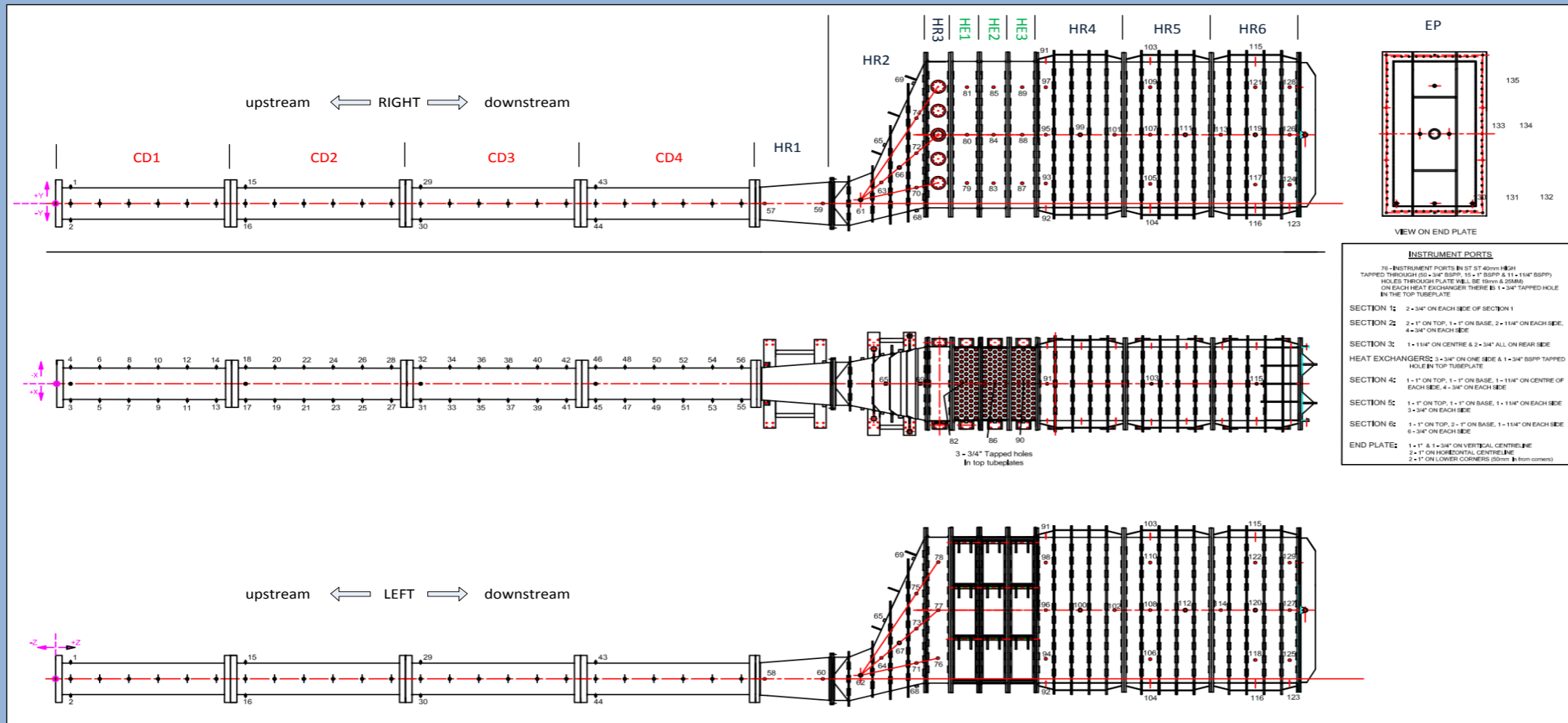


Date	05 April 2016	General Comments: (weather, rig configuration) Weather: Rig configuration: 4 x 3m circular duct; expansion section and HRSG attached. End Plate attached. Igniter 258mm from beginning of 2nd circular duct section Engine Speed: 40.5%; 11,800 rpm 1st test on mixture containing carbon monoxide (60% CO and 40% H2) at an EQR of 0.40 The test gave a moderate combustion event and most sensors (except IP rakes) provided an identifiable response. The optical sensors and ionisation probes provide a reasonably consistent picture with flame speeds in the vicinity of 300 m/s ahead of the HE. The picture downstream of the HE is more complex - highlighted by the OPs in HR4, directly after the HE, apparently seeing flame ahead of those in the HE The rake IP data was poor and gave limited information on flame speeds. Maximum overpressure of 779 mbar was seen in the circular duct, ahead of the heat exchanger.
Time	16:03:15	
Test Number	13	
Mixture Composition	40%H2 60%CO	
Ambient Temperature	8oC	
Ambient Pressure	970	
Wind Speed	2.2-2.7 m/s	
Wind direction	S to SW	
Relative Humidity	75.00%	
Mass Flow	<input type="text"/> kg/s	
Equivalence Ratio	0.50	

		Ionisation Probes		Ionisation Rakes		Optical Probes	
Max overpressure		Max. temperature		Max. flame speed		Max. flame speed	
<input type="text"/> 779 mbar		<input type="text"/> 979 °C		<input type="text"/> 541 m/s		<input type="text"/> 191 m/s	
		Initial Temperature					
		<input type="text"/> 399 °C					
Location of Max. Overpressure		Location of Max. Temperature		Location of Max. Flame Speed		Location of Max. Flame Speed	
sensor	<input type="text"/> KU6	sensor	<input type="text"/> TC7	sensor	<input type="text"/> IP20	sensor	<input type="text"/> RA1
label	<input type="text"/> CD3-R5	label	<input type="text"/> CD3-R2	label	<input type="text"/> HR6-LSU	label	<input type="text"/> HR2-R2M
distance	<input type="text"/> 8258 mm	distance	<input type="text"/> 6758 mm	distance	<input type="text"/> 21165 mm	distance	<input type="text"/> 13785 mm
						ance	<input type="text"/> OP10
							<input type="text"/> CD4-R4
							<input type="text"/> 10758 mm



INSTRUMENT PORTS

76 - INSTRUMENT PORTS IN 5T 40mm HIGH TAPPED THROUGH ISO - 3/4" BSPP, 1/2" BSPP & 1/4" BSPP HOLES THROUGH PLATE WILL BE 18mm (± 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 - 1/4" ON EACH SIDE, 4 - 3/4" ON EACH SIDE

SECTION 3: 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 - 1/4" ON CENTRE OF EACH SIDE, 4 - 3/4" ON EACH SIDE

SECTION 5: 1 - 1" ON TOP, 1 - 1" ON BASE, 1 - 1/4" ON EACH SIDE, 3 - 3/4" ON EACH SIDE

SECTION 6: 1 - 1" ON TOP, 2 - 1" ON BASE, 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 from corners)

Naming Convention		
Section Identifier i.e. HE, HR, CD or EP	HR 1 - R 1 U	Vertical position in section (sides only) i.e. U, M or L. Absence of letter denotes centreline
Section Number (1-6) Numbered from downstream to upstream	Side i.e. R, L, T or B	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

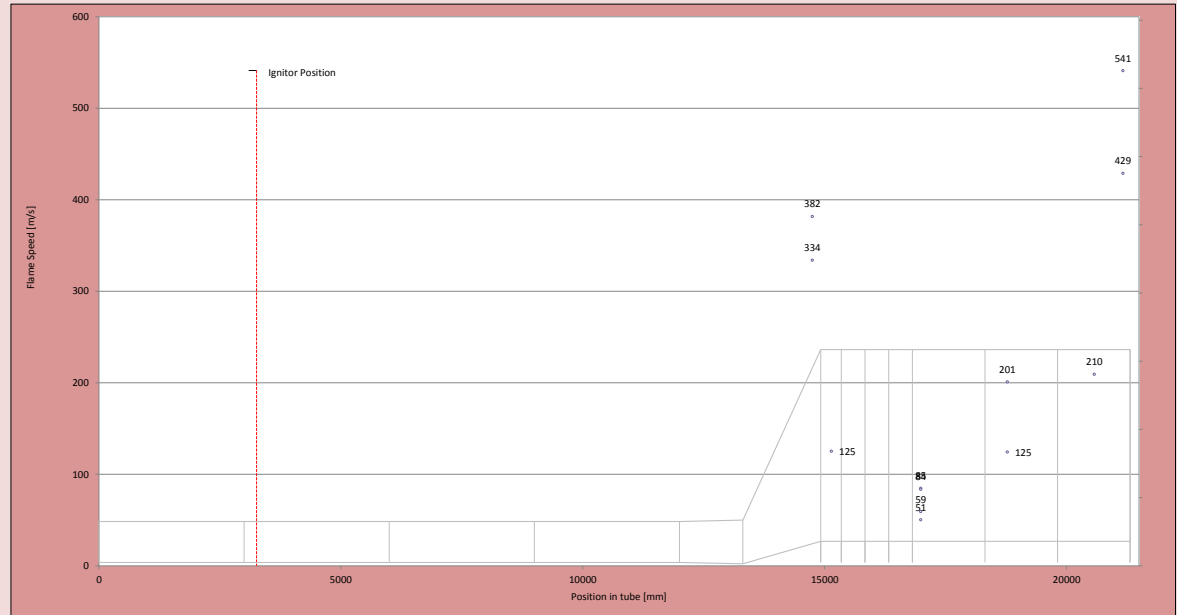
- 4 circular duct sections (CD1 to CD4)
- 6 HRSG sections (HR1 to HR6)
- 3 heat exchanger sections (HE1 to HE3) located between HR3 and HR4

0	3000	6000	9000	12000	13310	14920	15345	15835	16325	16815	18315	19815	21315	21315	19815	16815	16325	15835	15345	14920	13310	12000	9000	6000	3000	0
600	600	600	600	600	620	3120	3120	3120	3120	3120	3120	3120	3120	310	310	310	310	310	310	310	-20	0	0	0	0	0

Location of igniter mm Time of ignition seconds

IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
IP11	HR2-L5U	Flameion_11	14745	3.7001	334
IP8	HR2-L5M	Flameion_8	14745	ND	
IP9	HR2-L5L	Flameion_9	14745	3.6958	382
IP7	HR3-L1U	Flameion_7	15140	3.7032	125
IP10	HE2-R1M	Flameion_10	16090	ND	
IP12	HR4-R1U	Flameion_12	16985	3.7397	51
IP13	HR4-L1U	Flameion_13	16985	3.7249	85
IP2	HR4-L1M	Flameion_2	16985	3.7252	84
IP4	HR4-L1L	Flameion_4	16985	3.7335	59
IP14	HR4-R5M	Flameion_14	18165	ND	
IP21	HR4-L5M	Flameion_21	18165	ND	
IP0	HR5-L2M	Flameion_0	18775	3.7396	125
IP1	HR5-L2U	Flameion_1	18775	ND	
IP15	HR5-R2U	Flameion_15	18775	3.7407	
IP16	HR5-L2L	Flameion_16	18775	3.7424	201
IP3	HR6-L1M	Flameion_3	19985	3.7345	-240
IP5	HR6-R1M	Flameion_5	19985	3.7345	-240
IP18	HR6-R3U	Flameion_18	20575	3.7419	
IP19	HR6-L3L	Flameion_19	20575	3.7303	-148
IP22	HR6-L3U	Flameion_22	20575	3.7421	210
IP23	HR6-L3M	Flameion_23	20575	ND	
IP17	HR6-R5U	Flameion_17	21165	3.7421	
IP20	HR6-L5U	Flameion_20	21165	3.7432	541
IP6	HR6-L5M	Flameion_6	21165	3.7451	429

Values highlighted in yellow show flame arrival times that are ambiguous

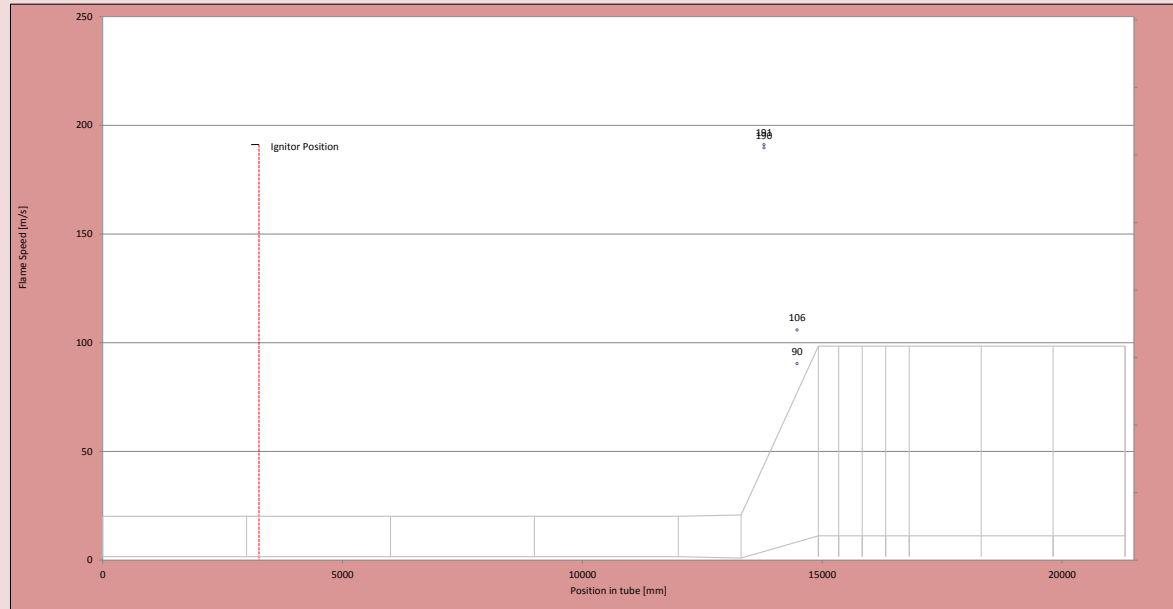


Location of igniter 3258 mm

Time of ignition 3.66569 seconds

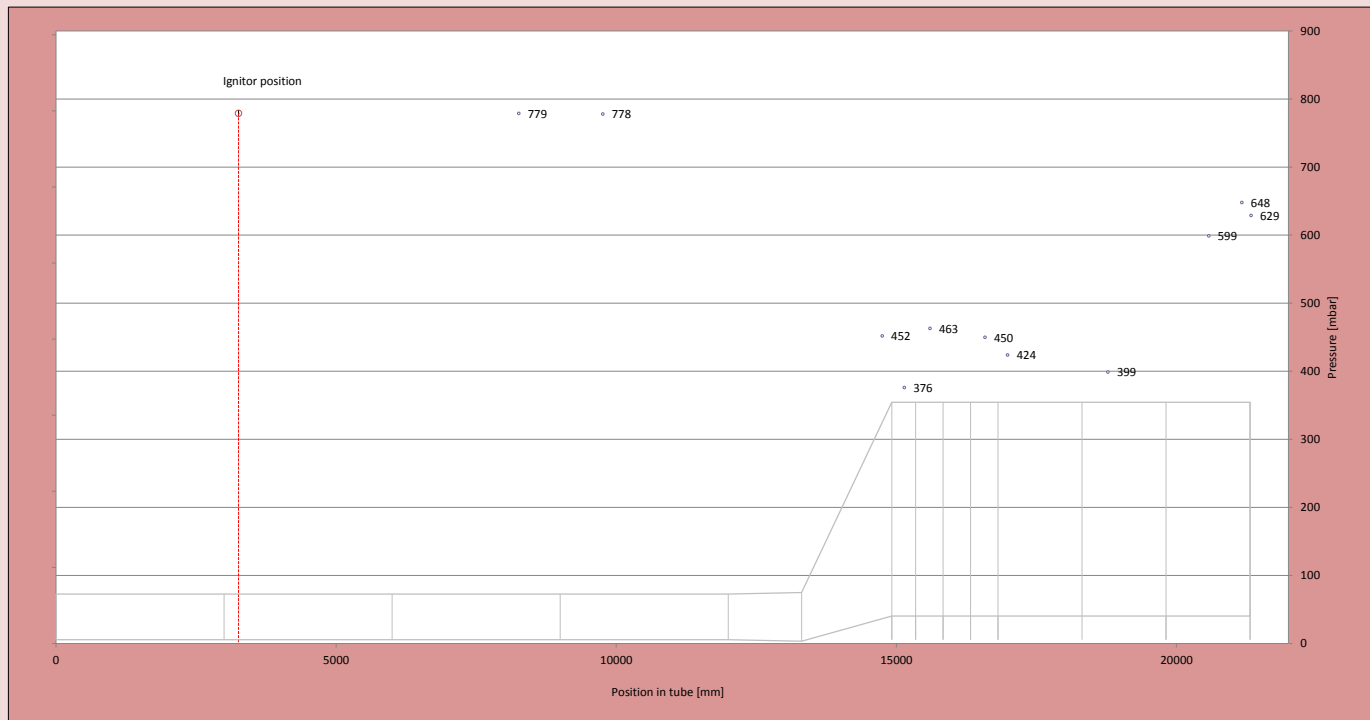
Rake Number	IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
RA1	IP24	HR2-R2M	IP24	13785	3.7212	190
RA1	IP25	HR2-R2M	IP25	13785	ND	
RA1	IP26	HR2-R2M	IP26	13785	3.7208	191
RA2	IP27	HR2-R4M	IP27	14475	ND	
RA2	IP28	HR2-R4M	IP28	14475	3.7277	106
RA2	IP29	HR2-R4M	IP29	14475	3.7288	90
RA3	IP30	HR4-R3M	IP30	17575	ND	
RA3	IP31	HR4-R3M	IP31	17575	ND	
RA3	IP32	HR4-R3M	IP32	17575	ND	
RA4	IP33	HR5-R4M	IP33	19375	ND	
RA4	IP34	HR5-R4M	IP34	19375	ND	
RA4	IP35	HR5-R4M	IP35	19375	ND	

Rake IP responses were poor. Only 4 of the 12 available gave responses which were decipherable



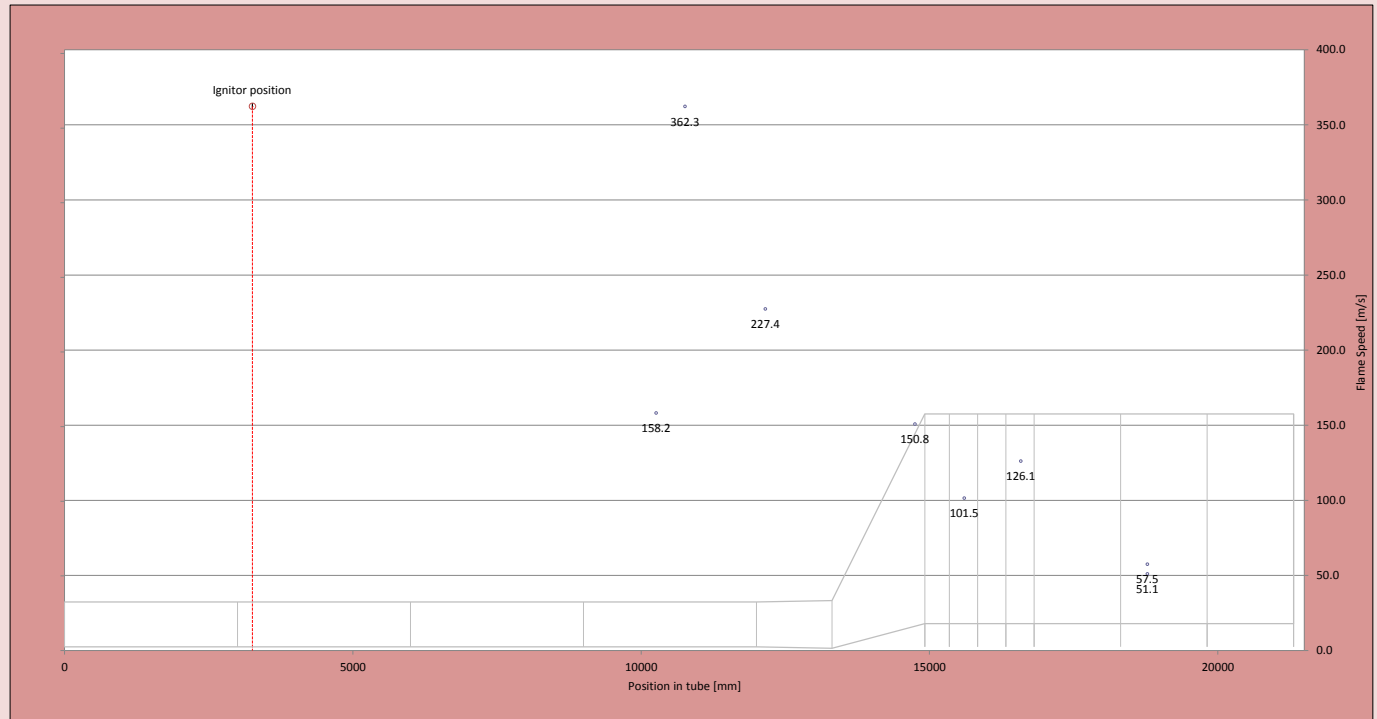
Location of igniter mm

Transducer number	Location	Position in tube [mm]	ΔP_{max} [mbar]	Time ΔP_{max} [mbar]
KU6	CD3-R5	8258	779	3.7659
KU7	CD4-R2	9758	778	3.7651
KU8	HR2-T5	14745	452	3.7363
KU9	HR3-L1L	15140	376	3.7580
KU0	HE1-R1U	15600	463	3.7375
KU1	HE3-R1L	16580	450	3.7575
KU4	HR4-R1L	16985	424	3.7379
KU3	HR5-R2L	18775	399	3.7497
KU2	HR6-R3L	20575	599	3.7478
KU5	HR6-L5L	21165	648	3.7484
PCB	EP-1M	21330	629	3.7473
KU10	#N/A	#N/A		
KU11	#N/A	#N/A		



Location of igniter mm Time of ignitio seconds

OP Number	Location label	Position in tube (mm)	Flame arrival time (s)	Average flame speed (m/s)
OP11	CD4-L3	10258	3.7099	158.2
OP10	CD4-R4	10758	3.7113	362.3
OP0	HR1-R1	12152	3.7175	227.4
OP2	HR2-R5M	14745	3.7346	150.8
OP3	HE1-T1	15600	3.7431	101.5
OP4	HE3-T1	16580	3.7508	126.1
OP1	HR4-R1M	16985	3.7409	-40.7
OP6	HR4-T1	16985	3.7402	-38.0
OP5	HR5-R2M	18775	3.7752	51.1
OP7	HR5-T2	18775	3.7713	57.5
OP8	HR6-T3	20575	ND	
OP9	HR6-R3M	20575	ND	
OP12	#N/A	#N/A		
OP13	#N/A	#N/A		
OP14	#N/A	#N/A		
OP15	#N/A	#N/A		

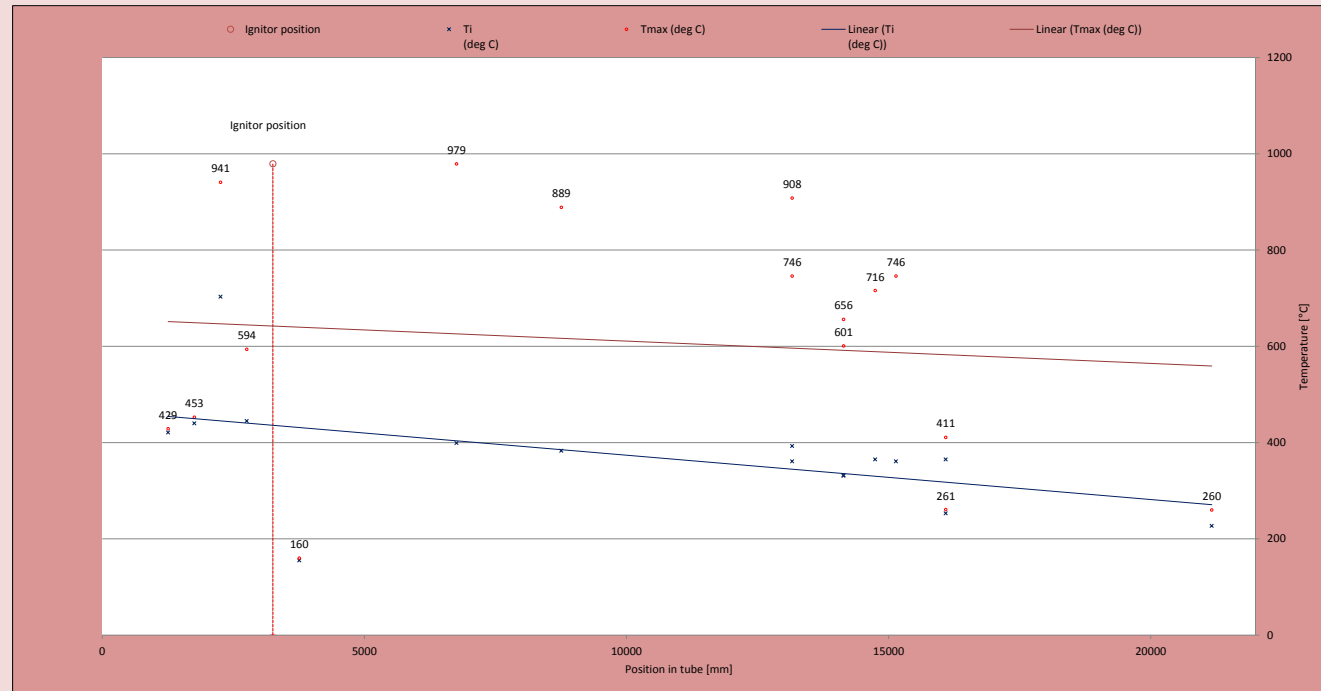


Location of igniter 3258 mm

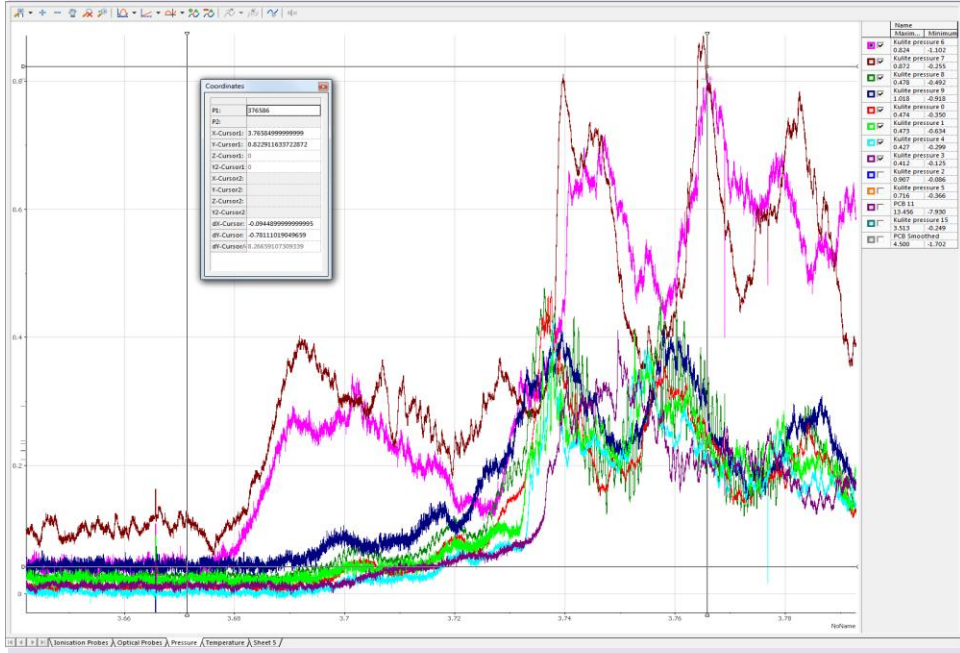
Thermocouple number	Location	Position in tube (mm)	T _{max} (deg C)	T _i (deg C)
TC0	CD1-R3	1258	429	421
TC2	CD1-R4	1758	453	440
TC3	CD1-R5	2258	941	703
TC4	CD1-R6	2758	594	445
TC5	CD2-R2	3758	160	155
TC7	CD3-R2	6758	979	399
TC9	CD3-R6	8758	889	383
TC12	HR1-R2	13160	908	393
TC24	HR1-L2	13160	746	361
TC13	HR2-R3M	14140	656	331
TC25	HR2-L3M	14140	601	332
TC16	HR2-R5L	14745	716	365
TC26	HR3-L1M	15140	746	361
TC17	HE2-R1U	16090	261	253
TC20	HE2-R1L	16090	411	365
TC18	HR6-R5L	21165	260	227
TC11	#N/A	#N/A		
TC14	#N/A	#N/A		
TC15	#N/A	#N/A		
TC19	#N/A	#N/A		
TC22	#N/A	#N/A		
TC23	#N/A	#N/A		
TC27	#N/A	#N/A		
TC28	#N/A	#N/A		
TC29	#N/A	#N/A		
TC30	#N/A	#N/A		
TC31	#N/A	#N/A		

surface thermocouples [not plotted]

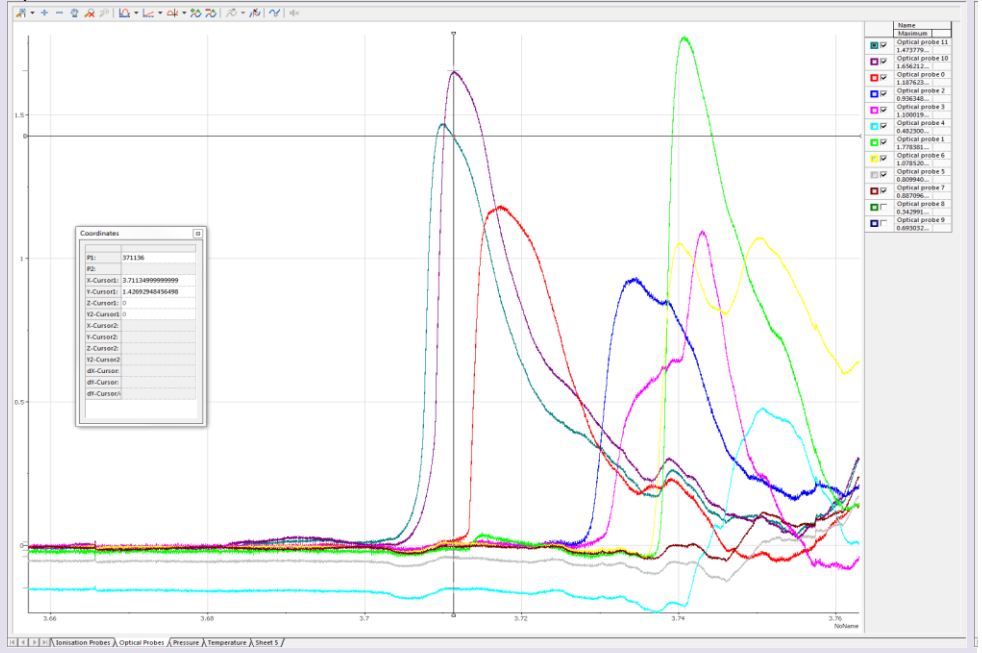
TC1	CD1-T2	1508		
TC6	CD2-T2	4508	122	117
TC8	CD3-T2	7508	135	130
TC10	CD4-T2	10508	80	77
TC21	HR5-R1M	18455	25	24



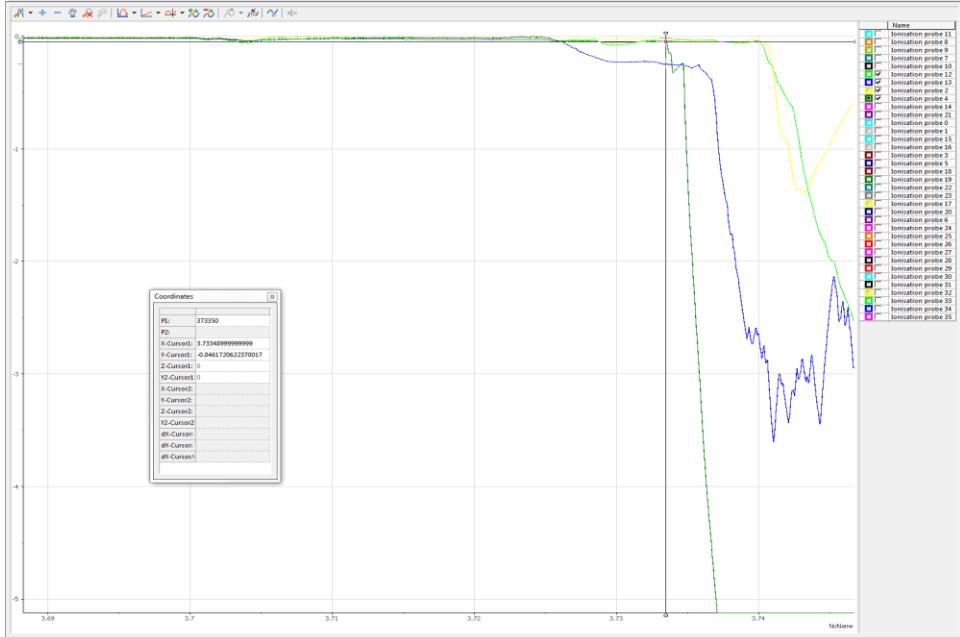
Pressure



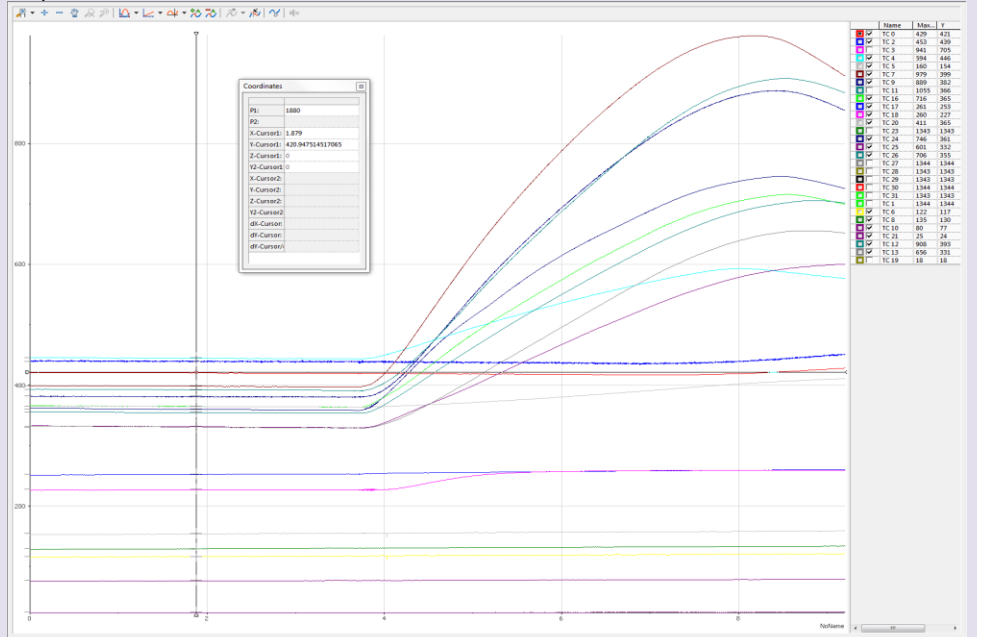
Optical Probes



Ionisation Probes



Temperature



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
TC2	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
TC3	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
TC4	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
TC6	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
TC5	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
-	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
-		CD3-T1	CD	3	T	1		29	1" BSPP	0	298	6258
TC8	TS1-1	CD3-T2	CD	3	T	2		NA	SURFACE	0	298	7508
-		CD3-B1	CD	3	B	1		30	1" BSPP	0	-298	6258
-	NS3-1	CD3-R1	CD	3	R	1		31	3/4" BSPP	298	0	6258
-	FS3-1	CD3-L1	CD	3	L	1		32	3/4" BSPP	-298	0	6258
TC7	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
-	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
KU6	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
TC9	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
TC10	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
KU7	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
-	NS4-3	CD4-R3	CD	4	R	3		49	3/4" BSPP	298	0	10258
OP11	FS4-3	CD4-L3	CD	4	L	3		50	3/4" BSPP	-298	0	10258
OP10	NS4-4	CD4-R4	CD	4	R	4		51	3/4" BSPP	298	0	10758
-	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
-	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"
-	FS4-6	CD4-L6	CD	4	L	6		56	3/4" BSPP	-298	0	11758
OP0		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
TC12		HR1-R2	HR	1	R	2		59	3/4" BSPP	393	0	13160
TC24		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
TC13		HR2-R3M	HR	2	R	3	M	63	3/4" BSPP	528	410	14140
TC25		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
KU8		HR2-T5	HR	2	T	5		69	1" BSPP	0	2315	14745
TC16		HR2-R5L	HR	2	R	5	L	70	3/4" BSPP	662	310	14745
IP9		HR2-L5L	HR	2	L	5	L	71	3/4" BSPP	-662	310	14745
OP2		HR2-R5M	HR	2	R	5	M	72	3/4" BSPP	662	975	14745
IP8		HR2-L5M	HR	2	L	5	M	73	3/4" BSPP	-662	975	14745
-		HR2-R5U	HR	2	R	5	U	74	3/4" BSPP	662	1660	14745
IP11		HR2-L5U	HR	2	L	5	U	75	3/4" BSPP	-662	1660	14745
KU9		HR3-L1L	HR	3	L	1	L	76	3/4" BSPP	-700	400	15140
TC26		HR3-L1M	HR	3	L	1	M	77	11/4" BSPP	-700	1335	15140
IP7		HR3-L1U	HR	3	L	1	U	78	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
KU0		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
IP10		HE2-R1M	HE	2	R	1	M	84	3/4" BSPP	700	1335	16090
TC17		HE2-R1U	HE	2	R	1	U	85	3/4" BSPP	700	2270	16090
KU1		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
OP3		HE1-T1	HE	1	T	1		82	3/4" BSPP HOLE	-47	2735	15600
-		HE2-T1	HE	2	T	1		86	3/4" BSPP HOLE	0	2735	16090
OP4		HE3-T1	HE	3	T	1		90	3/4" BSPP HOLE	-47	2735	16580
OP6		HR4-T1	HR	4	T	1		91	1" BSPP	0	2735	16985
-		HR4-B1	HR	4	B	1		92	1" BSPP	0	-65	16985
KU4		HR4-R1L	HR	4	R	1	L	93	3/4" BSPP	700	400	16985
IP4		HR4-L1L	HR	4	L	1	L	94	3/4" BSPP	-700	400	16985
OP1		HR4-R1M	HR	4	R	1	M	95	3/4" BSPP	700	1335	16985
IP2		HR4-L1M	HR	4	L	1	M	96	3/4" BSPP	-700	1335	16985
IP12		HR4-R1U	HR	4	R	1	U	97	3/4" BSPP	700	2270	16985
IP13		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
IP14		HR4-R5M	HR	4	R	5	M	101	3/4" BSPP	700	1335	18165
IP21		HR4-L5M	HR	4	L	5	M	102	3/4" BSPP	-700	1335	18165
TC21		HR5-R1M	HR	5	R	1	M	NA	SURFACE	700	1200	18455
OP7		HR5-T2	HR	5	T	2		103	1" BSPP	0	2735	18775
-		HR5-B2	HR	5	B	2		104	1" BSPP	0	-65	18775
KU3		HR5-R2L	HR	5	R	2	L	105	3/4" BSPP	700	400	18775
IP16		HR5-L2L	HR	5	L	2	L	106	3/4" BSPP	-700	400	18775
OP5		HR5-R2M	HR	5	R	2	M	107	3/4" BSPP	700	1335	18775
IP0		HR5-L2M	HR	5	L	2	M	108	3/4" BSPP	-700	1335	18775
IP15		HR5-R2U	HR	5	R	2	U	109	3/4" BSPP	700	2270	18775
IP1		HR5-L2U	HR	5	L	2	U	110	3/4" BSPP	-700	2270	18775
RA4		HR5-R4M	HR	5	R	4	M	111	11/4" BSPP	700	1335	19375
RA4		HR5-L4M	HR	5	L	4	M	112	11/4" BSPP	-700	1335	19375
IP5		HR6-R1M	HR	6	R	1	M	113	3/4" BSPP	700	1335	19985

Sensor	OLD DESIGNATION	NEW DESIGNATION	Section	Section Number	Side	Horizontal Location	Vertical Location	PORT REF	SIZE	"X"	"Y"	"Z"
IP3		HR6-L1M	HR	6	L	1	M	114	3/4" BSPP	-700	1335	19985
OP8		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
KU2		HR6-R3L	HR	6	R	3	L	117	3/4" BSPP	700	400	20575
IP19		HR6-L3L	HR	6	L	3	L	118	3/4" BSPP	-700	400	20575
OP9		HR6-R3M	HR	6	R	3	M	119	11/4" BSPP	700	1335	20575
IP23		HR6-L3M	HR	6	L	3	M	120	11/4" BSPP	-700	1335	20575
IP18		HR6-R3U	HR	6	R	3	U	121	3/4" BSPP	700	2270	20575
IP22		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
TC18		HR6-R5L	HR	6	R	5	L	124	3/4" BSPP	700	400	21165
KU5		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
IP6		HR6-L5M	HR	6	L	5	M	127	3/4" BSPP	-700	1335	21165
IP17		HR6-R5U	HR	6	R	5	U	128	3/4" BSPP	700	2270	21165
IP20		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
PCB		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

