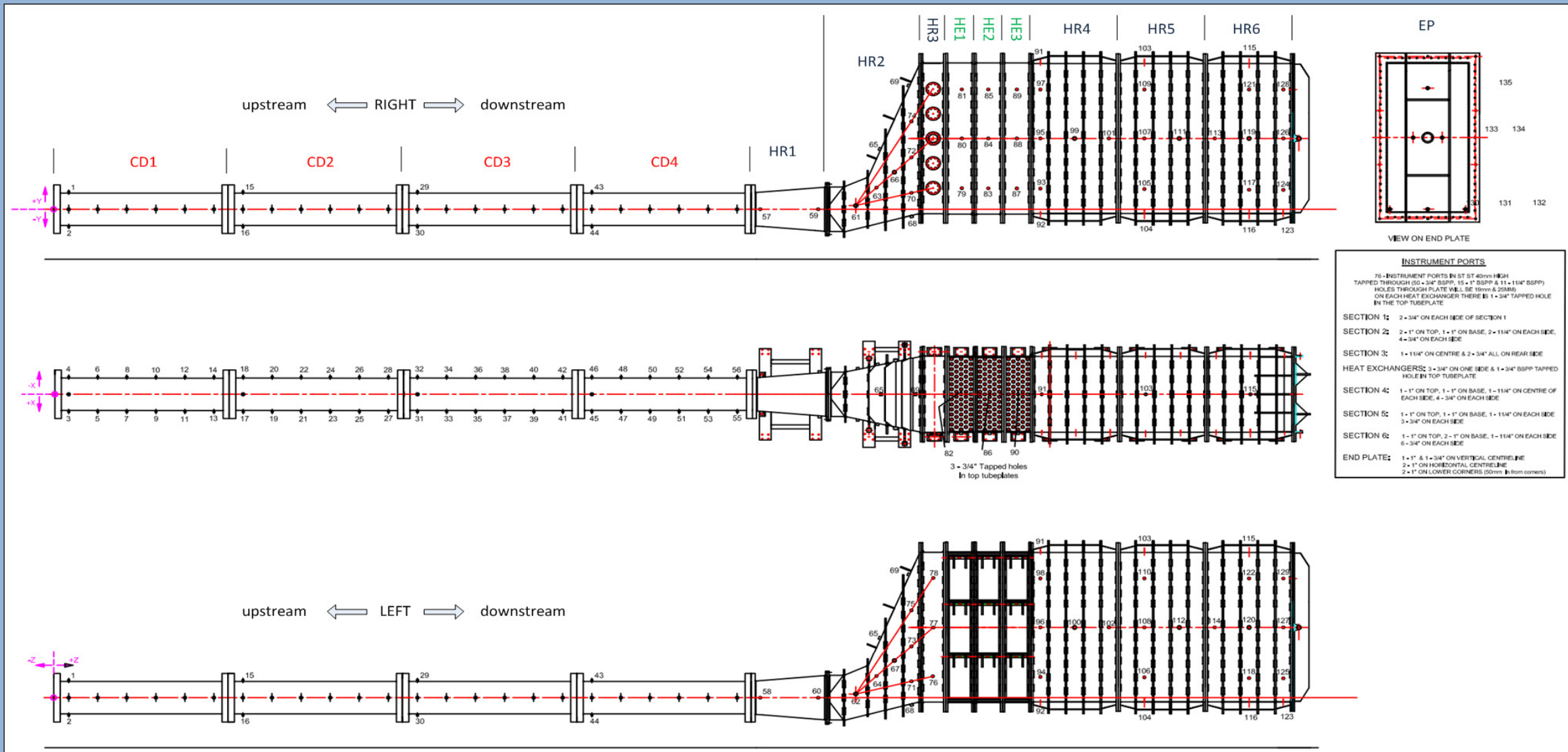


Date	26 August 2016	General Comments: (weather, rig configuration) Weather: Rig configuration: 4 x 3m circular duct; expansion section and HRSG attached. End Plate attached. Igniter 258mm from beginning of 2nd circular duct section Engine Speed: 40%; 11,800 rpm extra test on mixture containing carbon monoxide (60% CO and 40% H2) at an EQR of 0.62 The test gave a moderate combustion event and most sensors provided an identifiable response. Maximum overpressure of 1374 mbar was seen on K05 near the end plate.
Time		
Test Number	17	
Mixture Composition	40%H2 60%CO	
Ambient Temperature	15oC	
Ambient Pressure	980 mbar	
Wind Speed	2 m/s	
Wind direction	N	
Relative Humidity	65.00%	
Mass Flow	<input type="text"/> kg/s	
Equivalence Ratio	0.62	

	Ionisation Probes	Ionisation Rakes	Optical Probes
Max overpressure	Max. temperature	Max. flame speed	Max. flame speed
<input type="text"/> 1374 mbar	<input type="text"/> 1173 °C	<input type="text"/> 767 m/s	<input type="text"/> 650 m/s
	Initial Temperature		<input type="text"/> 556 m/s
	<input type="text"/> 505 °C		
Location of Max. Overpressure	Location of Max. Temperature	Location of Max. Flame Speed	Location of Max. Flame Speed
sensor <input type="text"/> KU5	sensor <input type="text"/> TC4	sensor <input type="text"/> IP18	sensor <input type="text"/> RA2
label <input type="text"/> HR6-L5L	label <input type="text"/> CD1-R6	label <input type="text"/> HR6-R3U	label <input type="text"/> HR2-R4M
distance <input type="text"/> 21165 mm	distance <input type="text"/> 2758 mm	distance <input type="text"/> 20575 mm	istance <input type="text"/> 14475 mm
			sensor <input type="text"/> OP6
			label <input type="text"/> HR4-T1
			istance <input type="text"/> 16985 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

HR 1 - R 1 U

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

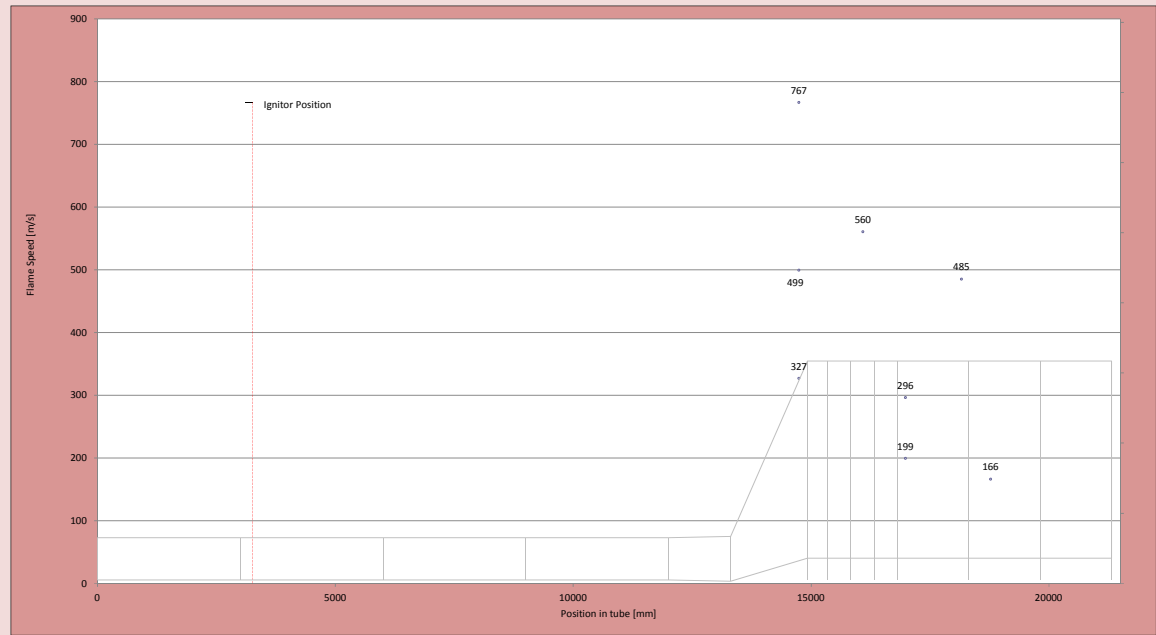
- 4 circular duct sections (CD1 to CD4)
- 6 HRSG sections (HR1 to HR6)
- 3 heat exchanger sections (HE1 to HE3) located between HR3 and HR4

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	16.28880	327
IP8	HR2-L5M	Flameion_8	14745	16.27666	499
IP9	HR2-L5L	Flameion_9	14745	16.26863	767
IP7	HR3-L1U	Flameion_7	15140	16.29351	
IP10	HE2-R1U	Flameion_10	16090	16.27655	560
IP12	HR4-R1U	Flameion_12	16985	16.28104	199
IP13	HR4-L1U	Flameion_13	16985	16.27938	
IP2	HR4-L1M	Flameion_2	16985	16.27697	
IP4	HR4-L1L	Flameion_4	16985	16.27619	296
IP14	HR4-R5M	Flameion_14	18165	16.28525	
IP21	HR4-L5M	Flameion_21	18165	16.28371	485
IPO	HR5-L2M	Flameion_0	18775	NA	
IP1	HR5-L2U	Flameion_1	18775	NA	
IP15	HR5-R2U	Flameion_15	18775	NA	
IP16	HR5-L2L	Flameion_16	18775	16.28698	166
IP3	HR6-L1M	Flameion_3	19985		
IP5	HR6-R1M	Flameion_5	19985		0
IP18	HR6-R3U	Flameion_18	20575		0
IP19	HR6-L3L	Flameion_19	20575		
IP22	HR6-L3U	Flameion_22	20575		
IP23	HR6-L3M	Flameion_23	20575		
IP17	HR6-R5U	Flameion_17	21165		
IP20	HR6-L5U	Flameion_20	21165		
IP6	HR6-L5M	Flameion_6	21165		

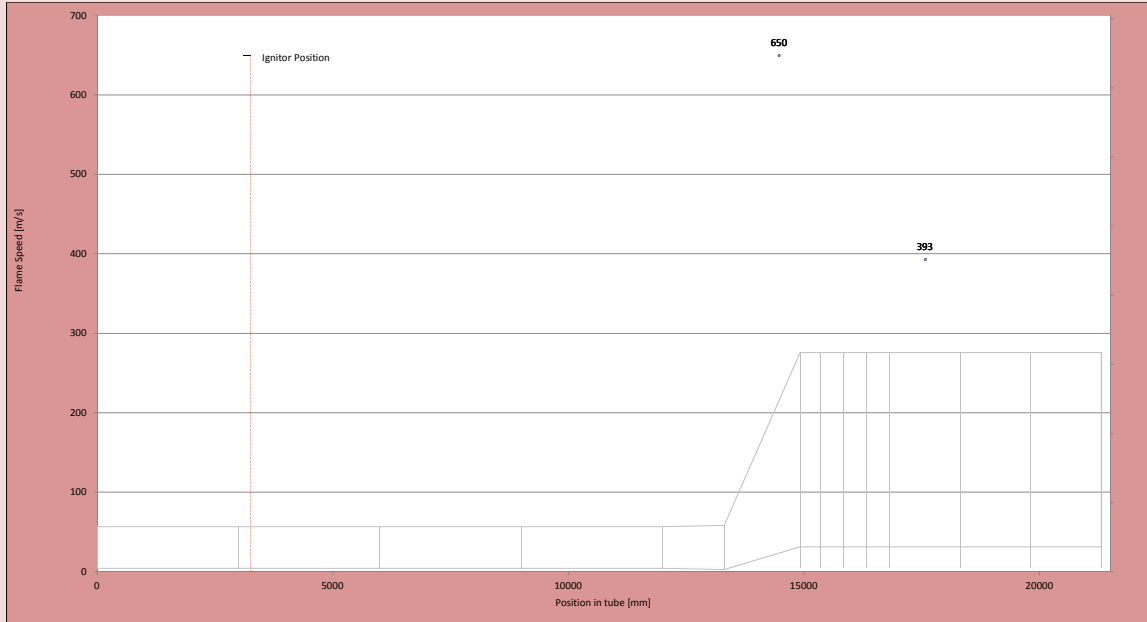
Values highlighted in yellow show flame arrival times that are ambiguous and need further investigation



Location of igniter 3258 mm

Time of ignition 16.25365 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		
RA1	IP25	HR2-R2M	IP25	13785		
RA1	IP26	HR2-R2M	IP26	13785		
RA2	IP27	HR2-R4M	IP27	14475	16.2709	650
RA2	IP28	HR2-R4M	IP28	14475	16.2709	650
RA2	IP29	HR2-R4M	IP29	14475	16.2709	650
RA3	IP30	HR4-R3M	IP30	17575	16.2788	393
RA3	IP31	HR4-R3M	IP31	17575	16.2788	393
RA3	IP32	HR4-R3M	IP32	17575	16.2788	393
RA4	IP33	HR5-R4M	IP33	19375		
RA4	IP34	HR5-R4M	IP34	19375		
RA4	IP35	HR5-R4M	IP35	19375		



Location of igniter mm

Transducer number	Location	Position in tube [mm]	ΔP_{max} [mbar]	Time ΔP_{max} [sec]
KU6	CD4-L4	10758	982	16.3017
KU7	CD4-R2	9758	1302	16.3021
KU8	HR2-T5	14745	797	16.2937
KU9	HR3-L1L	15140	596	16.2959
KU0	HE2-R1M	16090	648	16.2737
KU1	HE2-R1L	16090	588	16.2736
KU4	HR4-R1L	16985	681	16.2763
KU3	HR5-R2L	18775	648	16.2896
KU2	HR6-R3L	20575	1260	16.2843
KU5	HR6-L5L	21165	1374	16.2865
PCB	EP-1M	21330	1113	16.2850
KU10	#N/A	#N/A		
KU11	#N/A	#N/A		

