33467	65
IP2	HR2-L5M	Ionisation probe 2	14745	22.35653	44
IP3	HR2-L5U	Ionisation probe 3	14745	22.38794	30
IP4	HR3-R1L	Ionisation probe 4	15140	22.34335	62
IP5	HR3-R1LM	Ionisation probe 5	15140	ND	
IP6	HR3-R1M	Ionisation probe 6	15140	ND	
IP7	HR3-R1U	Ionisation probe 7	15140	ND	
IP8	HR3-L1U	Ionisation probe 8	15140	22.37856	
IP9	HE2-R1M	Ionisation probe 9	16090	ND	
IP10	HR4-L1L	Ionisation probe 10	16985	ND	
IP11	HR4-L1M	Ionisation probe 11	16985	ND	
IP12	HR4-L1U	Ionisation probe 12	16985	ND	
IP13	HR4-R1U	Ionisation probe 13	16985	ND	
IP14	HR4-R3U	Ionisation probe 14	17575	ND	
IP15	HR4-L5L	Ionisation probe 15	18165	ND	
IP16	HR4-L5M	Ionisation probe 16	18165	ND	
IP17	HR4-L5U	Ionisation probe 17	18165	ND	
IP18	HR4-R5M	Ionisation probe 18	18165	ND	
IP19	HR5-L2L	Ionisation probe 19	18775	ND	
IP20	HR5-L2M	Ionisation probe 20	18775	ND	
IP21	HR5-L2U	Ionisation probe 21	18775	ND	
IP22	HR5-R2U	Ionisation probe 22	18775	ND	-
IP23	HR6-L1M	Ionisation probe 23	19985	ND	



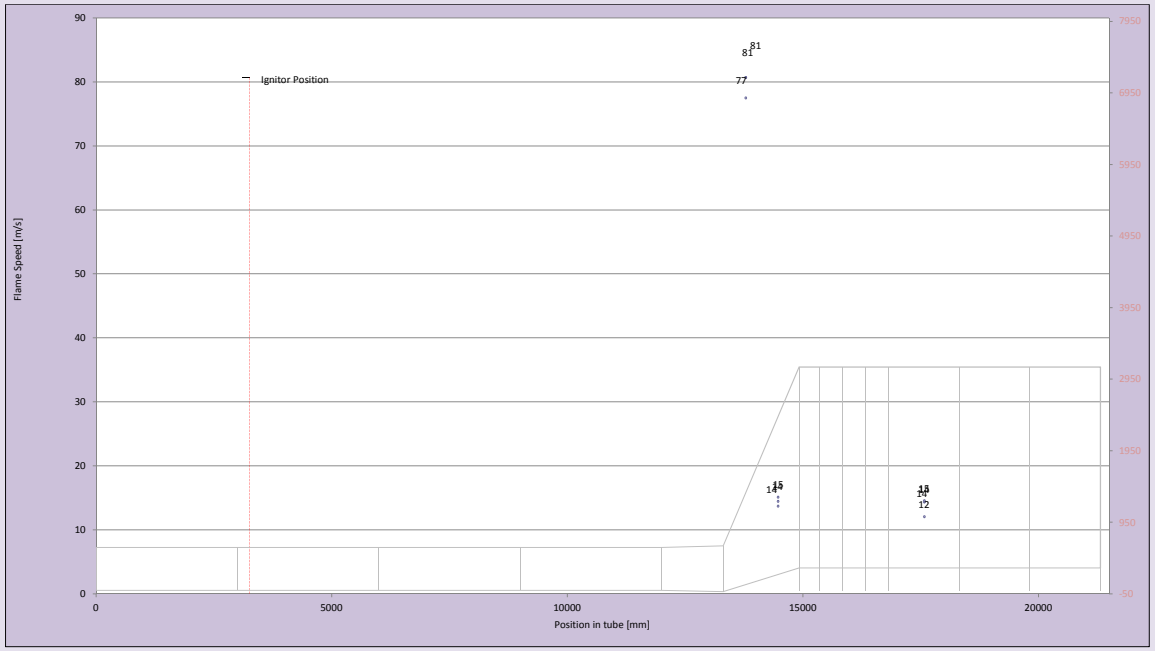
KEY: ND - not detected - sensor working but flame too weak to be picked up
NW - not working - sensor not

A weak combustion event. Sensors ahead of the HE gave a weak response but may sensors within the HE and further downstream did not detect an event.

Location of igniter 3258 mm **Time of ignition** 22.1756 seconds

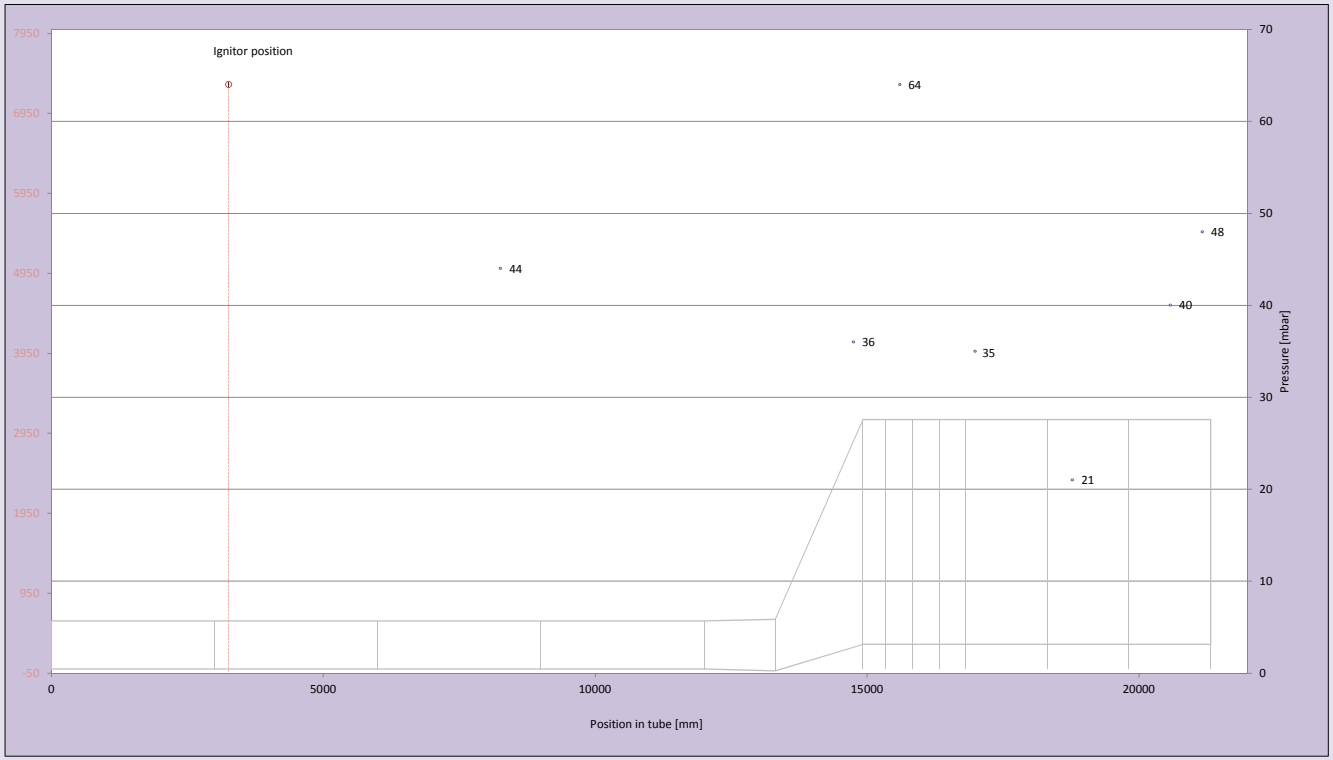
Rake Number	IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
RA1	IP24	HR2-R2M	IP24	13785	22.3060	81
RA1	IP25	HR2-R2M	IP25	13785	22.3060	81
RA1	IP26	HR2-R2M	IP26	13785	22.3114	77
RA2	IP27	HR2-R4M	IP27	14475	22.3515	15
RA2	IP28	HR2-R4M	IP28	14475	22.3562	14
RA2	IP29	HR2-R4M	IP29	14475	22.3591	14
RA3	IP30	HR4-R3M	IP30	17575	22.6082	12
RA3	IP31	HR4-R3M	IP31	17575	22.5711	14
RA3	IP32	HR4-R3M	IP32	17575	22.5721	15
RA4	IP33	HR4-R3L	IP33	17575	NW	
RA4	IP34	HR4-R3L	IP34	17575	22.5721	14
RA4	IP35	HR4-R3L	IP35	17575	NW	

KEY: ND - not detected - sensor working but flame too weak to be picked up
NW - not working - sensor not working.



Location of igniter 3258 mm

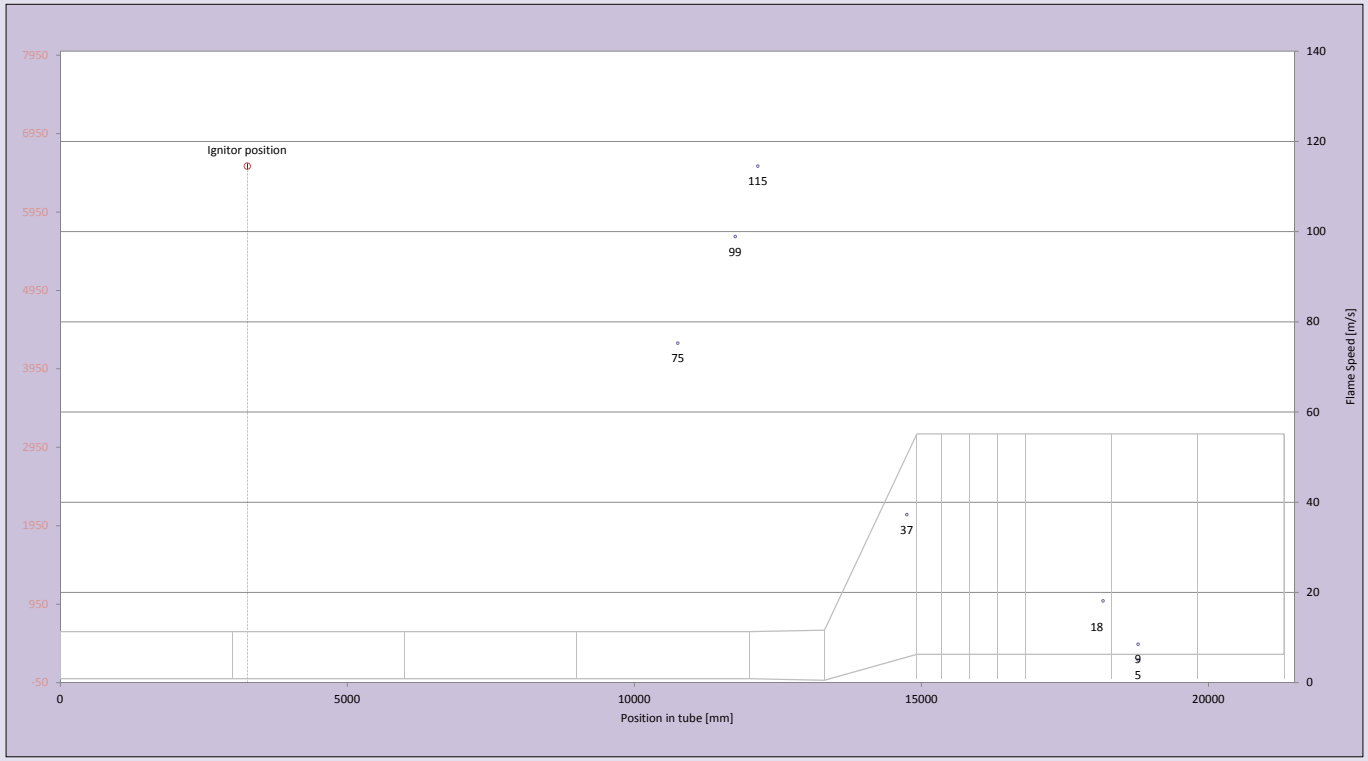
Transducer number	Location	Position in tube [mm]	ΔPmax [mbar]	TimeΔPmax [sec]
KU0	CD3-R5	8258	44	22.3441
KU1	CD4-R2	9758		
KU2	HR2-T5	14745	36	22.3377
KU3	HR3-L1L	15140		
KU4	HE1-R1U	15600	64	22.3607
KU5	HE3-R1L	16580		
KU6	HR4-R1L	16985	35	22.5866
KU7	HR4-R5U	18165		
KU8	HR5-R2L	18775	21	22.5879
KU9	HR6-R3L	20575	40	22.2866
KU10	HR6-L5L	21165	48	22.3375



Location of igniter 3258 mm **Time of ignitio** 22.1756 seconds

OP Number	Location label	Position in tube (mm)	Flame arrival time (s)	Average flame speed (m/s)
OP0	CD4-L4	10758	22.2752	75
OP1	CD4-R6	11758	22.2853	99
OP2	HR1-R1	12152	22.2888	115
OP3	HR2-R5M	14745	22.3584	37
OP4	HE1-T1	15600	22.4883	
OP5	HE2-T1	16090	22.5195	
OP6	HE3-T1	16580	22.5539	
OP7	HR4-T1	16985	22.5667	
OP8	HR4-R1M	16985	22.5342	
OP9	HR4-R5L	18165	22.5467	18
OP10	HR5-T2	18775	22.6184	9
OP11	HR5-R2M	18775	22.6681	5

KEY: ND - not detected - sensor working but flame too weak to be picked up
NW - not working - sensor not working

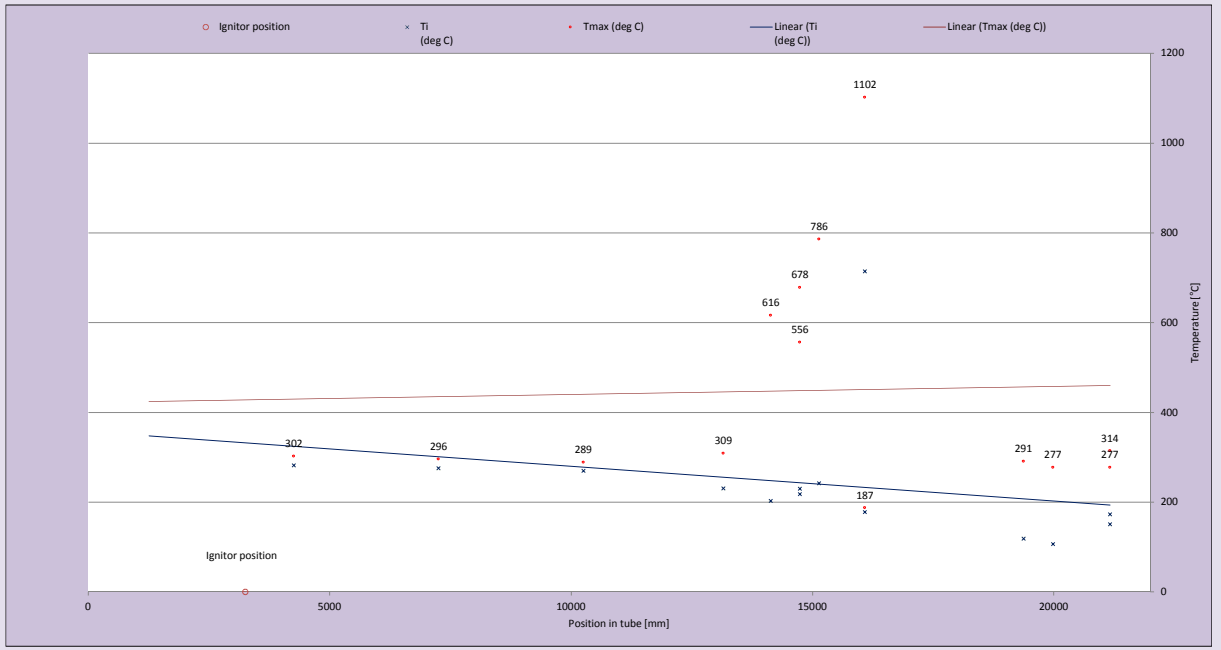


Location of igniter	3258	mm	Time of ignition	22.17560	seconds

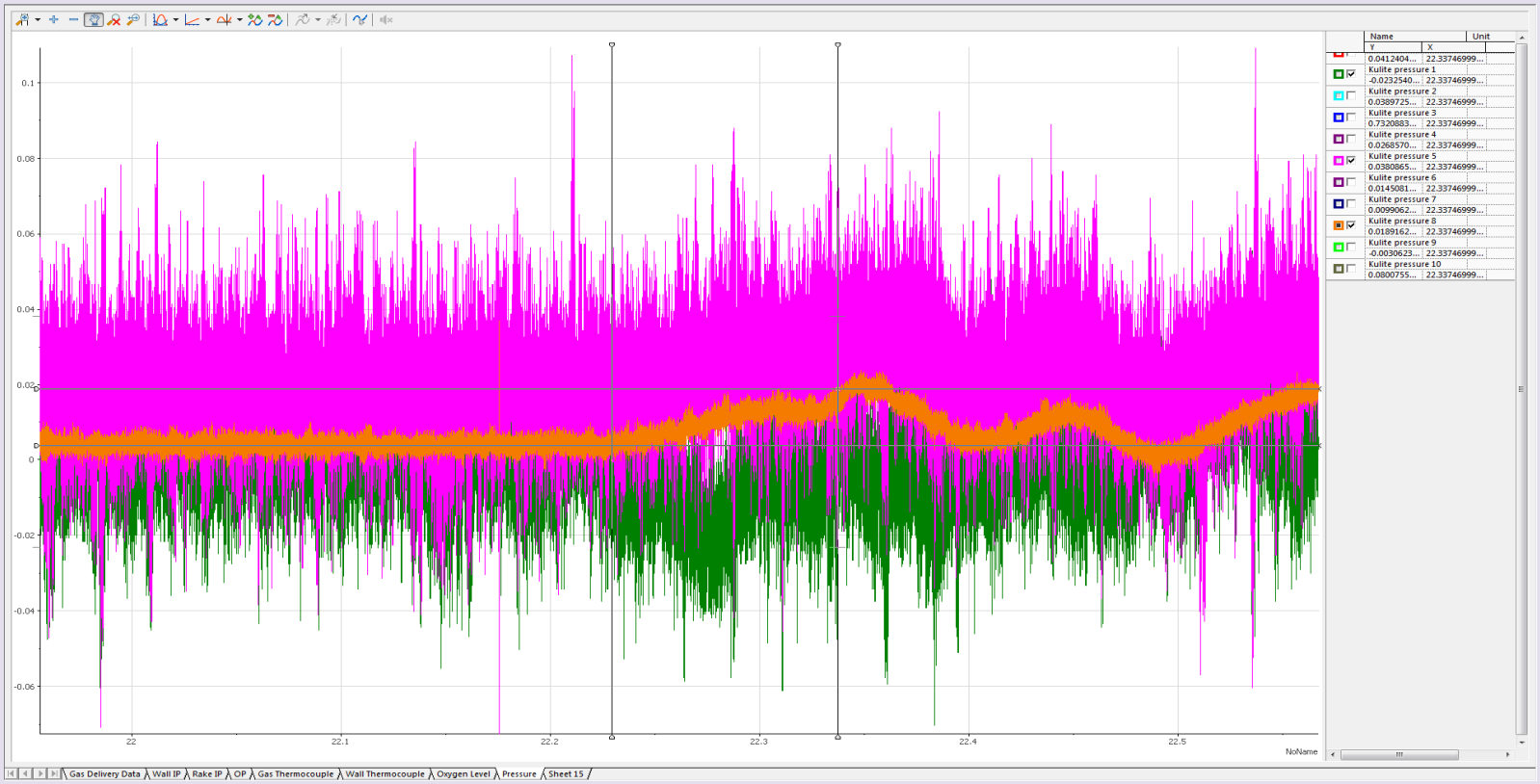
Thermocouple number	Location	Position in tube (mm)	T_{max} (deg C)	T_i (deg C)
TC0	CD1-R3	1258		
TC2	CD2-R3	4258	302	282
TC4	CD3-R3	7258	296	276
TC6	CD4-R3	10258	289	270
TC8	HR1-R2	13160	309	231
TC12	CD3-T1	6258	280	266
TC13	CD3-L1	6258	294	277
TC14	CD3-B1	6258		
TC15	CD3-R1	6258	305	287
TC16	HR2-R3M	14140	616	203
TC17	HR2-R5L	14745	678	230
TC18	HR2-R5U	14745	556	218
TC19	HR3-L1M	15140	786	242
TC20	HE2-R1L	16090	1102	715
TC21	HE2-R1U	16090	187	178
TC22	HR5-R4M	19375	291	119
TC23	HR6-R1M	19985	277	107
TC24	HR6-R5L	21165	277	151
TC25	HR6-R5U	21165	314	173

surface thermocouples [not plotted]

TC1	CD1-T2	1508	118	110
TC3	CD2-T2	4508	104	97
TC5	CD3-T2	7508	107	101
TC7	CD4-T2	10508	88	84



Pressure


Name
Unit
Y
X
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Kulite pressure 1
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22.33746999...
Kulite pressure 2
0.0389725...
22.33746999...
Kulite pressure 3
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Kulite pressure 4
0.0268570...
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Kulite pressure 5
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Kulite pressure 6
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Kulite pressure 8
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Kulite pressure 9
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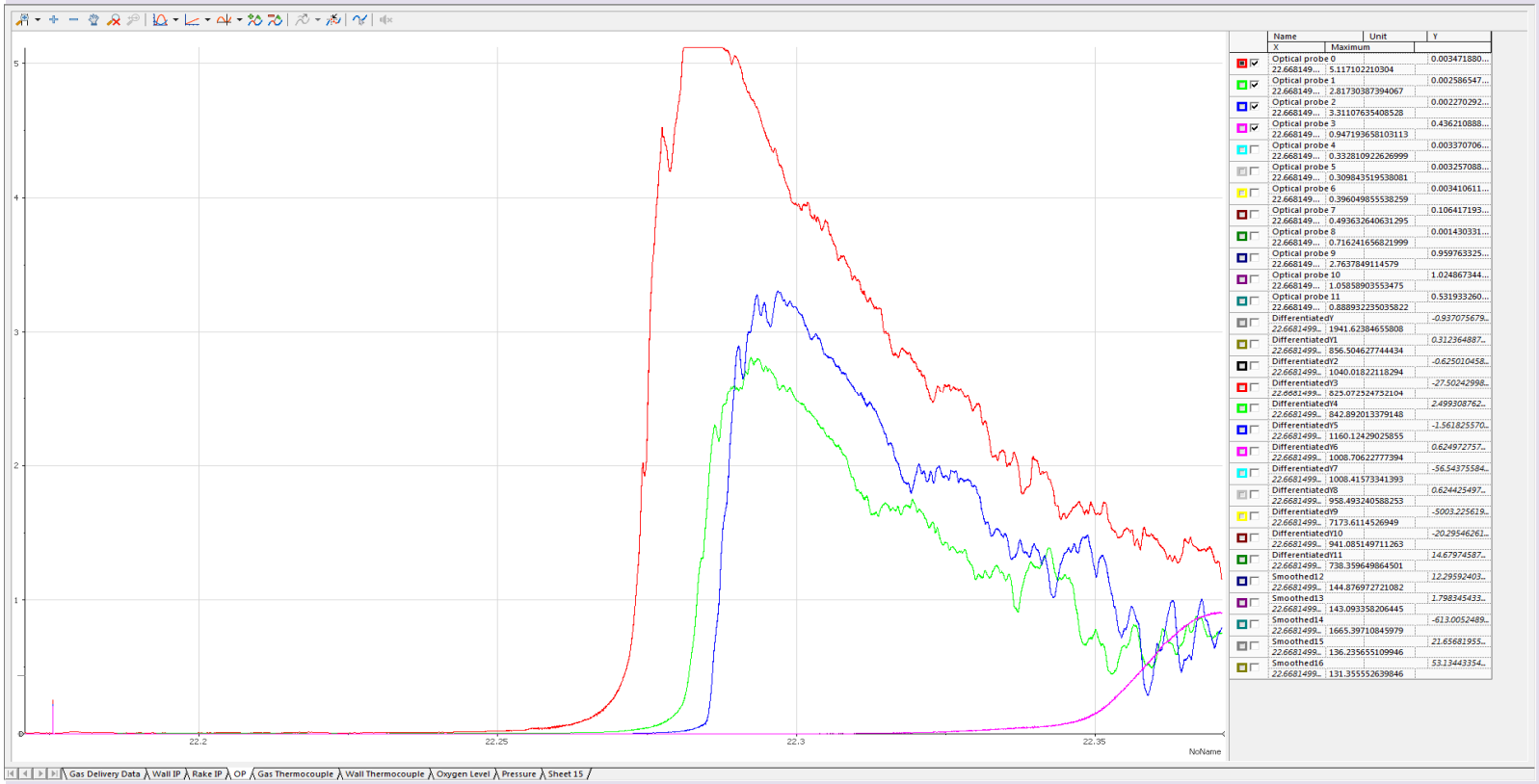
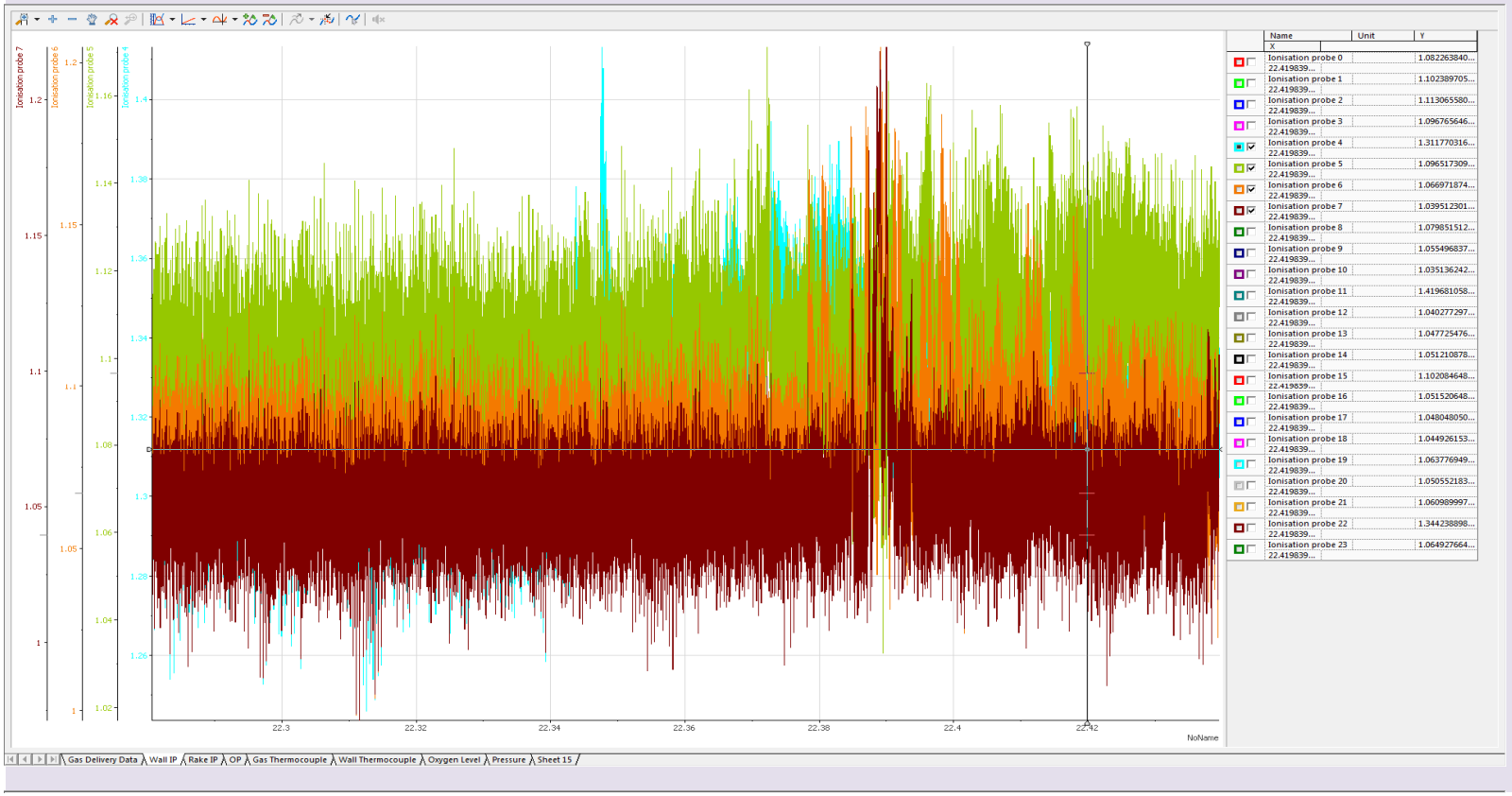
Kulite pressure 10
0.0800755...
22.33746999...
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
22
22.1
22.2
22.3
22.4
22.5
NoName
Gas Delivery Data
Wall IP
Rake IP
OP
Gas Thermocouple
Wall Thermocouple
Oxygen Level
Pressure
Sheet 15

Optical Probes

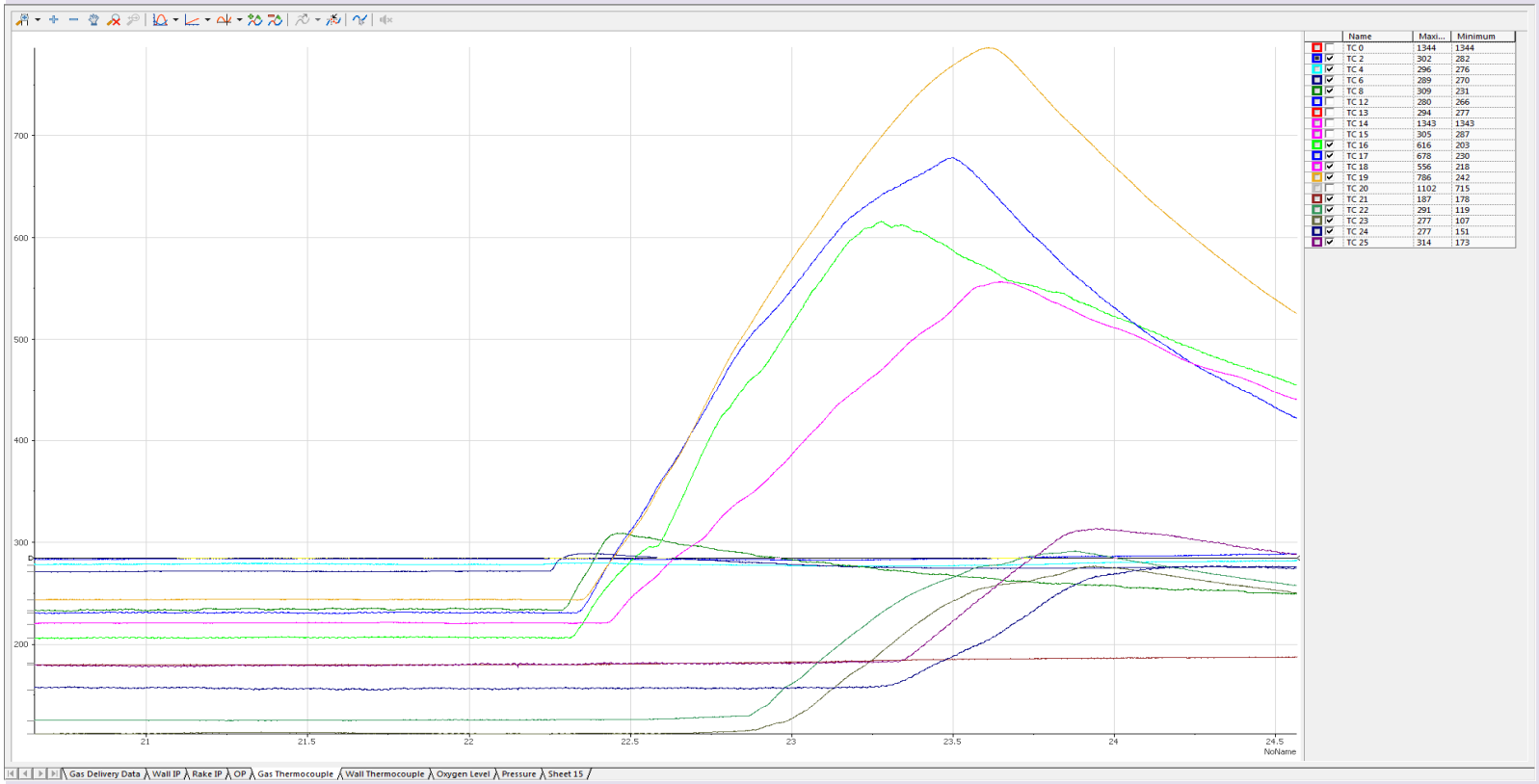


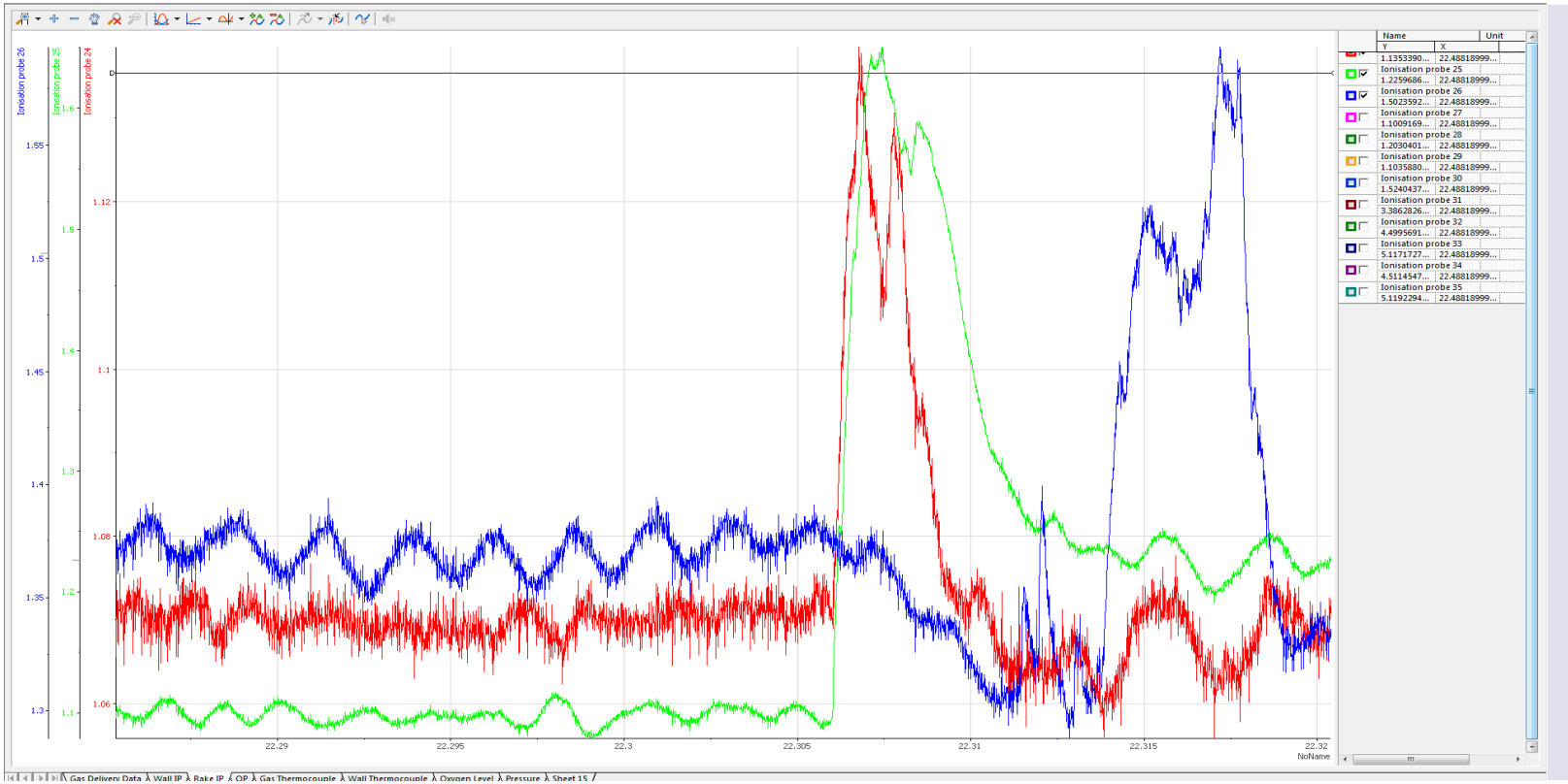
	Name	Unit	Y
	X	Maximum	
☑	Optical probe 0		0.003471880...
	22.668149...	5.117102210304	
☑	Optical probe 1		0.002586547...
	22.668149...	2.81730387394067	
☑	Optical probe 2		0.002270292...
	22.668149...	3.31107635408528	
☑	Optical probe 3		0.436210888...
	22.668149...	0.947193658103113	
☐	Optical probe 4		0.003370706...
	22.668149...	0.332810922626999	
☐	Optical probe 5		0.003257088...
	22.668149...	0.309843519538081	
☐	Optical probe 6		0.003410611...
	22.668149...	0.396049855538259	
☐	Optical probe 7		0.106417193...
	22.668149...	0.493632640631295	
☐	Optical probe 8		0.001430331...
	22.668149...	0.716241656821999	
☐	Optical probe 9		0.959763325...
	22.668149...	2.7637849114579	
☐	Optical probe 10		1.024867344...
	22.668149...	1.05858903553475	
☐	Optical probe 11		0.531933260...
	22.668149...	0.888932235035822	
☐	DifferentiatedY		-0.937075679...
	22.6681499...	1941.62384655808	
☐	DifferentiatedY1		0.312364887...
	22.6681499...	856.504627744434	
☐	DifferentiatedY2		-0.625010458...
	22.6681499...	1040.01822118294	
☐	DifferentiatedY3		-27.50242998...
	22.6681499...	825.072524752104	
☐	DifferentiatedY4		2.499308762...
	22.6681499...	842.892013379148	
☐	DifferentiatedY5		-1.561825570...
	22.6681499...	1160.12429025855	
☐	DifferentiatedY6		0.624972757...
	22.6681499...	1008.70622777394	
☐	DifferentiatedY7		-56.54375584...
	22.6681499...	1008.41573341393	
☐	DifferentiatedY8		0.624425497...
	22.6681499...	958.493240588253	
☐	DifferentiatedY9		-5003.225619...
	22.6681499...	7173.6114526949	
☐	DifferentiatedY10		-20.29546261...
	22.6681499...	941.085149711263	
☐	DifferentiatedY11		14.67974587...
	22.6681499...	738.359649864501	
☐	Smoothed12		12.29592403...
	22.6681499...	144.876972721082	
☐	Smoothed13		1.798345433...
	22.6681499...	143.093358206445	
☐	Smoothed14		-613.0052489...
	22.6681499...	1665.39710845979	
☐	Smoothed15		21.65681955...
	22.6681499...	136.235655109946	
☐	Smoothed16		53.13443354...
	22.6681499...	131.355552639846	

Ionisation Probes



Temperature




Ionisation probe 26
Ionisation probe 25
Ionisation probe 24
1.55
1.5
1.45
1.4
1.35
1.3
1.6
1.5
1.4
1.3
1.2
1.1
1.12
1.1
1.08
1.06
22.29
22.295
22.3
22.305
22.31
22.315
22.32
NoName
Name
Unit
Y
X
Ionisation probe 25
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22.48818999...
Ionisation probe 26
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22.48818999...
Ionisation probe 27
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22.48818999...
Ionisation probe 28
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22.48818999...
Ionisation probe 29
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22.48818999...
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22.48818999...
Ionisation probe 32
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Ionisation probe 33
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Ionisation probe 34
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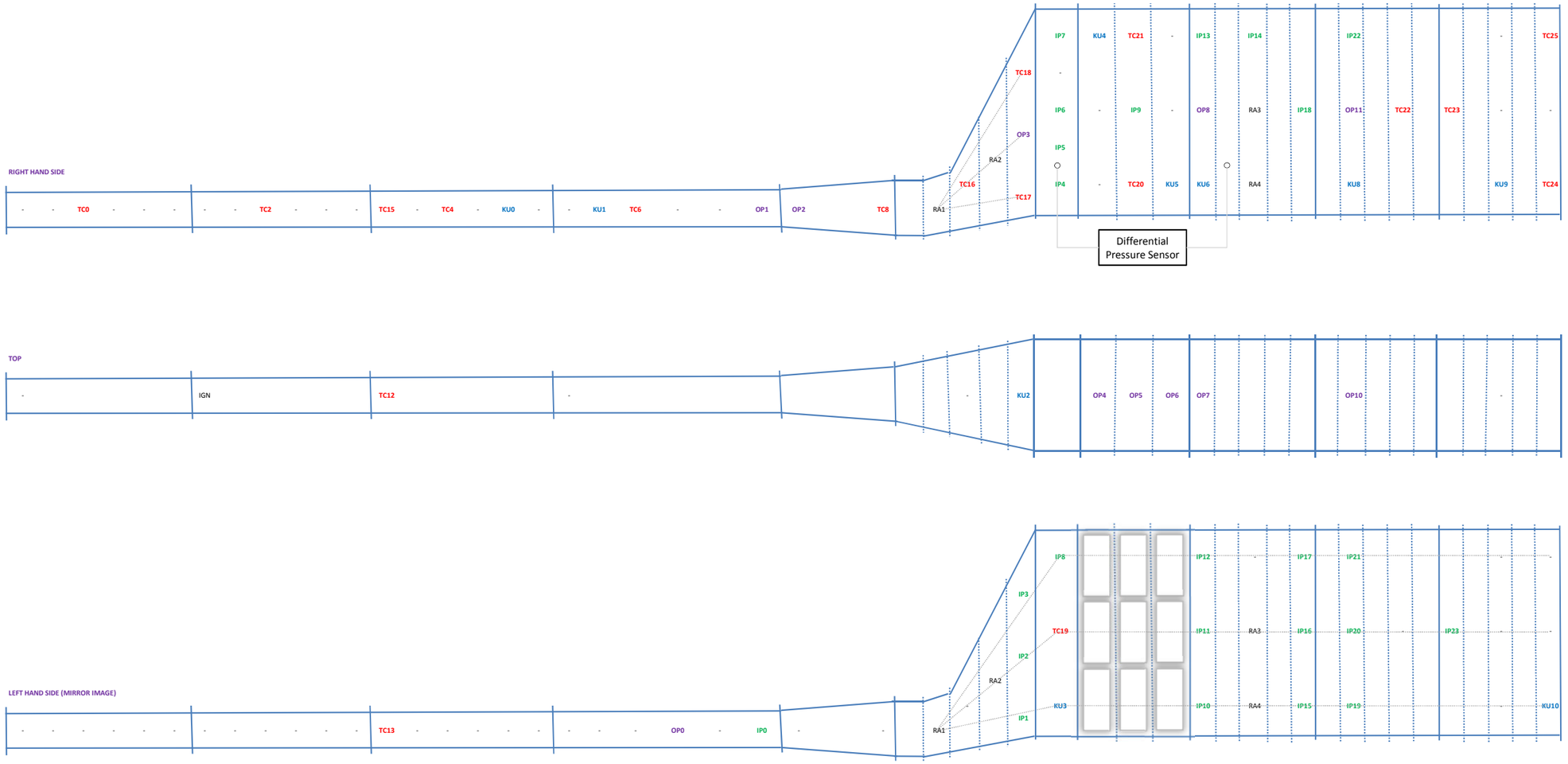
22.48818999...
Ionisation probe 35
5.1192294...
22.48818999...
Gas Delivery Data
Wall IP
Rake IP
OP
Gas Thermocouple
Wall Thermocouple
Oxygen Level
Pressure
Sheet 15

Sensor	OLD DESIGNATION	NEW DESIGNATION	Section	Section Number	Side	Horizontal Location	Vertical Location	PORT REF	SIZE	"X"	"Y"	"Z"
-		CD1-T1	CD	1	T	1		1	1" BSPP	0	298	258
TC1	TS1-1	CD1-T2	CD	1	T	2		NA	SURFACE	0	298	1508
-		CD1-B1	CD	1	B	1		2	1" BSPP	0	-298	258
-	NS1-1	CD1-R1	CD	1	R	1		3	3/4" BSPP	298	0	258
-	FS1-1	CD1-L1	CD	1	L	1		4	3/4" BSPP	-298	0	258
-	NS1-2	CD1-R2	CD	1	R	2		5	3/4" BSPP	298	0	758
-	FS1-2	CD1-L2	CD	1	L	2		6	3/4" BSPP	-298	0	758
TC0	NS1-3	CD1-R3	CD	1	R	3		7	3/4" BSPP	298	0	1258
-	FS1-3	CD1-L3	CD	1	L	3		8	3/4" BSPP	-298	0	1258
-	NS1-4	CD1-R4	CD	1	R	4		9	3/4" BSPP	298	0	1758
-	FS1-4	CD1-L4	CD	1	L	4		10	3/4" BSPP	-298	0	1758
-	NS1-5	CD1-R5	CD	1	R	5		11	3/4" BSPP	298	0	2258
-	FS1-5	CD1-L5	CD	1	L	5		12	3/4" BSPP	-298	0	2258
-	NS1-6	CD1-R6	CD	1	R	6		13	3/4" BSPP	298	0	2758
-	FS1-6	CD1-L6	CD	1	L	6		14	3/4" BSPP	-298	0	2758
IGN		CD2-T1	CD	2	T	1		15	1" BSPP	0	298	3258
TC3	TS2-1	CD2-T2	CD	2	T	2		NA	SURFACE	0	298	4508
-		CD2-B1	CD	2	B	1		16	1" BSPP	0	-298	2358
-	NS2-1	CD2-R1	CD	2	R	1		17	3/4" BSPP	298	0	3258
-	FS2-1	CD2-L1	CD	2	L	1		18	3/4" BSPP	-298	0	3258
-	NS2-2	CD2-R2	CD	2	R	2		19	3/4" BSPP	298	0	3758
-	FS2-2	CD2-L2	CD	2	L	2		20	3/4" BSPP	-298	0	3758
TC2	NS2-3	CD2-R3	CD	2	R	3		21	3/4" BSPP	298	0	4258
-	FS2-3	CD2-L3	CD	2	L	3		22	3/4" BSPP	-298	0	4258
-	NS2-4	CD2-R4	CD	2	R	4		23	3/4" BSPP	298	0	4758
-	FS2-4	CD2-L4	CD	2	L	4		24	3/4" BSPP	-298	0	4758
-	NS2-5	CD2-R5	CD	2	R	5		25	3/4" BSPP	298	0	5258
-	FS2-5	CD2-L5	CD	2	L	5		26	3/4" BSPP	-298	0	5258
-	NS2-6	CD2-R6	CD	2	R	6		27	3/4" BSPP	298	0	5758
-	FS2-6	CD2-L6	CD	3	L	6		28	3/4" BSPP	-298	0	5758
TC12		CD3-T1	CD	3	T	1		29	1" BSPP	0	298	6258
TC5	TS1-1	CD3-T2	CD	3	T	2		NA	SURFACE	0	298	7508
TC14		CD3-B1	CD	3	B	1		30	1" BSPP	0	-298	6258
TC15	NS3-1	CD3-R1	CD	3	R	1		31	3/4" BSPP	298	0	6258
TC13	FS3-1	CD3-L1	CD	3	L	1		32	3/4" BSPP	-298	0	6258
-	NS3-2	CD3-R2	CD	3	R	2		33	3/4" BSPP	298	0	6758
-	FS3-2	CD3-L2	CD	3	L	2		34	3/4" BSPP	-298	0	6758
TC4	NS3-3	CD3-R3	CD	3	R	3		35	3/4" BSPP	298	0	7258
-	FS3-3	CD3-L3	CD	3	L	3		36	3/4" BSPP	-298	0	7258
-	NS3-4	CD3-R4	CD	3	R	4		37	3/4" BSPP	298	0	7758
-	FS3-4	CD3-L4	CD	3	L	4		38	3/4" BSPP	-298	0	7758
KU0	NS3-5	CD3-R5	CD	3	R	5		39	3/4" BSPP	298	0	8258
-	FS3-5	CD3-L5	CD	3	L	5		40	3/4" BSPP	-298	0	8258
-	NS3-6	CD3-R6	CD	3	R	6		41	3/4" BSPP	298	0	8758
-	FS3-6	CD3-L6	CD	3	L	6		42	3/4" BSPP	-298	0	8758
-		CD4-T1	CD	4	T	1		43	1" BSPP	0	298	9258
TC7	TS1-1	CD4-T2	CD	4	T	2		NA	SURFACE	0	298	10508
-		CD4-B1	CD	4	B	1		44	1" BSPP	0	-298	9258
-	NS4-1	CD4-R1	CD	4	R	1		45	3/4" BSPP	298	0	9258
-	FS4-1	CD4-L1	CD	4	L	1		46	3/4" BSPP	-298	0	9258
KU1	NS4-2	CD4-R2	CD	4	R	2		47	3/4" BSPP	298	0	9758
-	FS4-2	CD4-L2	CD	4	L	2		48	3/4" BSPP	-298	0	9758
TC6	NS4-3	CD4-R3	CD	4	R	3		49	3/4" BSPP	298	0	10258
-	FS4-3	CD4-L3	CD	4	L	3		50	3/4" BSPP	-298	0	10258
-	NS4-4	CD4-R4	CD	4	R	4		51	3/4" BSPP	298	0	10758
OP0	FS4-4	CD4-L4	CD	4	L	4		52	3/4" BSPP	-298	0	10758
-	NS4-5	CD4-R5	CD	4	R	5		53	3/4" BSPP	298	0	11258
-	FS4-5	CD4-L5	CD	4	L	5		54	3/4" BSPP	-298	0	11258
OP1	NS4-6	CD4-R6	CD	4	R	6		55	3/4" BSPP	298	0	11758

Sensor	OLD DESIGNATION	NEW DESIGNATION	Section	Section Number	Side	Horizontal Location	Vertical Location	PORT REF	SIZE	"X"	"Y"	"Z"
IP0	FS4-6	CD4-L6	CD	4	L	6		56	3/4" BSPP	-298	0	11758
OP2		HR1-R1	HR	1	R	1		57	3/4" BSPP	308	0	12152
-		HR1-L1	HR	1	L	1		58	3/4" BSPP	-308	0	12152
TC8		HR1-R2	HR	1	R	2		59	3/4" BSPP	393	0	13160
-		HR1-L2	HR	1	L	2		60	3/4" BSPP	-393	0	13160
RA1		HR2-R2M	HR	2	R	2	M	61	11/4" BSPP	448	70	13785
RA1		HR2-L2M	HR	2	L	2	M	62	11/4" BSPP	-448	70	13785
TC16		HR2-R3M	HR	2	R	3	M	63	3/4" BSPP	528	410	14140
-		HR2-L3M	HR	2	L	3	M	64	3/4" BSPP	-528	410	14140
-		HR2-T3	HR	2	T	3		65	1" BSPP	0	1122	14215
RA2		HR2-R4M	HR	2	R	4	M	66	11/4" BSPP	598	700	14475
RA2		HR2-L4M	HR	2	L	4	M	67	11/4" BSPP	-598	700	14475
-		HR2-B5	HR	2	B	5		68	1" BSPP	0	-100	14745
KU2		HR2-T5	HR	2	T	5		69	1" BSPP	0	2315	14745
TC17		HR2-R5L	HR	2	R	5	L	70	3/4" BSPP	662	310	14745
IP1		HR2-L5L	HR	2	L	5	L	71	3/4" BSPP	-662	310	14745
OP3		HR2-R5M	HR	2	R	5	M	72	3/4" BSPP	662	975	14745
IP2		HR2-L5M	HR	2	L	5	M	73	3/4" BSPP	-662	975	14745
TC18		HR2-R5U	HR	2	R	5	U	74	3/4" BSPP	662	1660	14745
IP3		HR2-L5U	HR	2	L	5	U	75	3/4" BSPP	-662	1660	14745
KU3		HR3-L1L	HR	3	L	1	L	76	3/4" BSPP	-700	400	15140
TC19		HR3-L1M	HR	3	L	1	M	77	11/4" BSPP	-700	1335	15140
IP8		HR3-L1U	HR	3	L	1	U	78	3/4" BSPP	-700	2270	15140
IP4		HR3-R1L	HR	3	R	1	L	136	3/4" BSPP	700	400	15140
IP5		HR3-R1LM	HR	3	R	1	LM	137	3/4" BSPP	700	868	15140
IP6		HR3-R1M	HR	3	R	1	M	138	3/4" BSPP	700	1335	15140
-		HR3-R1UM	HR	3	R	1	UM	139	3/4" BSPP	700	1802	15140
IP7		HR3-R1U	HR	3	R	1	U	140	3/4" BSPP	700	2270	15140
-		HE1-R1L	HE	1	R	1	L	79	3/4" BSPP	700	400	15600
-		HE1-R1M	HE	1	R	1	M	80	3/4" BSPP	700	1335	15600
KU4		HE1-R1U	HE	1	R	1	U	81	3/4" BSPP	700	2270	15600
TC20		HE2-R1L	HE	2	R	1	L	83	3/4" BSPP	700	400	16090
IP9		HE2-R1M	HE	2	R	1	M	84	3/4" BSPP	700	1335	16090
TC21		HE2-R1U	HE	2	R	1	U	85	3/4" BSPP	700	2270	16090
KU5		HE3-R1L	HE	3	R	1	L	87	3/4" BSPP	700	400	16580
-		HE3-R1M	HE	3	R	1	M	88	3/4" BSPP	700	1335	16580
-		HE3-R1U	HE	3	R	1	U	89	3/4" BSPP	700	2270	16580
OP4		HE1-T1	HE	1	T	1		82	3/4" BSPP HOLE	-47	2735	15600
OP5		HE2-T1	HE	2	T	1		86	3/4" BSPP HOLE	0	2735	16090
OP6		HE3-T1	HE	3	T	1		90	3/4" BSPP HOLE	-47	2735	16580
OP7		HR4-T1	HR	4	T	1		91	1" BSPP	0	2735	16985
-		HR4-B1	HR	4	B	1		92	1" BSPP	0	-65	16985
KU6		HR4-R1L	HR	4	R	1	L	93	3/4" BSPP	700	400	16985
IP10		HR4-L1L	HR	4	L	1	L	94	3/4" BSPP	-700	400	16985
OP8		HR4-R1M	HR	4	R	1	M	95	3/4" BSPP	700	1335	16985
IP11		HR4-L1M	HR	4	L	1	M	96	3/4" BSPP	-700	1335	16985
IP13		HR4-R1U	HR	4	R	1	U	97	3/4" BSPP	700	2270	16985
IP12		HR4-L1U	HR	4	L	1	U	98	3/4" BSPP	-700	2270	16985
RA3		HR4-R3M	HR	4	R	3	M	99	11/4" BSPP	700	1335	17575
RA3		HR4-L3M	HR	4	L	3	M	100	11/4" BSPP	-700	1335	17575
RA4		HR4-R3L	HR	4	R	3	L	141	11/4" BSPP	700	400	17575
IP14		HR4-R3U	HR	4	R	3	U	142	3/4" BSPP	700	2270	17575
RA4		HR4-L3L	HR	4	L	3	L	143	11/4" BSPP	-700	400	17575
-		HR4-L3U	HR	4	L	3	U	144	3/4" BSPP	-700	2270	17575
IP18		HR4-R5M	HR	4	R	5	M	101	3/4" BSPP	700	1335	18165
IP16		HR4-L5M	HR	4	L	5	M	102	3/4" BSPP	-700	1335	18165
OP9		HR4-R5L	HR	4	R	5	L	145	3/4" BSPP	700	400	18165
KU7		HR4-R5U	HR	4	R	5	U	146	3/4" BSPP	700	2270	18165
IP15		HR4-L5L	HR	4	L	5	L	147	3/4" BSPP	-700	400	18165

Sensor	OLD DESIGNATION	NEW DESIGNATION	Section	Section Number	Side	Horizontal Location	Vertical Location	PORT REF	SIZE	"X"	"Y"	"Z"
IP17		HR4-L5U	HR	4	L	5	U	148	3/4" BSPP	-700	2270	18165
-		HR5-R1M	HR	5	R	1	M	NA	SURFACE	700	1200	18455
OP10		HR5-T2	HR	5	T	2		103	1" BSPP	0	2735	18775
-		HR5-B2	HR	5	B	2		104	1" BSPP	0	-65	18775
KU8		HR5-R2L	HR	5	R	2	L	105	3/4" BSPP	700	400	18775
IP19		HR5-L2L	HR	5	L	2	L	106	3/4" BSPP	-700	400	18775
OP11		HR5-R2M	HR	5	R	2	M	107	3/4" BSPP	700	1335	18775
IP20		HR5-L2M	HR	5	L	2	M	108	3/4" BSPP	-700	1335	18775
IP22		HR5-R2U	HR	5	R	2	U	109	3/4" BSPP	700	2270	18775
IP21		HR5-L2U	HR	5	L	2	U	110	3/4" BSPP	-700	2270	18775
TC22		HR5-R4M	HR	5	R	4	M	111	11/4" BSPP	700	1335	19375
-		HR5-L4M	HR	5	L	4	M	112	11/4" BSPP	-700	1335	19375
TC23		HR6-R1M	HR	6	R	1	M	113	3/4" BSPP	700	1335	19985
IP23		HR6-L1M	HR	6	L	1	M	114	3/4" BSPP	-700	1335	19985
-		HR6-T3	HR	6	T	3		115	1" BSPP	0	2735	20575
-		HR6-B3	HR	6	B	3		116	3/4" BSPP	0	-65	20575
KU9		HR6-R3L	HR	6	R	3	L	117	3/4" BSPP	700	400	20575
-		HR6-L3L	HR	6	L	3	L	118	3/4" BSPP	-700	400	20575
-		HR6-R3M	HR	6	R	3	M	119	11/4" BSPP	700	1335	20575
-		HR6-L3M	HR	6	L	3	M	120	11/4" BSPP	-700	1335	20575
-		HR6-R3U	HR	6	R	3	U	121	3/4" BSPP	700	2270	20575
-		HR6-L3U	HR	6	L	3	U	122	3/4" BSPP	-700	2270	20575
-		HR6-B5	HR	6	B	5		123	1" BSPP	0	-65	21165
TC24		HR6-R5L	HR	6	R	5	L	124	3/4" BSPP	700	400	21165
KU10		HR6-L5L	HR	6	L	5	L	125	3/4" BSPP	-700	400	21165
-		HR6-R5M	HR	6	R	5	M	126	3/4" BSPP	700	1335	21165
-		HR6-L5M	HR	6	L	5	M	127	3/4" BSPP	-700	1335	21165
TC25		HR6-R5U	HR	6	R	5	U	128	3/4" BSPP	700	2270	21165
-		HR6-L5U	HR	6	L	5	U	129	3/4" BSPP	-700	2270	21165
-		EP-1L	EP			1	L	130	1" BSPP	650	-15	21330
-		EP-2L	EP			2	L	131	1" BSPP	0	-15	21330
-		EP-3L	EP			3	L	132	1" BSPP	-650	-15	21330
-		EP-1M	EP			1	M	133	1" BSPP	250	1335	21330
-		EP-2M	EP			2	M	134	1" BSPP	-250	1335	21330
-		EP-1U	EP			1	U	135	3/4" BSPP	0	2270	21330


RIGHT HAND SIDE
TC0
TC2
TC15
TC4
KU0
KU1
TC6
OP1
OP2
TC8
RA1
TC16
TC18
OP3
RA2
TC17
IP7
KU4
TC21
IP13
IP14
IP22
TC25
IP6
IP9
OP8
RA3
IP18
OP11
TC22
TC23
IP5
IP4
TC20
KU5
KU6
RA4
KU8
KU9
TC24
Differential
Pressure Sensor
TOP
IGN
TC12
KU2
OP4
OP5
OP6
OP7
OP10
LEFT HAND SIDE (MIRROR IMAGE)
TC13
OP0
IP0
RA1
IP3
IP2
RA2
IP1
IP8
TC19
KU3
IP12
IP17
IP21
IP11
RA3
IP16
IP20
IP23
IP10
RA4
IP15
IP19
KU10