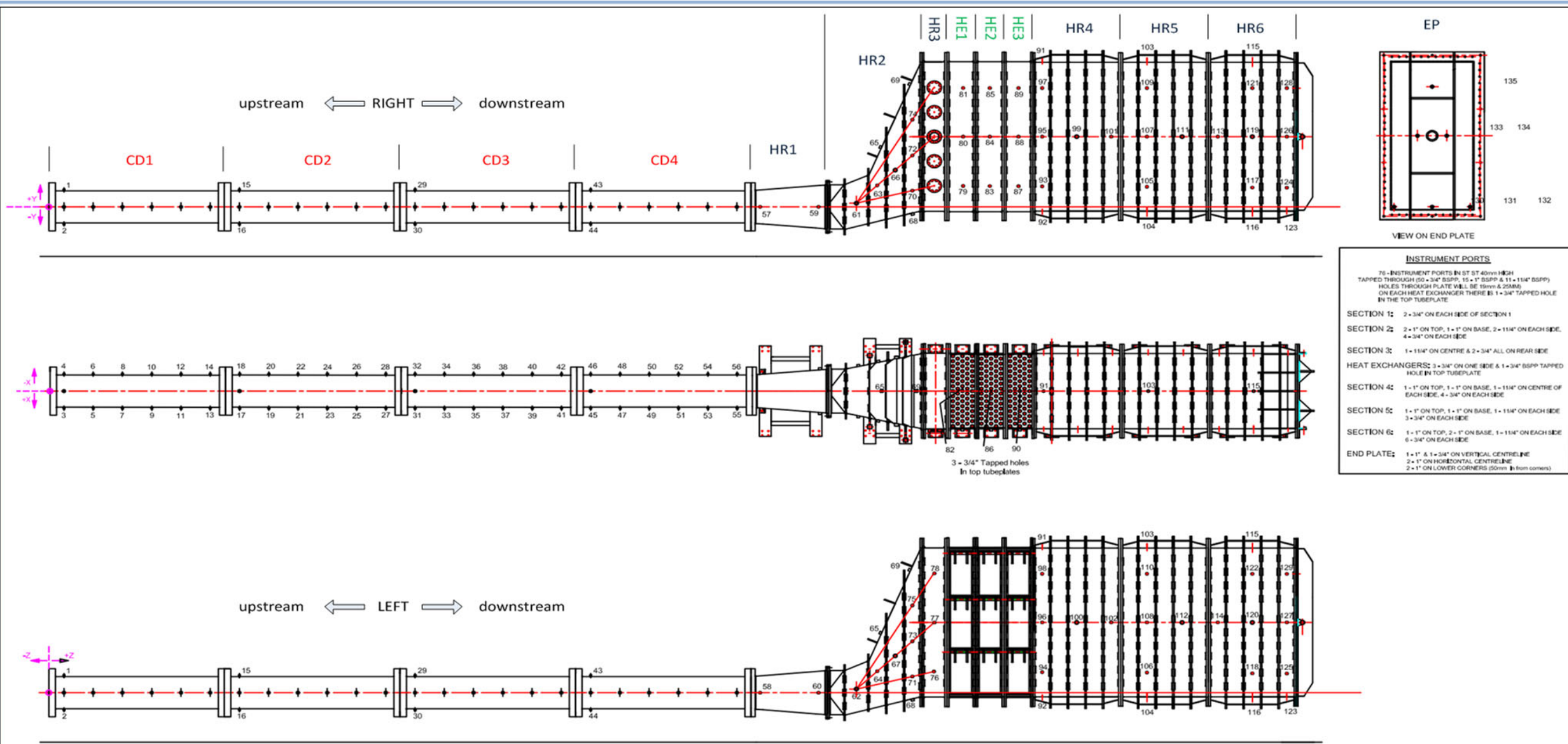


Date	12 March 2019	<b>General Comments: (weather, rig configuration)</b>  Weather: Cloudy with some snow. Light wind.  Rig configuration: 4 x 3m circular duct; expansion section and HRSG attached. End Plate attached. Igniter 258mm from beginning of 2nd circular duct section  Engine Speed: 12%; 8,100 rpm  Test on 100% H2 at an intended EQR of 0.45 LOW TEMPERATURE TESTS (NOMINAL 320 oC).  Test gave a strong combustion event with a very good response from (nearly) all sensors.
Time	13:40:33	
Test Number	HRSG Test 61	
Mixture Composition	100% H2	
Ambient Temperature	0.6 °C	
Ambient Pressure	950 mbar	
Wind Speed	2.2m/s	
Wind direction	N	
Relative Humidity	95.00%	
Mass Flow	9.8400 kg/s	
Equivalence Ratio	0.45	

		Ionisation Probes		Ionisation Rakes		Optical Probes	
Max overpressure		Max. gas temperature		Max. flame speed		Max. flame speed	
2833 mbar		1345 °C		184 m/s		365 m/s	
		Initial gas temperature				265 m/s	
		257 °C					
Location of Max. Overpressure		Location of Max. Temperature		Location of Max. Flame Speed		Location of Max. Flame Speed	
sensor	KU7	sensor	TC2	sensor	IP1	sensor	RA3
label	HR4-R5U	label	CD2-R3	label	HR2-L5L	label	HR4-R3M
distance	18165 mm	distance	4258 mm	distance	14745 mm	distance	17575 mm
						sensor	OP1
						label	CD4-R6
						istance	11758 mm



**Naming Convention**

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

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

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

Longitudinal position in section (numbered from 1)

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

**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

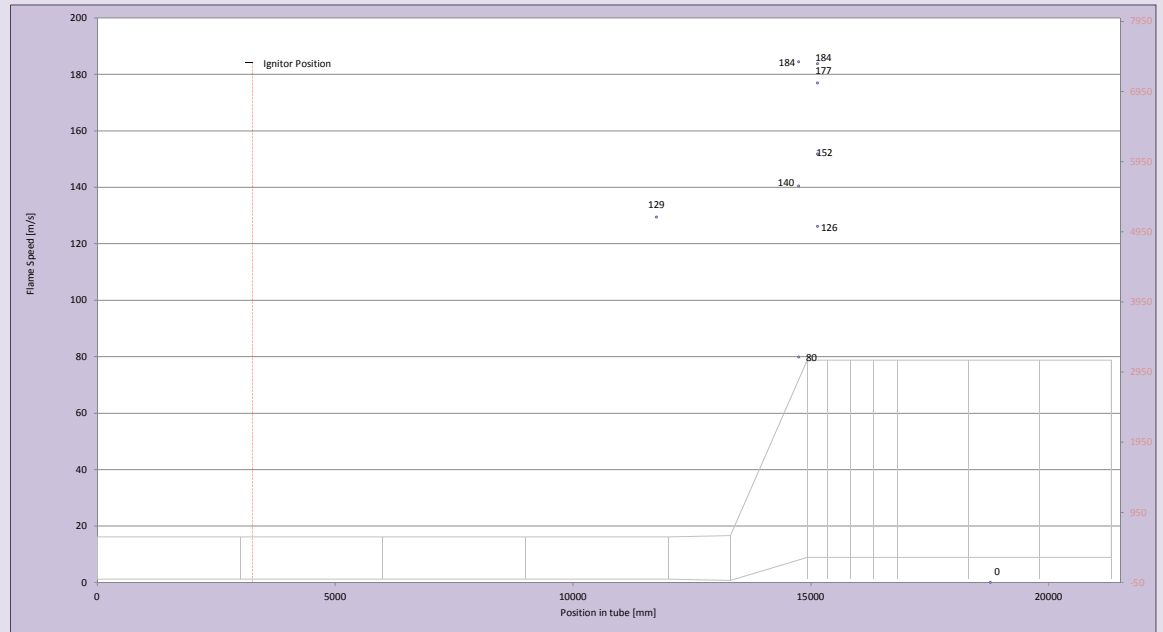
- 4 circular duct sections (CD1 to CD4)
- 6 HRSG sections (HR1 to HR6)
- 3 heat exchanger sections (HE1 to HE3) located between HR3 and HR4

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	1.34312	129
IP1	HR2-L5L	Ionisation probe 1	14745	1.35932	184
IP2	HR2-L5M	Ionisation probe 2	14745	1.36440	140
IP3	HR2-L5U	Ionisation probe 3	14745	1.38052	80
IP4	HR3-R1L	Ionisation probe 4	15140	1.36223	177
IP5	HR3-R1LM	Ionisation probe 5	15140	1.36153	184
IP6	HR3-R1M	Ionisation probe 6	15140	1.36541	152
IP7	HR3-R1U	Ionisation probe 7	15140	1.36994	126
IP8	HR3-L1U	Ionisation probe 8	15140		
IP9	HE2-R1M	Ionisation probe 9	16090	1.36635	
IP10	HR4-L1L	Ionisation probe 10	16985	1.36758	
IP11	HR4-L1M	Ionisation probe 11	16985	1.36868	
IP12	HR4-L1U	Ionisation probe 12	16985	1.36980	
IP13	HR4-R1U	Ionisation probe 13	16985	1.36966	
IP14	HR4-R3U	Ionisation probe 14	17575	1.37088	
IP15	HR4-L5L	Ionisation probe 15	18165	1.36890	
IP16	HR4-L5M	Ionisation probe 16	18165		
IP17	HR4-L5U	Ionisation probe 17	18165	1.37057	
IP18	HR4-R5M	Ionisation probe 18	18165		
IP19	HR5-L2L	Ionisation probe 19	18775	1.37028	
IP20	HR5-L2M	Ionisation probe 20	18775	1.37070	
IP21	HR5-L2U	Ionisation probe 21	18775	1.37128	
IP22	HR5-R2U	Ionisation probe 22	18775	1.37134	-
IP23	HR6-L1M	Ionisation probe 23	19985	1.37250	

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

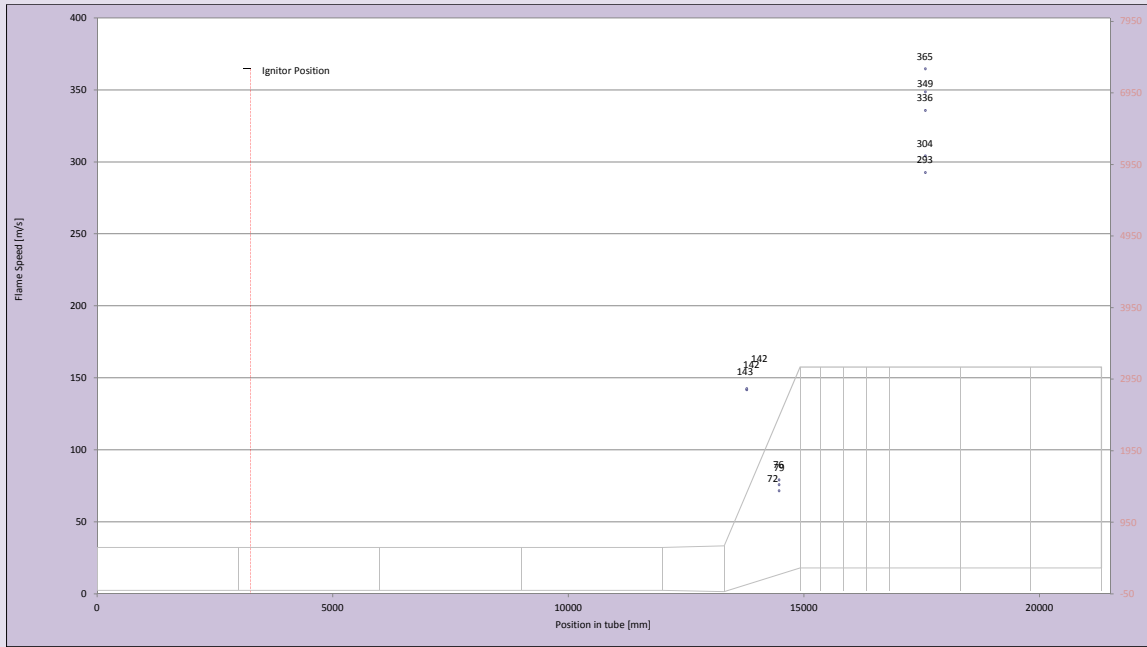
A weak combustion event. Sensors ahead of the HE gave a weak response but may sensors within the HE and further downstream did not detect an event.



Location of igniter 3258 mm Time of ignition 1.27745 seconds

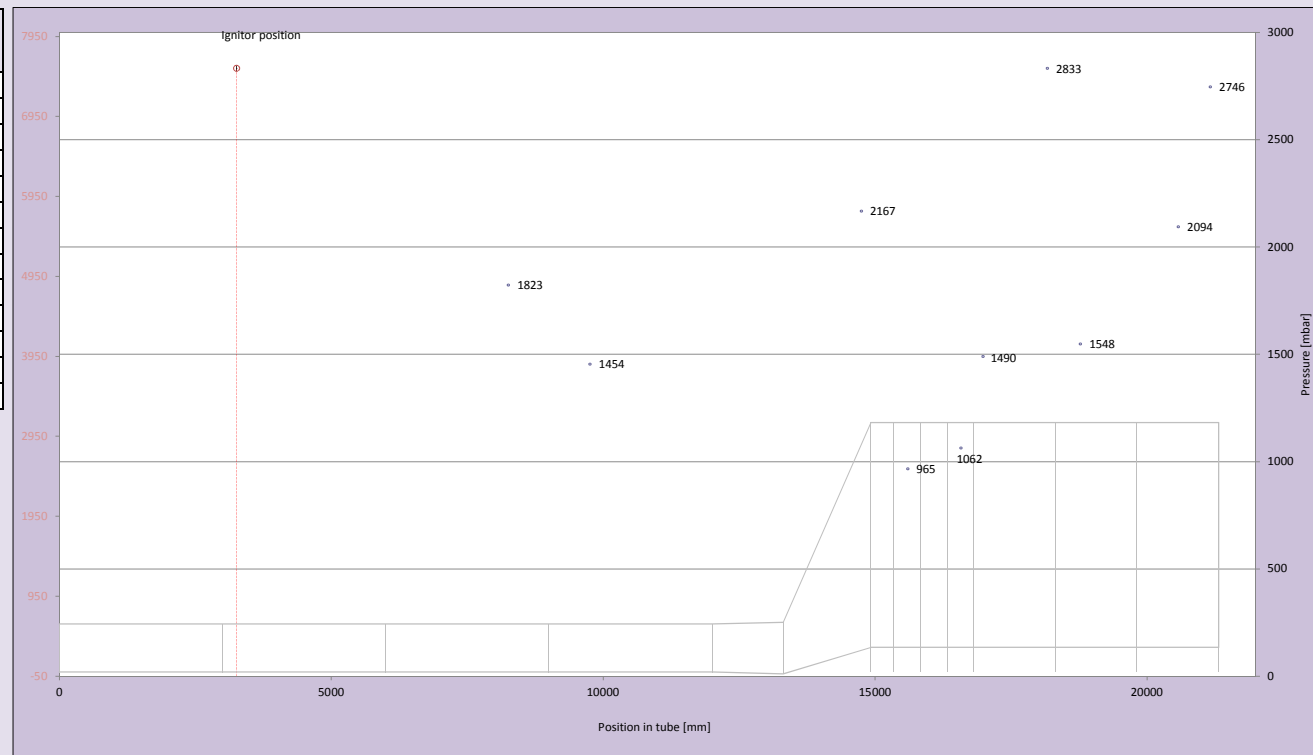
Rake Number	IP Number	Location label	Data Name	Position in tube (mm)	Flame arrival time (s)	Avg Flame speed from last sensor (m/s)
RA1	IP24	HR2-R2M	IP24	13785	1.3516	142
RA1	IP25	HR2-R2M	IP25	13785	1.3516	142
RA1	IP26	HR2-R2M	IP26	13785	1.3513	143
RA2	IP27	HR2-R4M	IP27	14475	1.3603	79
RA2	IP28	HR2-R4M	IP28	14475	1.3607	76
RA2	IP29	HR2-R4M	IP29	14475	1.3609	72
RA3	IP30	HR4-R3M	IP30	17575	1.3688	365
RA3	IP31	HR4-R3M	IP31	17575	1.3696	349
RA3	IP32	HR4-R3M	IP32	17575		
RA4	IP33	HR4-R3L	IP33	17575	1.3709	293
RA4	IP34	HR4-R3L	IP34	17575	1.3709	304
RA4	IP35	HR4-R3L	IP35	17575	1.3702	336

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



Location of igniter  mm

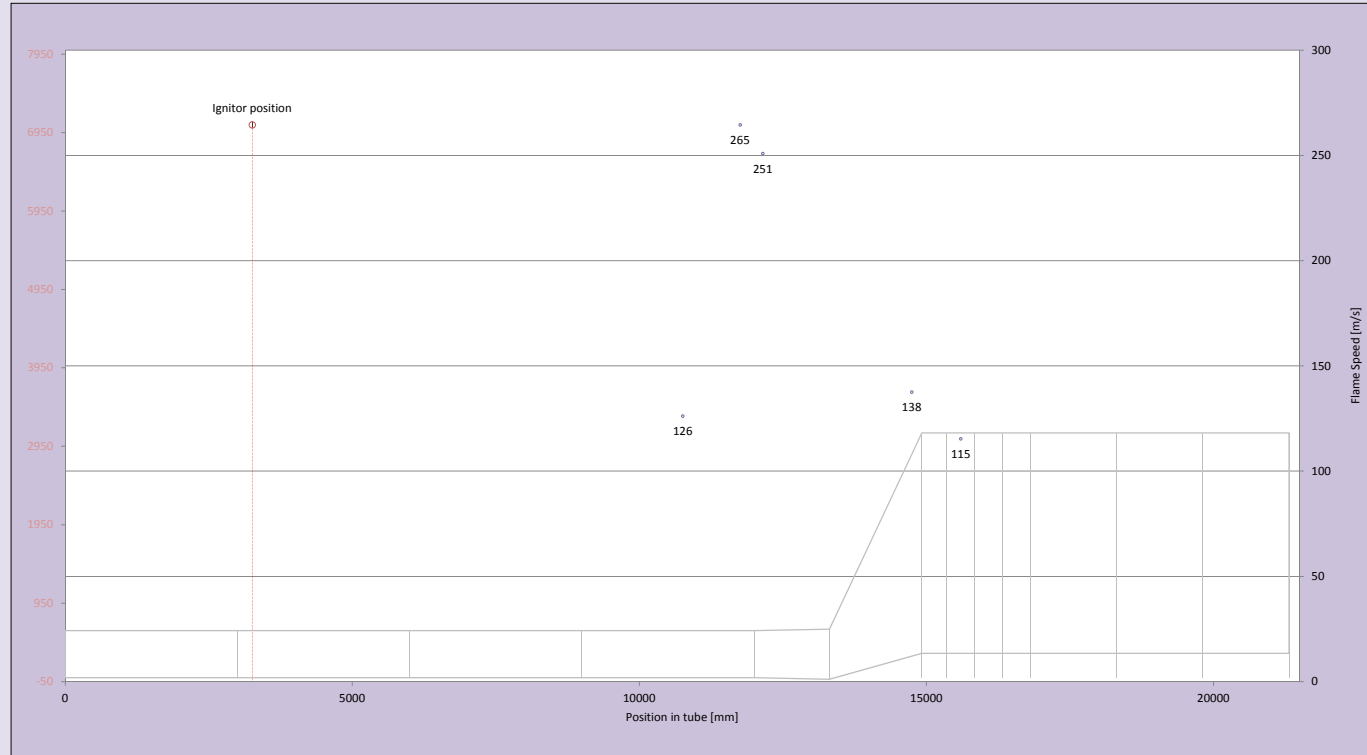
Transducer number	Location	Position in tube [mm]	$\Delta P_{max}$ [mbar]	Time $\Delta P_{max}$ [sec]
KU0	CD3-R5	8258	1823	1.4180
KU1	CD4-R2	9758	1454	1.4201
KU2	HR2-T5	14745	2167	1.3869
KU3	HR3-L1L	15140		
KU4	HE1-R1U	15600	965	1.3696
KU5	HE3-R1L	16580	1062	1.3674
KU6	HR4-R1L	16985	1490	1.3680
KU7	HR4-R5U	18165	2833	1.3717
KU8	HR5-R2L	18775	1548	1.3748
KU9	HR6-R3L	20575	2094	1.3764
KU10	HR6-L5L	21165	2746	1.3787



Location of igniter 3258 mm Time of ignition 1.27745 seconds

OP Number	Location label	Position in tube (mm)	Flame arrival time (s)	Average flame speed (m/s)
OP0	CD4-L4	10758	1.3369	126
OP1	CD4-R6	11758	1.3407	265
OP2	HR1-R1	12152	1.3422	251
OP3	HR2-R5M	14745	1.3611	138
OP4	HE1-T1	15600	1.3685	115
OP5	HE2-T1	16090	1.3689	
OP6	HE3-T1	16580	1.3696	
OP7	HR4-T1	16985	1.3679	
OP8	HR4-R1M	16985	1.3684	
OP9	HR4-R5L	18165	1.3749	
OP10	HR5-T2	18775	1.3963	
OP11	HR5-R2M	18775	1.3950	

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

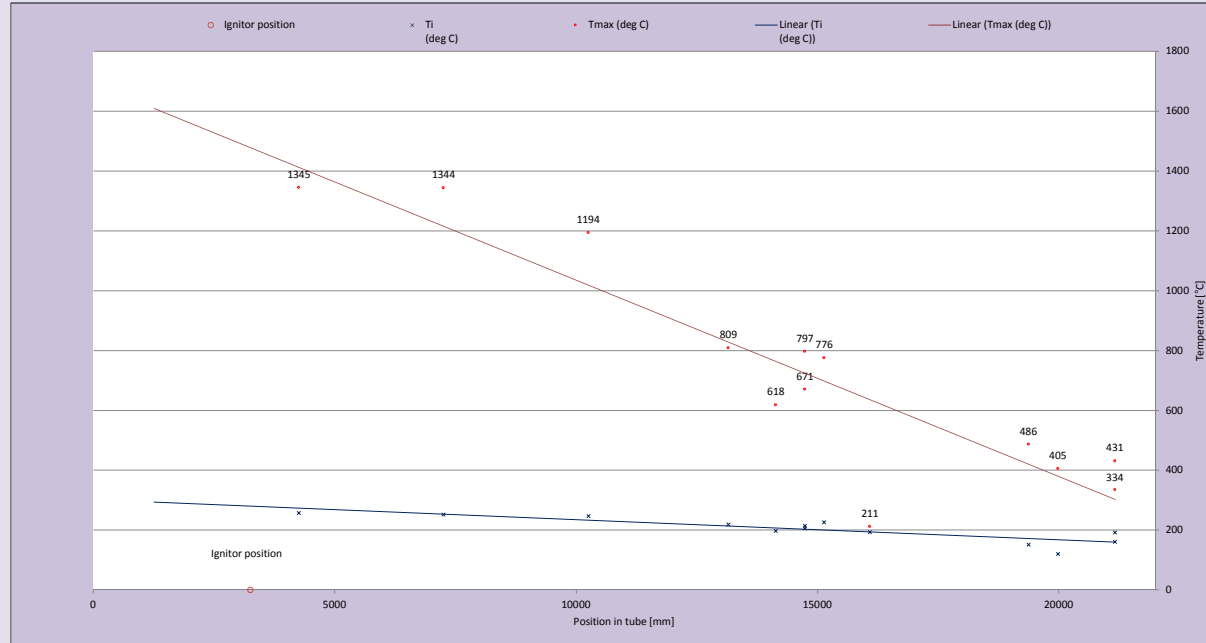


Location of igniter  mm      Time of ignition  seconds

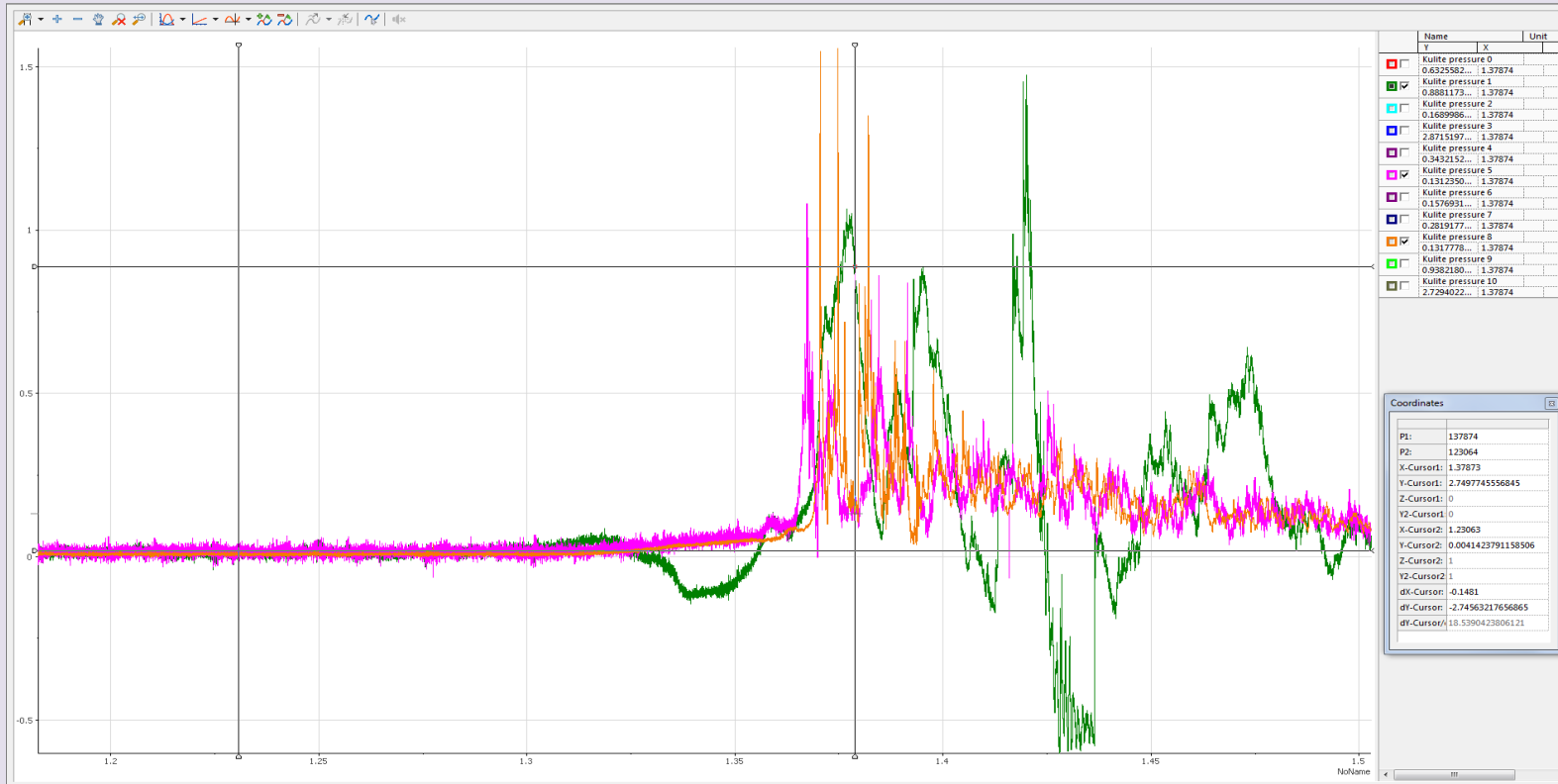
Thermocouple number	Location	Position in tube (mm)	T <sub>max</sub> (deg C)	T <sub>i</sub> (deg C)
TC0	CD1-R3	1258		
TC2	CD2-R3	4258	1345	257
TC4	CD3-R3	7258	1344	252
TC6	CD4-R3	10258	1194	247
TC8	HR1-R2	13160	809	219
TC12	CD3-T1	6258	606	241
TC13	CD3-L1	6258	633	242
TC14	CD3-B1	6258		
TC15	CD3-R1	6258	638	256
TC16	HR2-R3M	14140	618	197
TC17	HR2-R5L	14745	797	215
TC18	HR2-R5U	14745	671	206
TC19	HR3-L1M	15140	776	226
TC20	HE2-R1L	16090		
TC21	HE2-R1U	16090	211	193
TC22	HR5-R4M	19375	486	152
TC23	HR6-R1M	19985	405	120
TC24	HR6-R5L	21165	334	161
TC25	HR6-R5U	21165	431	192

surface thermocouples [not plotted]

TC1	CD1-T2	1508	153	147
TC3	CD2-T2	4508	135	132
TC5	CD3-T2	7508	140	137
TC7	CD4-T2	10508	112	110



# Pressure

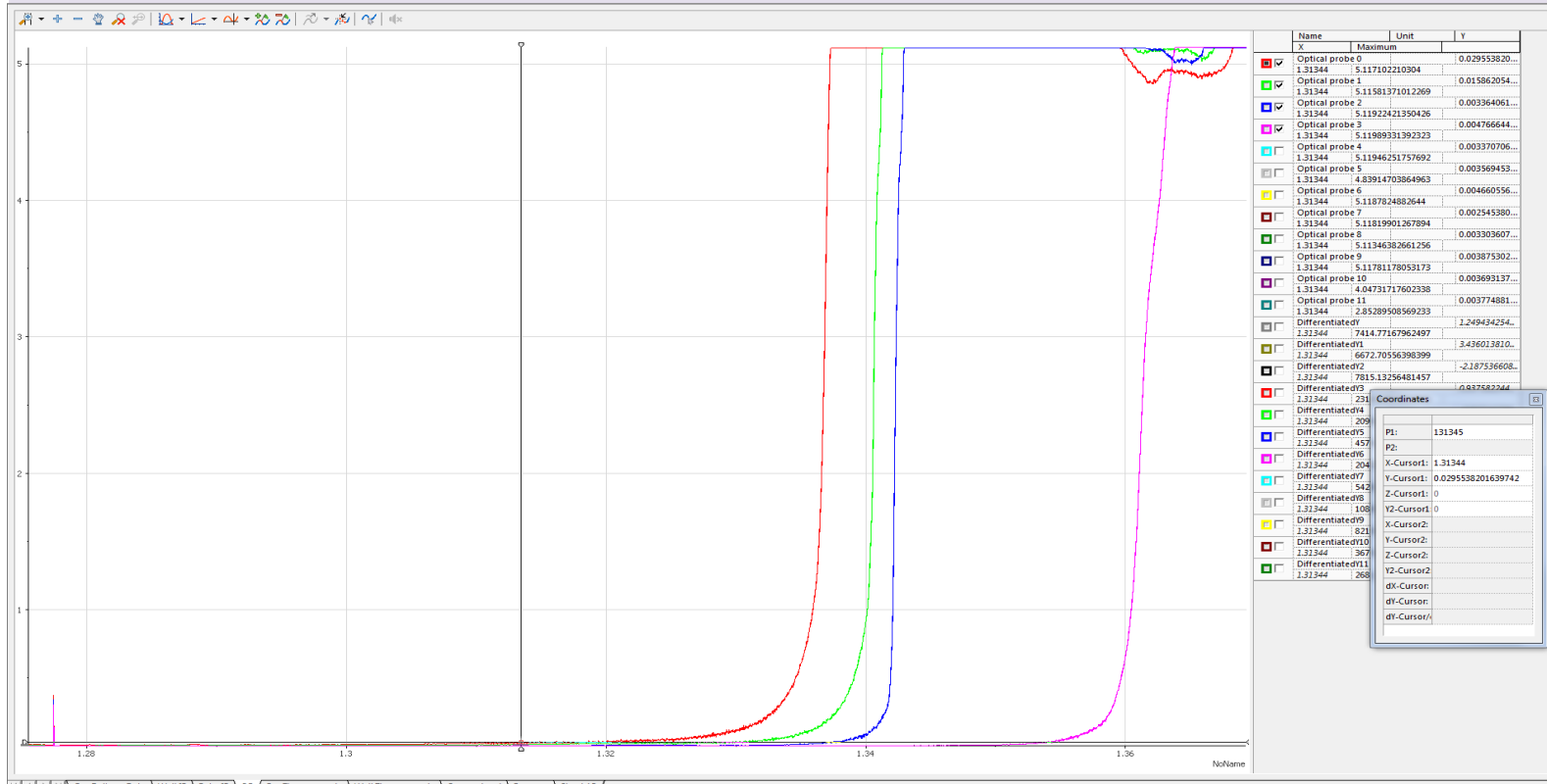


Name	X	Unit
<input type="checkbox"/> Kullite pressure 0	0.6325582...	1.37874
<input checked="" type="checkbox"/> Kullite pressure 1	0.8881173...	1.37874
<input type="checkbox"/> Kullite pressure 2	0.1689986...	1.37874
<input type="checkbox"/> Kullite pressure 3	2.8715197...	1.37874
<input type="checkbox"/> Kullite pressure 4	0.3492152...	1.37874
<input type="checkbox"/> Kullite pressure 5	0.1312950...	1.37874
<input checked="" type="checkbox"/> Kullite pressure 6	0.1576993...	1.37874
<input type="checkbox"/> Kullite pressure 7	0.2819177...	1.37874
<input checked="" type="checkbox"/> Kullite pressure 8	0.1317778...	1.37874
<input type="checkbox"/> Kullite pressure 9	0.9382180...	1.37874
<input type="checkbox"/> Kullite pressure 10	2.7294022...	1.37874

Parameter	Value
P1:	137874
P2:	123064
X-Cursor1:	1.37873
Y-Cursor1:	2.7497745556845
Z-Cursor1:	0
V2-Cursor1:	0
X-Cursor2:	1.23063
Y-Cursor2:	0.0041423791158506
Z-Cursor2:	1
V2-Cursor2:	1
dX-Cursor:	-0.1481
dY-Cursor:	-2.74563217656865
dZ-Cursor:	18.5390423806121

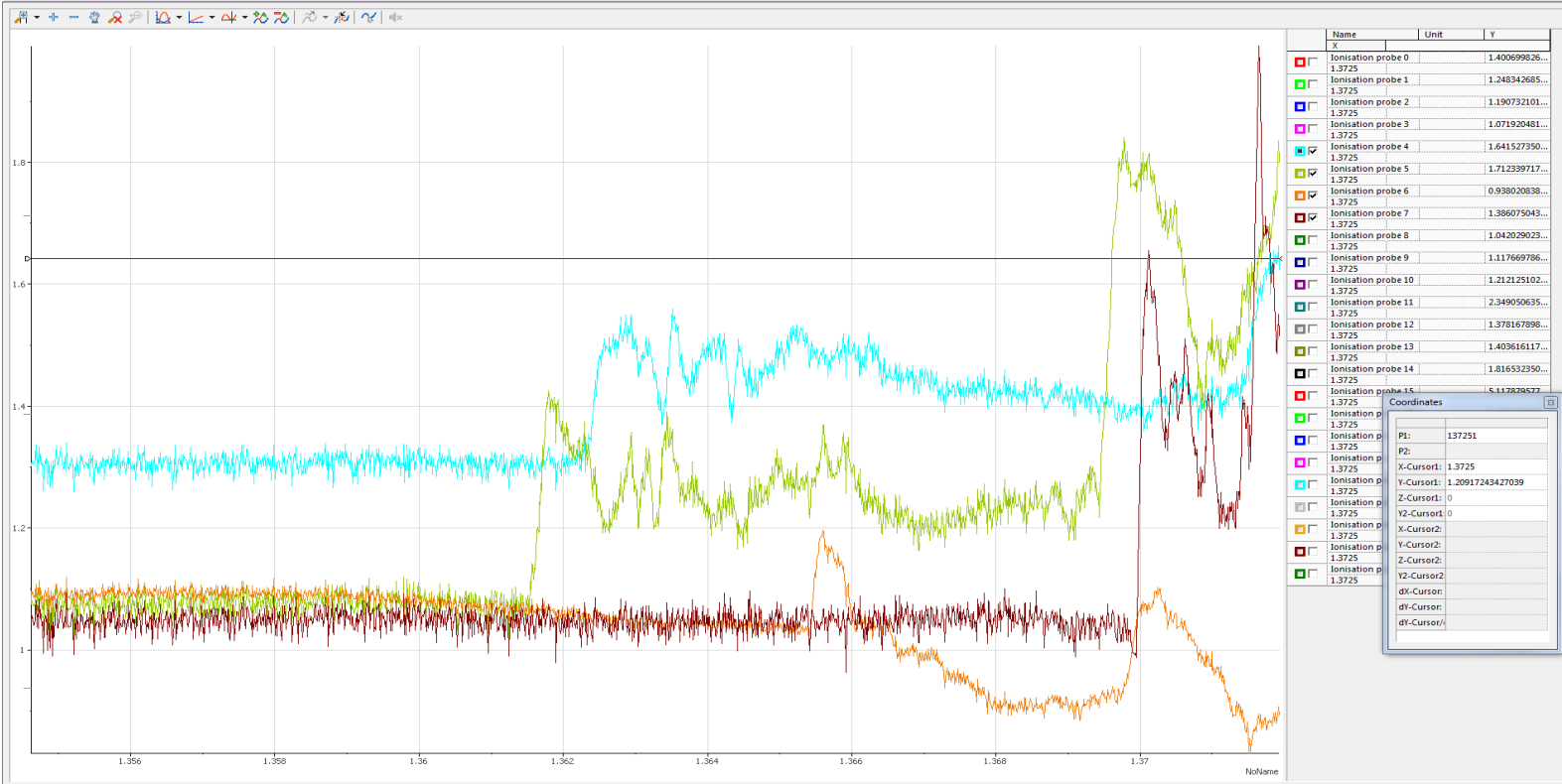


# Optical Probes



Name	Unit	Y
Optical probe 0	Maximum	0.029553820...
1.31344	5.117102210304	
Optical probe 1		0.015862054...
1.31344	5.11581371012269	
Optical probe 2		0.003364061...
1.31344	5.11922421350426	
Optical probe 3		0.004766644...
1.31344	5.11989331392323	
Optical probe 4		0.003370706...
1.31344	5.11946251757692	
Optical probe 5		0.003569453...
1.31344	4.83914703864963	
Optical probe 6		0.004660556...
1.31344	5.1187824882644	
Optical probe 7		0.002545380...
1.31344	5.11819901267894	
Optical probe 8		0.003303607...
1.31344	5.11346382661256	
Optical probe 9		0.003875302...
1.31344	5.11781178053173	
Optical probe 10		0.003699137...
1.31344	4.04731717602338	
Optical probe 11		0.003774881...
1.31344	2.85289508569233	
Differentiated0		1.249434254...
1.31344	7414.77167962497	
Differentiated01		3.436013810...
1.31344	6672.70556398399	
Differentiated02		-2.187536608...
1.31344	7815.13256481457	
Differentiated03		0.027682724...
1.31344	231	
Differentiated04		209
1.31344	209	
Differentiated05		457
1.31344	457	
Differentiated06		204
1.31344	204	
Differentiated07		X-Cursor1: 1.31344
1.31344	542	V-Cursor1: 0.0295538201639742
Differentiated08		Z-Cursor1: 0
1.31344	108	V2-Cursor1: 0
Differentiated09		X-Cursor2:
1.31344	821	V-Cursor2:
Differentiated10		Z-Cursor2:
1.31344	367	V2-Cursor2:
Differentiated11		dx-Cursor:
1.31344	268	dy-Cursor:
		df-Cursor/

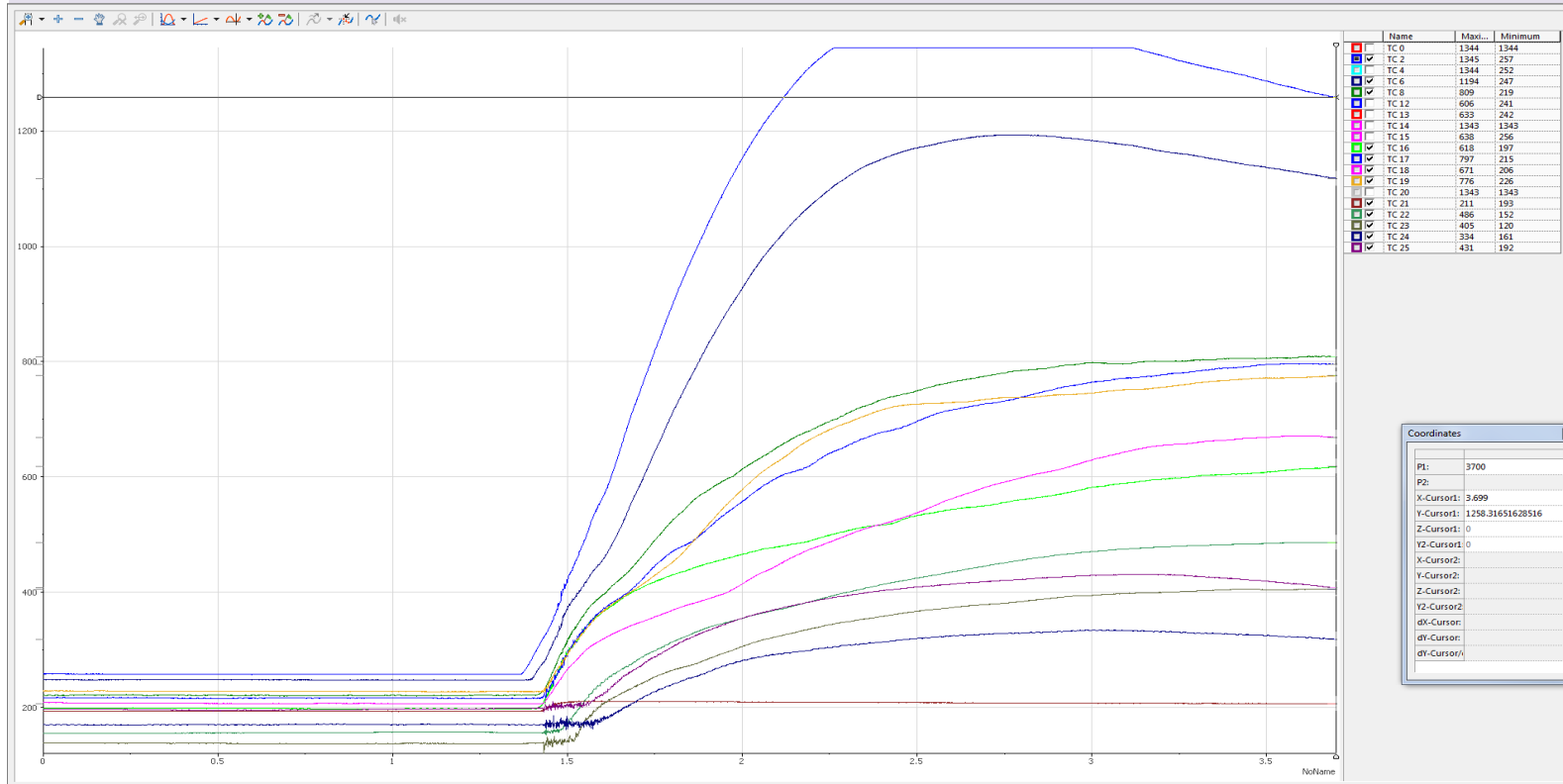
# Ionisation Probes

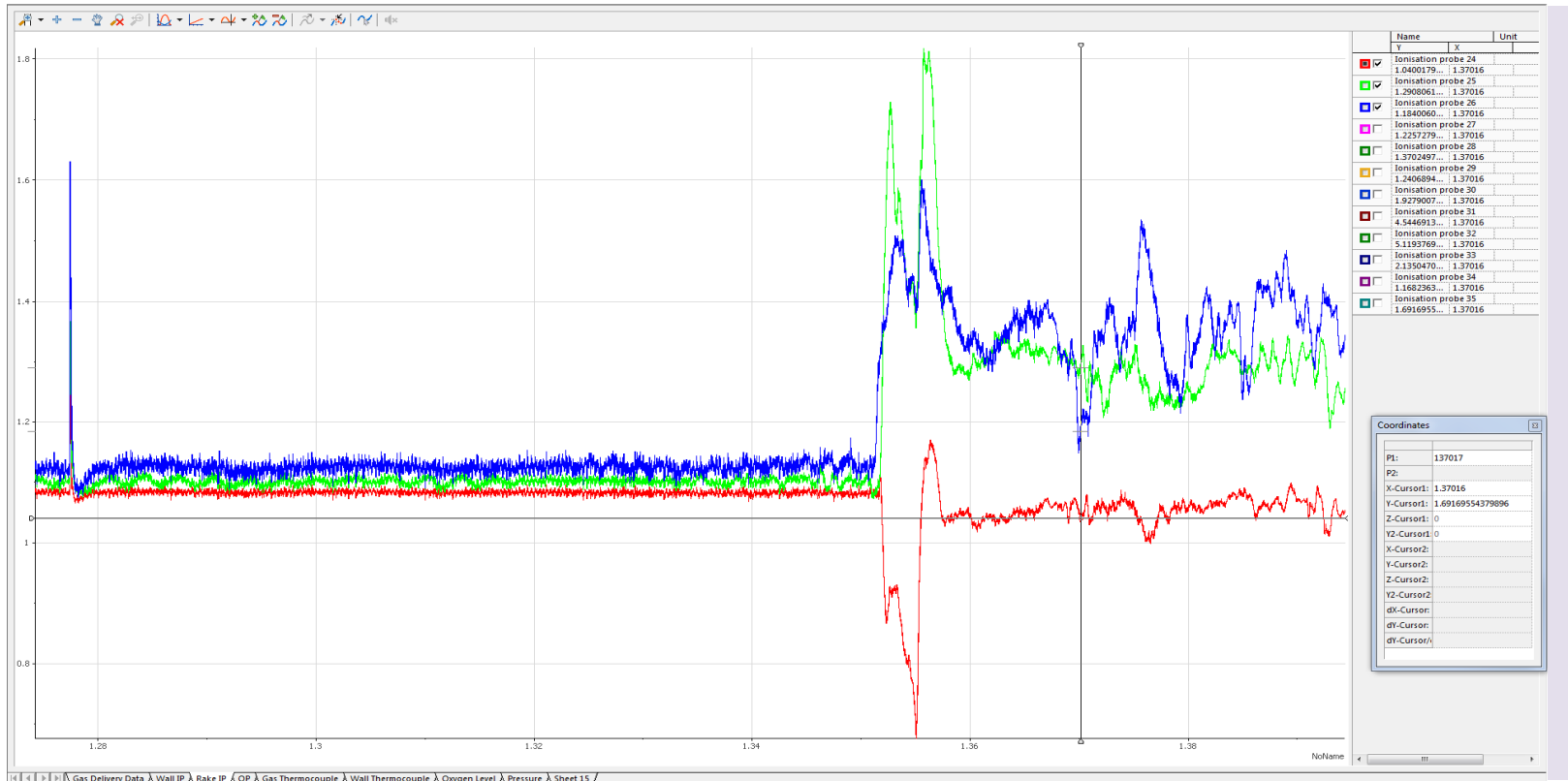


**Coordinates**

P1:	137251
P2:	
X-Cursor1:	1.3725
Y-Cursor1:	1.20917243427039
Z-Cursor1:	0
V2-Cursor1:	0
X-Cursor2:	
Y-Cursor2:	
Z-Cursor2:	
V2-Cursor2:	
dX-Cursor:	
dY-Cursor:	
dZ-Cursor:	

# Temperature





Coordinates	
P1:	137017
P2:	
X-Cursor1:	1.37016
Y-Cursor1:	1.6916954379896
Z-Cursor1:	0
Y2-Cursor1:	0
X-Cursor2:	
Y-Cursor2:	
Z-Cursor2:	
Y2-Cursor2:	
dX-Cursor:	
dY-Cursor:	
dY2-Cursor:	

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

