

Date	21 November 2018
Time	14:38:41
Test Number	HRSG Test 24
Mixture Composition	60/40 H2/CH4
Ambient Temperature	1 °C
Ambient Pressure	962
Wind Speed	4 m/s
Wind direction	SSW
Relative Humidity	70.00%
Mass Flow	9.9120 kg/s
Equivalence Ratio	0.65

General Comments: (weather, rig configuration)

Weather: Sunny and autumnal. Cold and crisp, light wind. Early mist cleared ahead of test.

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

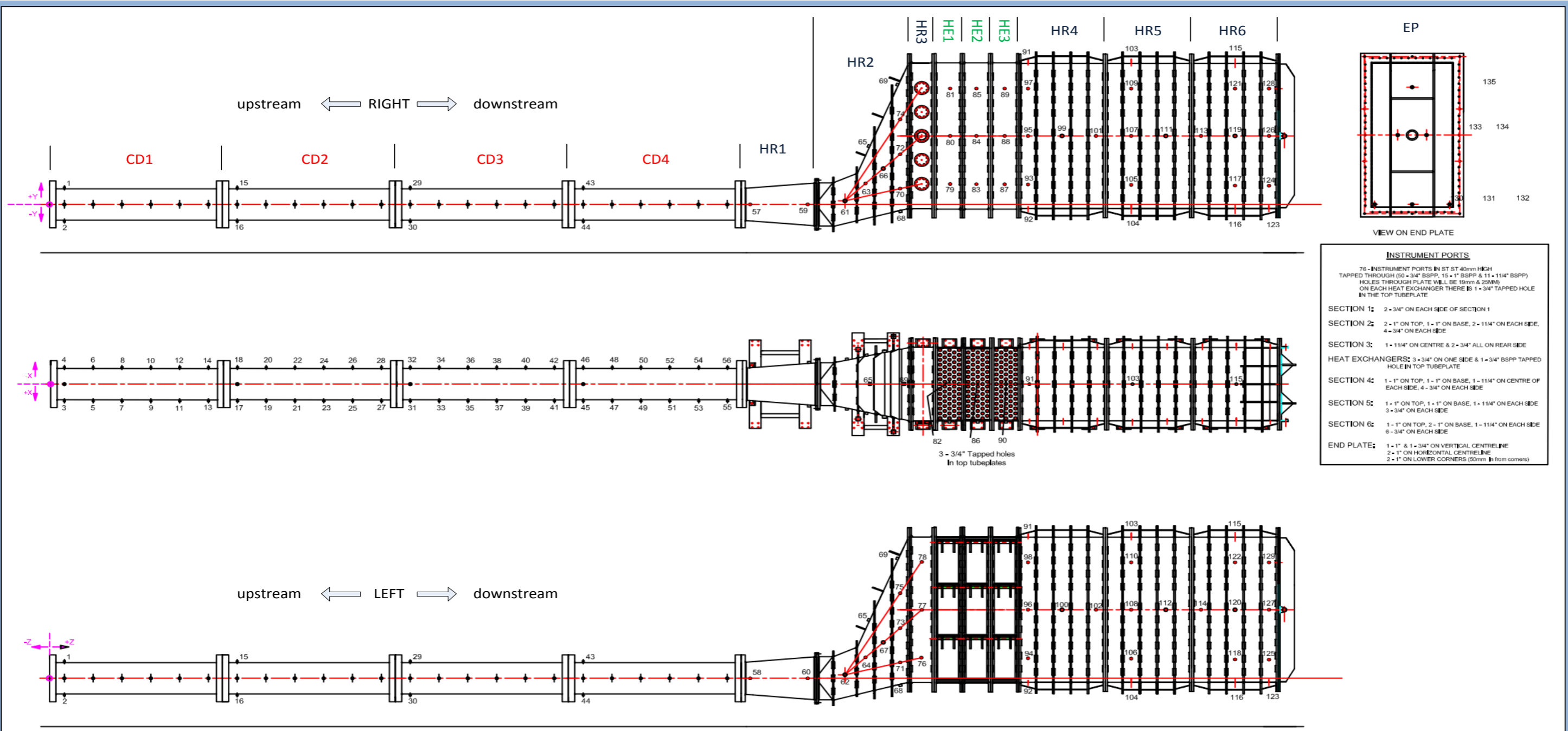
Engine Speed: 40%; 11,800 rpm

Test on 60% H2 40% H2 at an intended EQR of 0.65

The test gave a fairly strong combustion event and most sensors provided an identifiable response.

Maximum overpressure of 573 bar was seen on KU8 in HR5.

Max overpressure		Max. gas temperature		Ionisation Probes		Ionisation Rakes		Optical Probes	
573 mbar		1275 °C		Max. flame speed		Max. flame speed		Max. flame speed	
		Initial gas temperature		247 m/s		182 m/s		346 m/s	
		446 °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	KU8	sensor	TC4	sensor	IP1	sensor	RA1	sensor	OP1
label	HR5-R2L	label	CD3-R3	label	HR2-L5L	label	HR2-R2M	label	CD4-R6
distance	18775 mm	distance	7258 mm	distance	14745 mm	distance	13785 mm	distance	11758 mm



Naming Convention		
Section Identifier i.e. HE, HR, CD or EP	H R 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

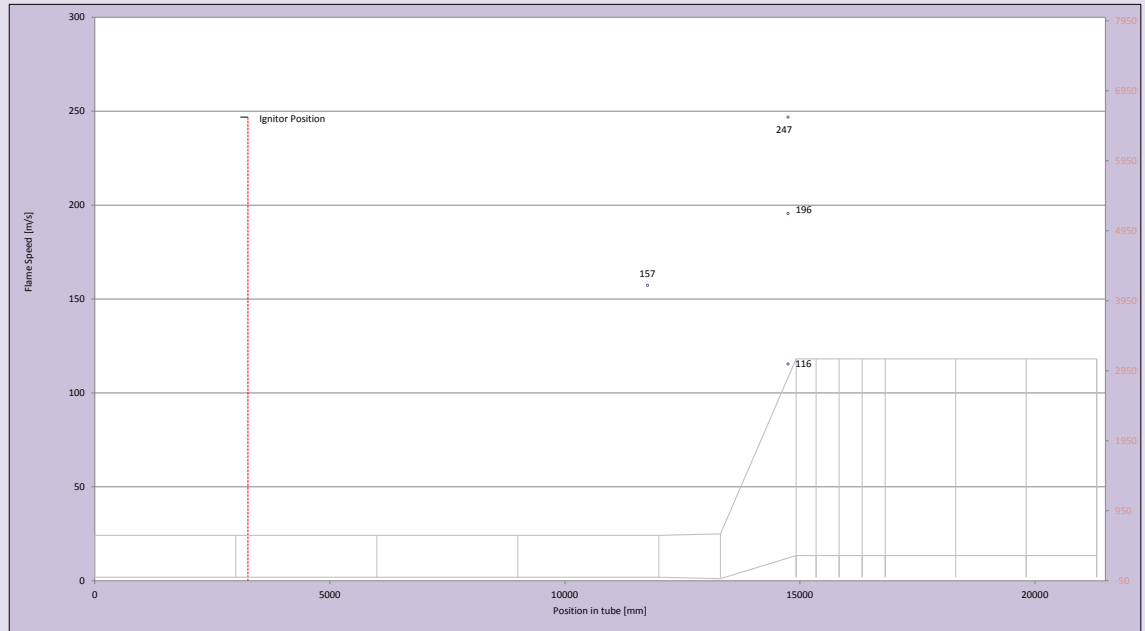
There are 13 sections on the rig

- 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

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)
IP0	CD4-L6	Ionisation probe 0	11758	15.50927	157
IP1	HR2-L5L	Ionisation probe 1	14745	15.52137	247
IP2	HR2-L5M	Ionisation probe 2	14745	15.52454	196
IP3	HR2-L5U	Ionisation probe 3	14745	15.53513	116
IP4	HR3-R1L	Ionisation probe 4	15140	15.52074	
IP5	HR3-R1LM	Ionisation probe 5	15140	15.52427	
IP6	HR3-R1M	Ionisation probe 6	15140	15.52505	
IP7	HR3-R1U	Ionisation probe 7	15140	15.53142	
IP8	HR3-L1U	Ionisation probe 8	15140		
IP9	HE2-R1M	Ionisation probe 9	16090	15.52774	
IP10	HR4-L1L	Ionisation probe 10	16985	15.53104	
IP11	HR4-L1M	Ionisation probe 11	16985		
IP12	HR4-L1U	Ionisation probe 12	16985	15.53966	
IP13	HR4-R1U	Ionisation probe 13	16985		
IP14	HR4-R3U	Ionisation probe 14	17575	15.55214	
IP15	HR4-L5L	Ionisation probe 15	18165		
IP16	HR4-L5M	Ionisation probe 16	18165	15.55425	
IP17	HR4-L5U	Ionisation probe 17	18165	15.57868	
IP18	HR4-R5M	Ionisation probe 18	18165	15.55479	
IP19	HR5-L2L	Ionisation probe 19	18775	15.55653	
IP20	HR5-L2M	Ionisation probe 20	18775	15.56426	
IP21	HR5-L2U	Ionisation probe 21	18775		
IP22	HR5-R2U	Ionisation probe 22	18775	15.56396	
IP23	HR6-L1M	Ionisation probe 23	19985	15.61179	

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

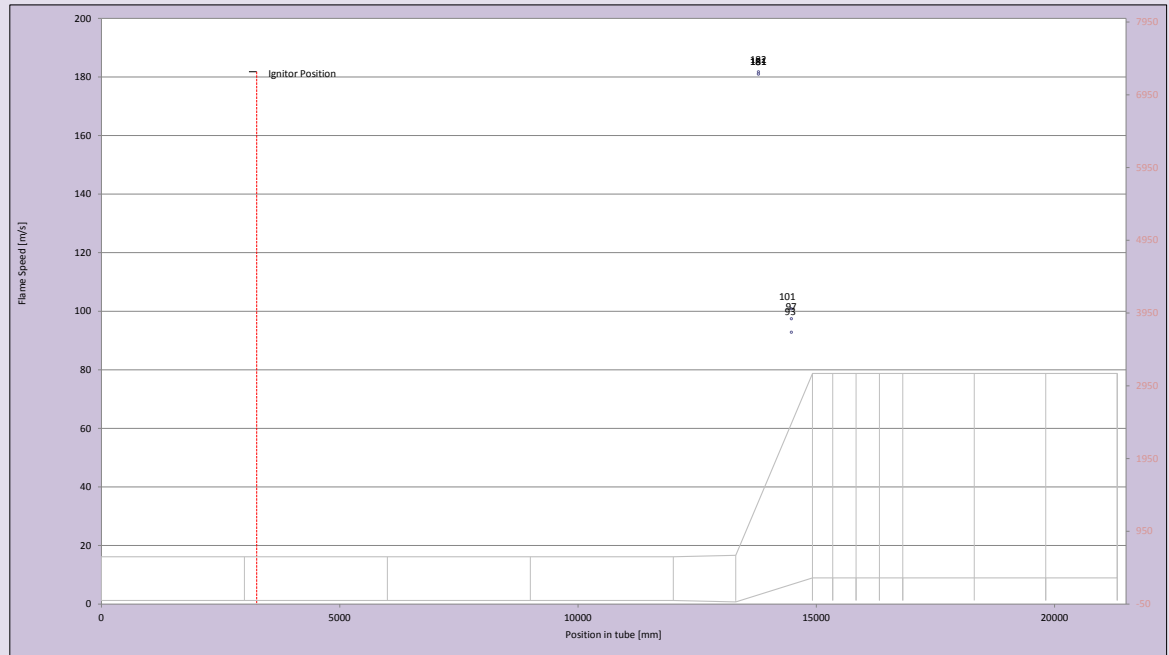


Location of igniter 3258 mm

Time of ignition 15.45524 seconds

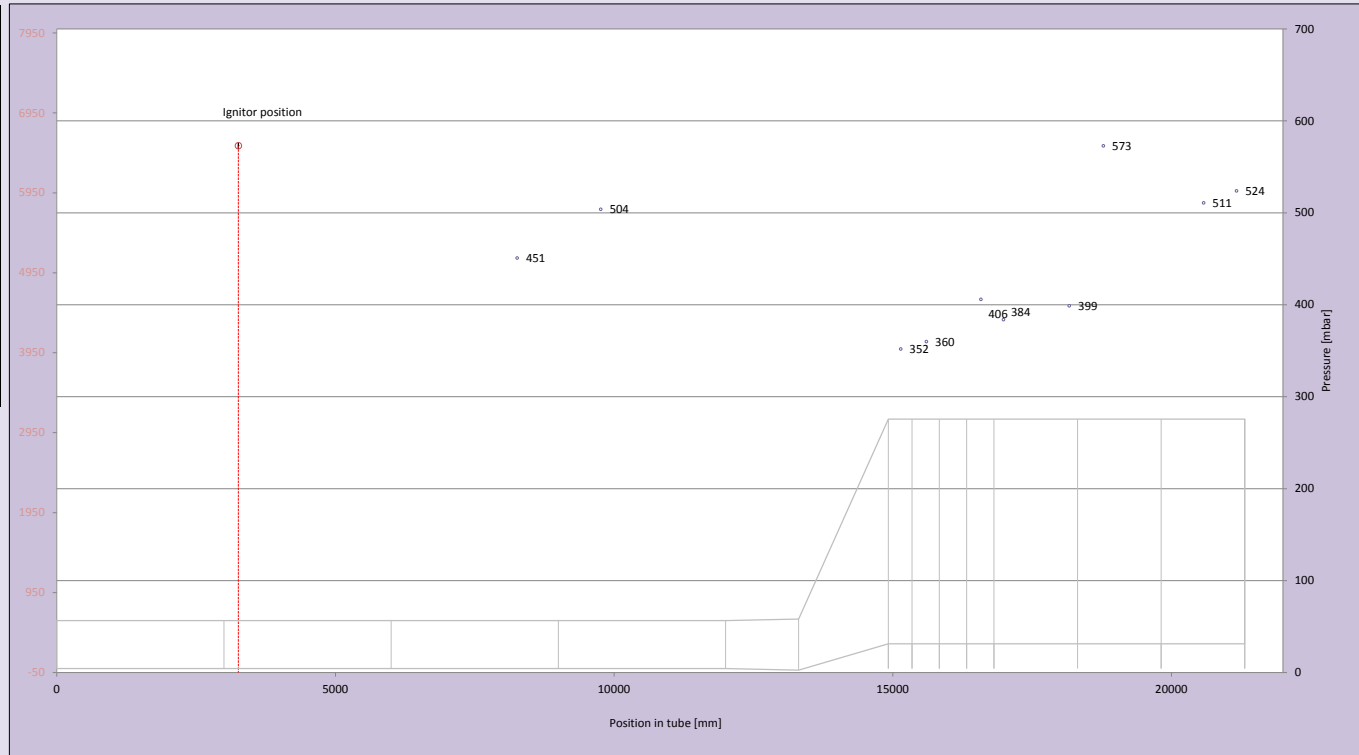
Rake Number	IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
RA1	IP24	HR2-R2M	IP24	13785	15.5132	182
RA1	IP25	HR2-R2M	IP25	13785	15.5134	181
RA1	IP26	HR2-R2M	IP26	13785	15.5134	181
RA2	IP27	HR2-R4M	IP27	14475	15.5202	97
RA2	IP28	HR2-R4M	IP28	14475	15.5208	93
RA2	IP29	HR2-R4M	IP29	14475	15.5202	101
RA3	IP30	HR4-R3M	IP30	17575	NW	
RA3	IP31	HR4-R3M	IP31	17575	NW	
RA3	IP32	HR4-R3M	IP32	17575	15.5266	
RA4	IP33	HR4-R3L	IP33	17575	NW	
RA4	IP34	HR4-R3L	IP34	17575	NW	
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 mm

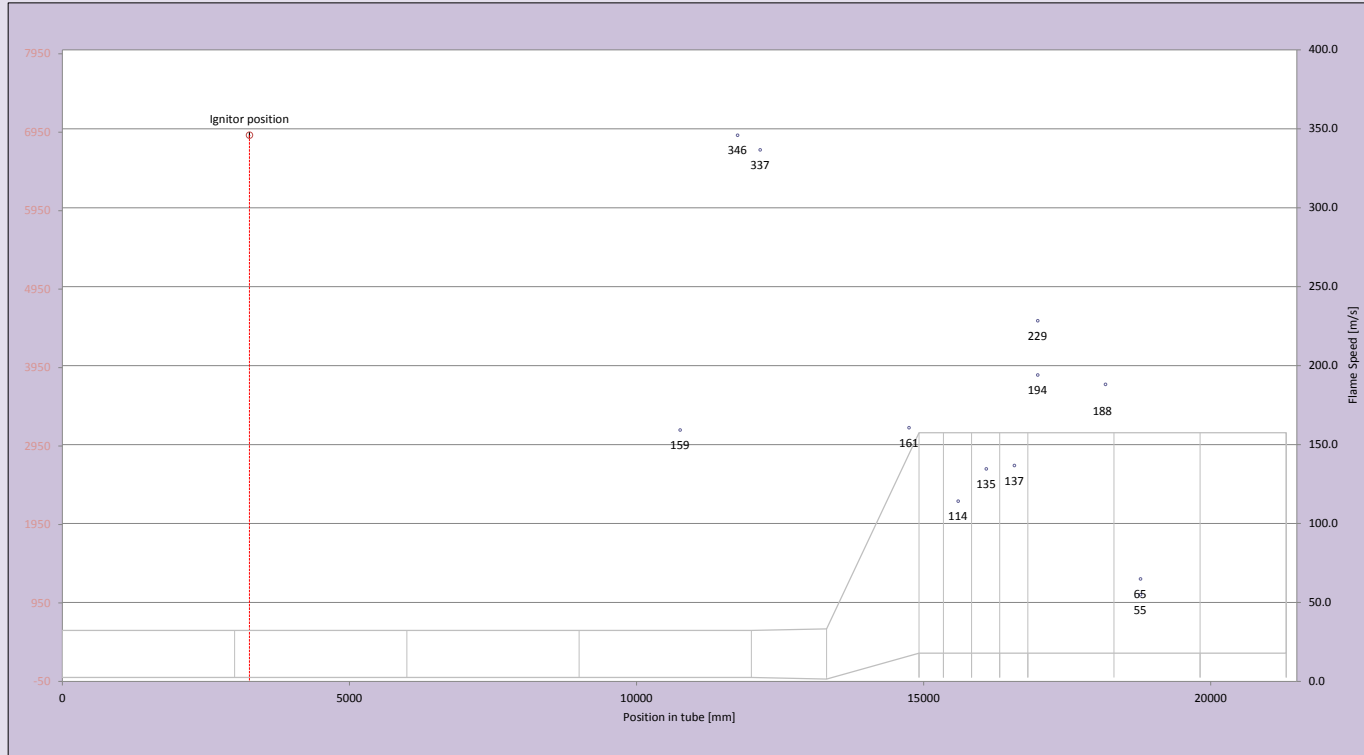
Transducer number	Location	Position in tube [mm]	P_{max} [mbar]	Time P_{max} [sec]
KU0	CD3-R5	8258	451	15.5581
KU1	CD4-R2	9758	504	15.5596
KU2	HR2-T5	14745		
KU3	HR3-L1L	15140	352	15.5537
KU4	HE1-R1U	15600	360	15.5289
KU5	HE3-R1L	16580	406	15.5513
KU6	HR4-R1L	16985	384	15.5321
KU7	HR4-R5U	18165	399	15.5468
KU8	HR5-R2L	18775	573	15.5441
KU9	HR6-R3L	20575	511	15.5404
KU10	HR6-L5L	21165	524	15.5396



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)
OP0	CD4-L4	10758	15.5023	159.3
OP1	CD4-R6	11758	15.5052	346.0
OP2	HR1-R1	12152	15.5064	336.8
OP3	HR2-R5M	14745	15.5225	160.8
OP4	HE1-T1	15600	15.5366	114.2
OP5	HE2-T1	16090	15.5356	134.7
OP6	HE3-T1	16580	15.5388	136.8
OP7	HR4-T1	16985	15.5313	194.2
OP8	HR4-R1M	16985	15.5323	228.6
OP9	HR4-R5L	18165	15.5386	188.2
OP10	HR5-T2	18775	15.5588	65.0
OP11	HR5-R2M	18775	15.5649	55.0

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

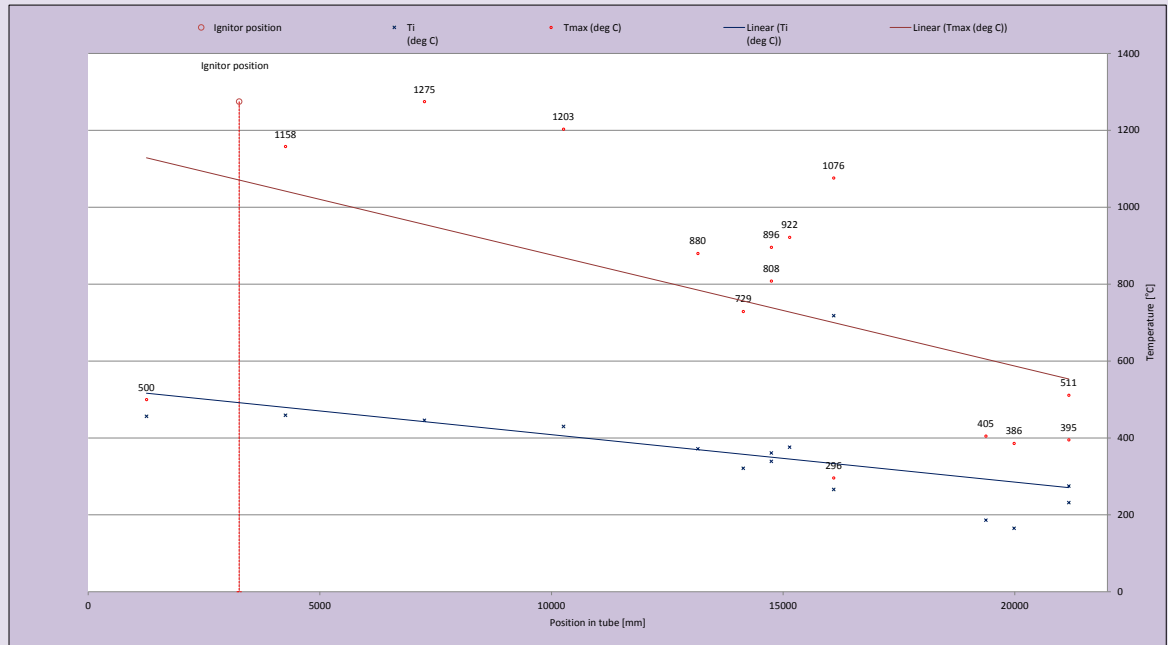


Location of igniter mm Time of ignition seconds

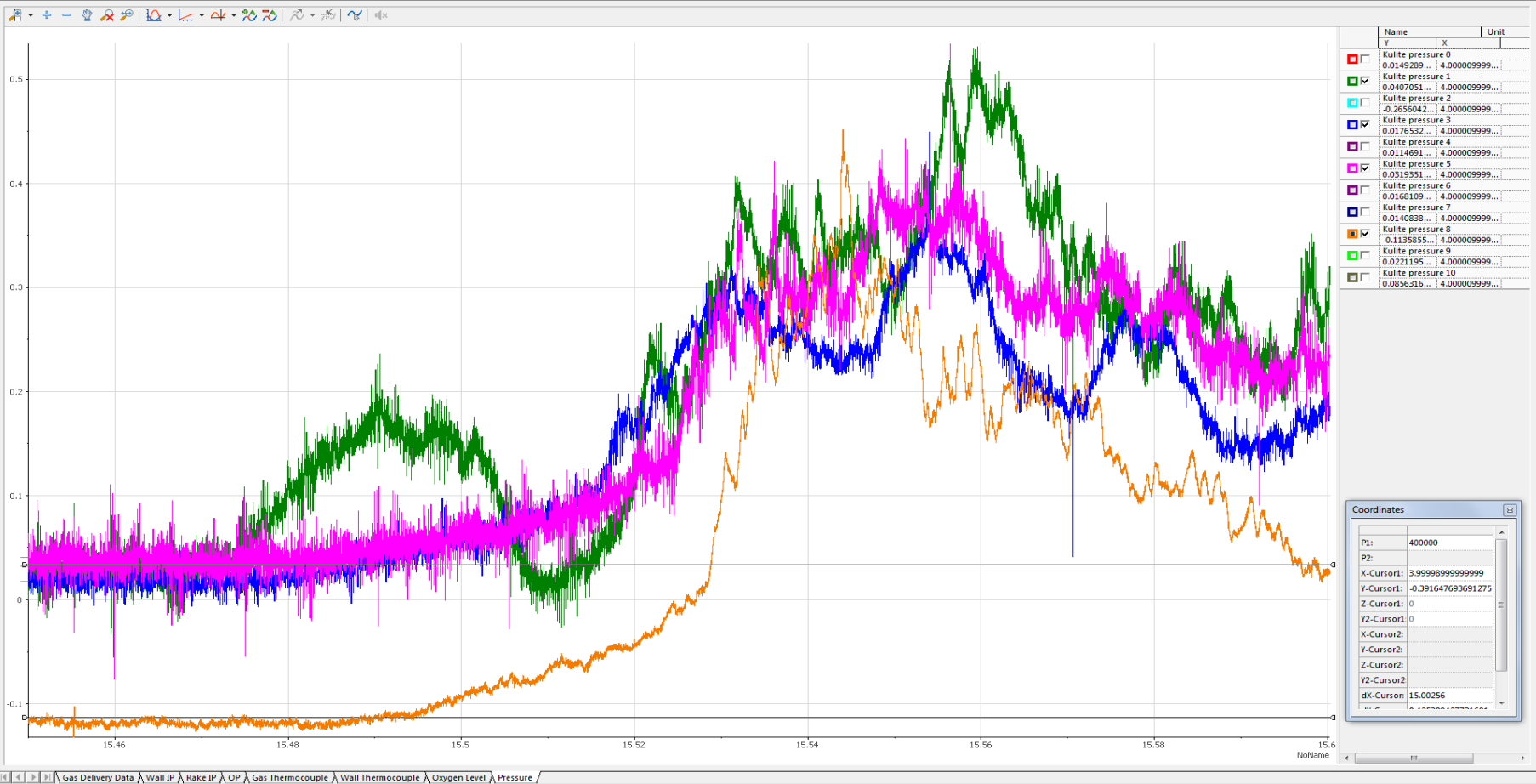
Thermocouple number	Location	Position in tube (mm)	Flame arrival time (s)	Average flame speed (m/s)	T _{max} (deg C)	T _i (deg C)
TC0	CD1-R3	1258			500	456
TC2	CD2-R3	4258			1158	459
TC4	CD3-R3	7258			1275	446
TC6	CD4-R3	10258			1203	430
TC8	HR1-R2	13160			880	372
TC16	HR2-R3M	14140			729	321
TC17	HR2-R5L	14745			896	361
TC18	HR2-R5U	14745			808	339
TC19	HR3-L1M	15140			922	376
TC20	HE2-R1L	16090			1076	718
TC21	HE2-R1U	16090			296	266
TC22	HR5-R4M	19375			405	186
TC23	HR6-R1M	19985			386	165
TC24	HR6-R5L	21165			395	232
TC25	HR6-R5U	21165			511	275

surface thermocouples [not plotted]

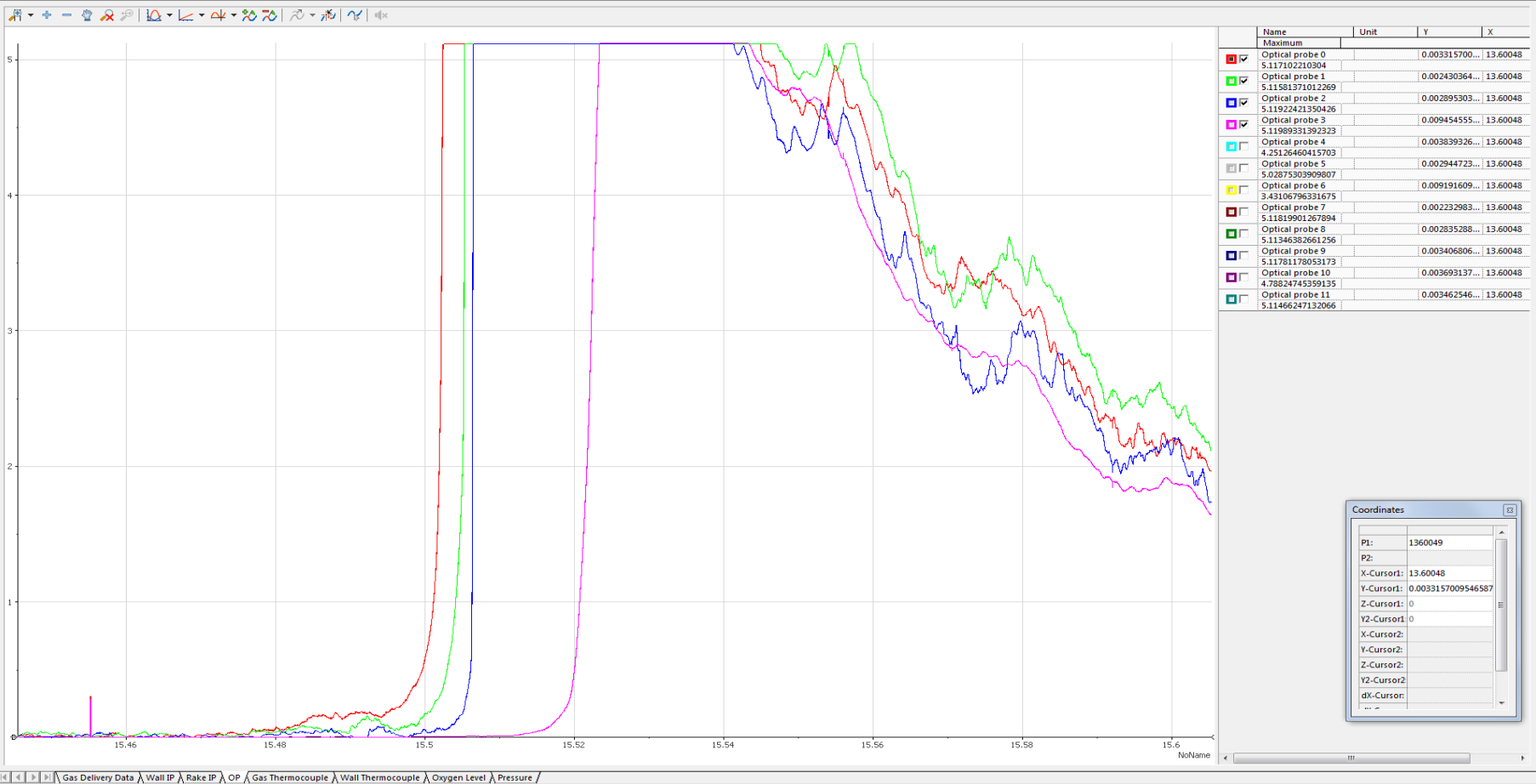
TC	Location	Position in tube (mm)	Flame arrival time (s)	Average flame speed (m/s)	T _{max} (deg C)	T _i (deg C)
TC1	CD1-T2	1508			145	131
TC3	CD2-T2	4508			108	97
TC5	CD3-T2	7508			109	98
TC7	CD4-T2	10508			65	57



Pressure



Optical Probes



Coordinates

P1: 1360049

P2:

X-Cursor1: 13.60048

Y-Cursor1: 0.0033157009546587

Z-Cursor1: 0

Y2-Cursor1: 0

X-Cursor2:

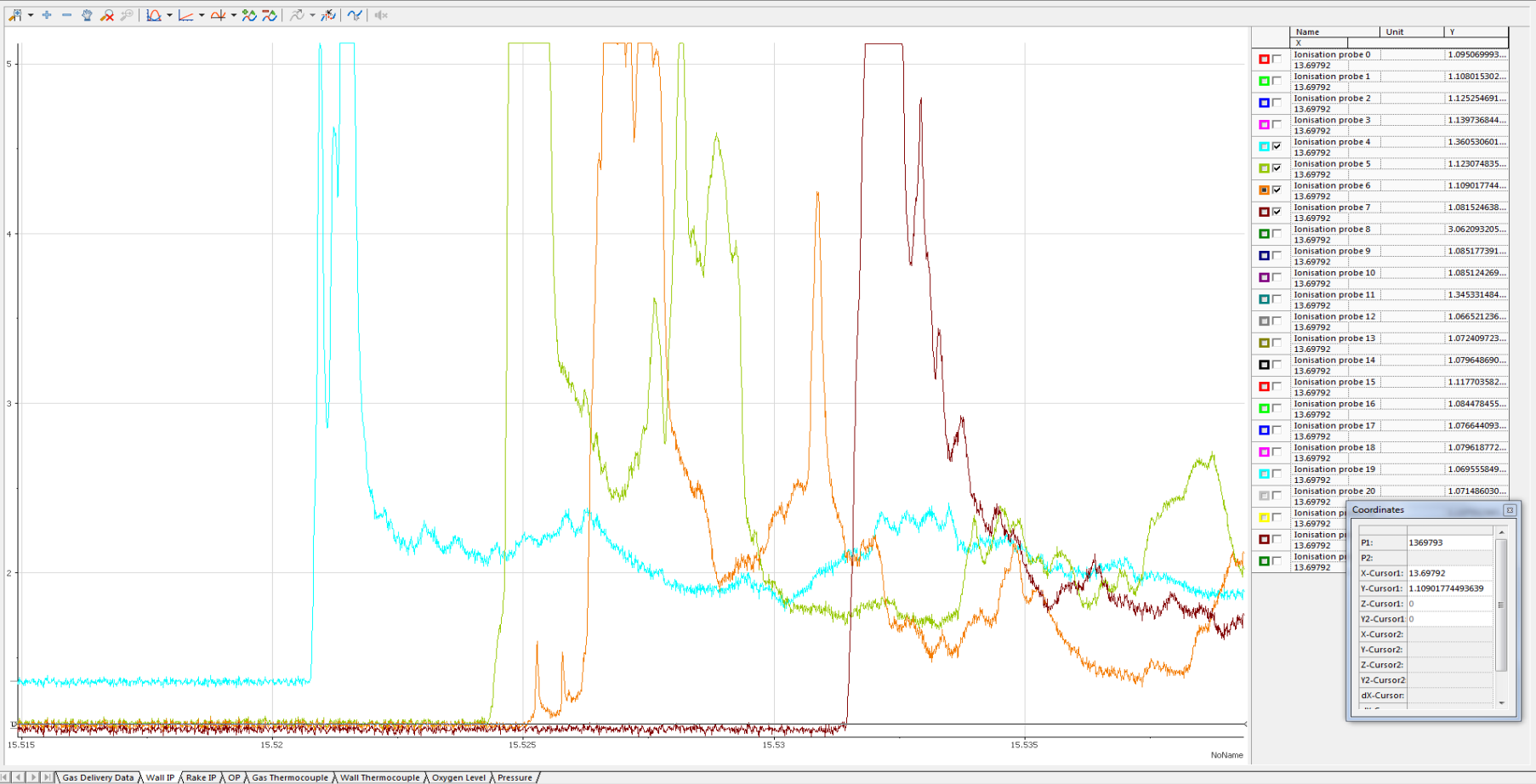
Y-Cursor2:

Z-Cursor2:

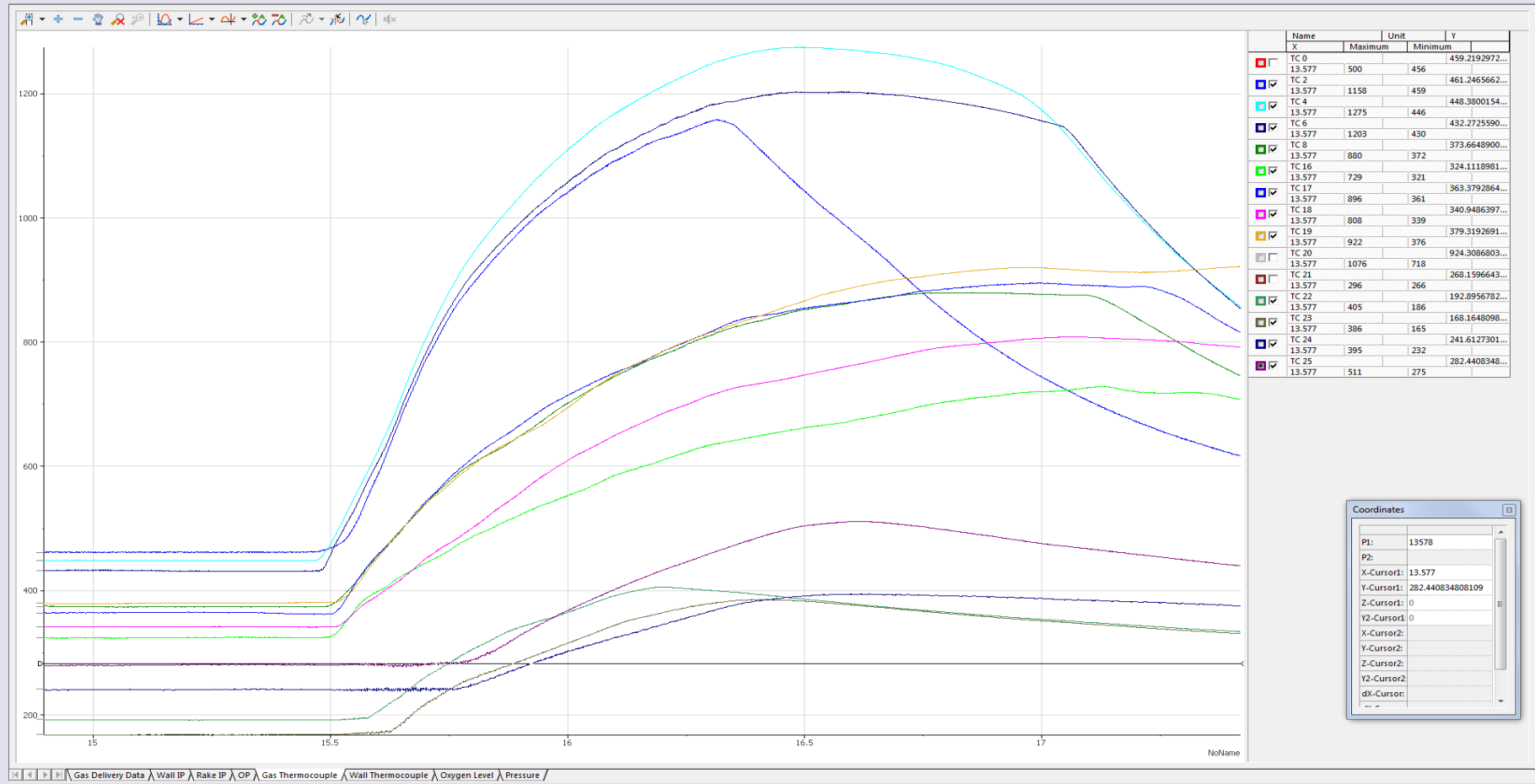
Y2-Cursor2:

dX-Cursor:

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
-	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
-		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
-		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
-	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
OPO	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
IPO	FS4-6	CD4-L6	CD	4	L	6		56	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"
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	1 1/4" BSPP	448	70	13785
RA1		HR2-L2M	HR	2	L	2	M	62	1 1/4" 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	1 1/4" BSPP	598	700	14475
RA2		HR2-L4M	HR	2	L	4	M	67	1 1/4" 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	1 1/4" 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	1 1/4" BSPP	700	1335	17575
RA3		HR4-L3M	HR	4	L	3	M	100	1 1/4" BSPP	-700	1335	17575
RA4		HR4-R3L	HR	4	R	3	L	141	1 1/4" 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	1 1/4" 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
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

Sensor	OLD DESIGNATION	NEW DESIGNATION	Section	Section Number	Side	Horizontal Location	Vertical Location	PORT REF	SIZE	"X"	"Y"	"Z"
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	1 1/4" BSPP	700	1335	19375
-		HR5-L4M	HR	5	L	4	M	112	1 1/4" 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	1 1/4" BSPP	700	1335	20575
-		HR6-L3M	HR	6	L	3	M	120	1 1/4" 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

