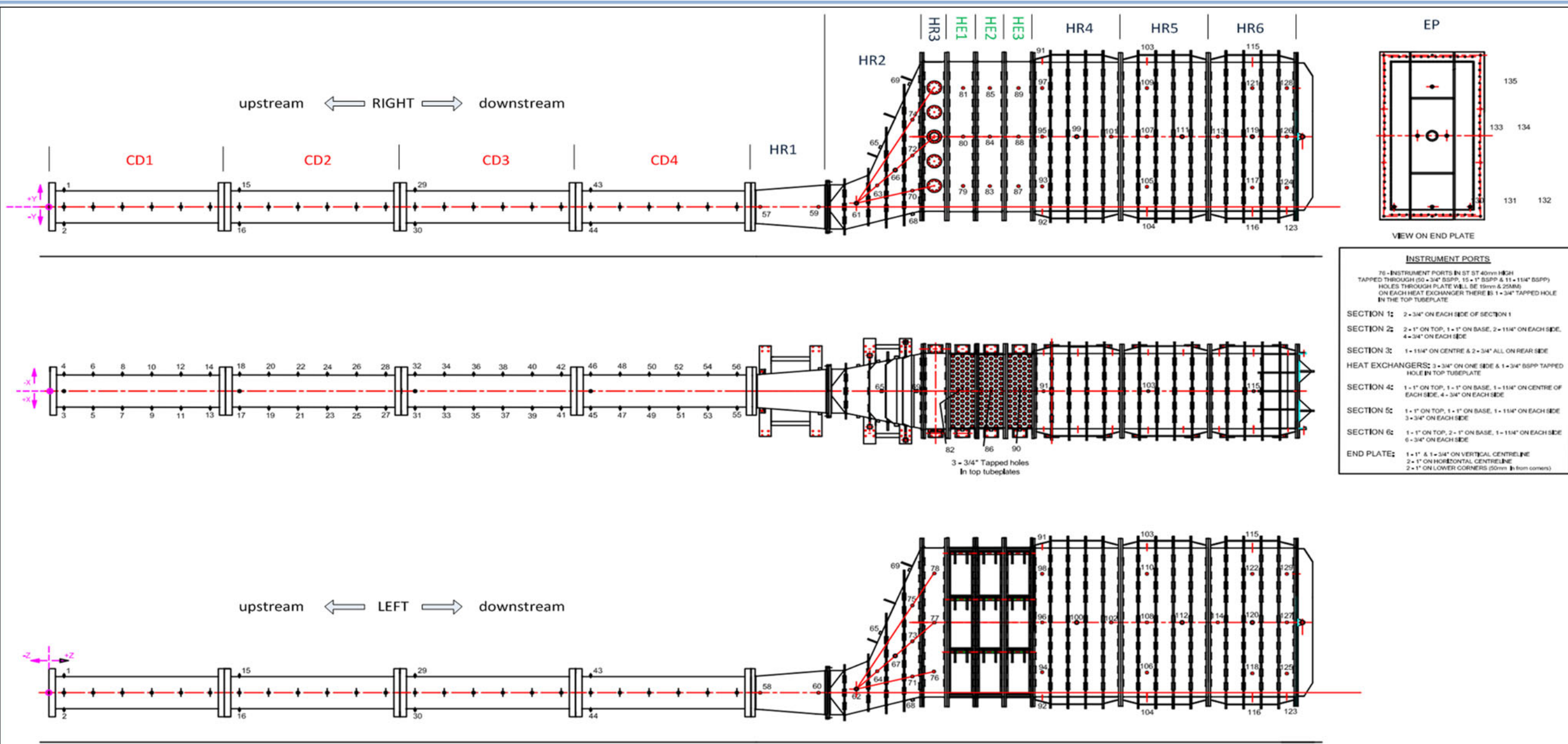


| | | |
|---------------------|------------------|---|
| Date | 12 February 2019 | General Comments: (weather, rig configuration) Weather: Damp and misty clearing later in the day. Light wind. Rig configuration: 4 x 3m circular duct; expansion section and HRSG attached. End Plate attached. Igniter 258mm from beginning of 2nd circular duct section Engine Speed: 34%; 11,500 rpm Test on 60% CO 40% H2 at an intended EQR of 0.40 AUTOIGNITION The mixture autoignited before reaching the target mass flow values. Flame detected by IP and OP sensors and pressures around 150 mbar seen in rig. DATA NOT ANALYSED FURTHER. |
| Time | 15:44:41 | |
| Test Number | HRSG Test 46 | |
| Mixture Composition | 40% CO 60% H2 | |
| Ambient Temperature | 5 °C | |
| Ambient Pressure | 979 mbar | |
| Wind Speed | 5 m/s | |
| Wind direction | SW | |
| Relative Humidity | 98.00% | |
| Mass Flow | 10.0700 kg/s | |
| Equivalence Ratio | 0.34 | |

| | Ionisation Probes | Ionisation Rakes | Optical Probes |
|-------------------------------|------------------------------|------------------------------|------------------------------|
| Max overpressure | Max. gas temperature | Max. flame speed | Max. flame speed |
| 0 mbar | 0 °C | #DIV/0! m/s | #DIV/0! m/s |
| | Initial gas temperature | | |
| | #N/A °C | | |
| Location of Max. Overpressure | Location of Max. Temperature | Location of Max. Flame Speed | Location of Max. Flame Speed |
| sensor #N/A | sensor #N/A | sensor #DIV/0! | sensor #DIV/0! |
| label #N/A | label #N/A | label #DIV/0! | label #DIV/0! |
| distance #N/A mm | distance #N/A mm | distance #DIV/0! mm | distance #DIV/0! mm |



INSTRUMENT PORTS

75 - INSTRUMENT PORTS IN ST 37 40mm I.D. 24 TAPPED THROUGH (50 x 3/4" BSPP, 15 x 1" BSPP & 11 x 1/4" BSPP) HOLES THROUGH PLATE WILL BE 19mm & 25mm ON EACH HEAT EXCHANGER THERE IS 1 x 3/4" TAPPED HOLE IN THE TOP TUBEPLATE

SECTION 1: 2 x 3/4" ON EACH SIDE OF SECTION 1
SECTION 2: 2 x 1" ON TOP, 1 x 1" ON BASE, 2 x 1/4" ON EACH SIDE, 4 x 3/4" ON EACH SIDE
SECTION 3: 1 x 1/4" ON CENTRE & 2 x 3/4" ALL ON REAR SIDE
HEAT EXCHANGERS: 3 x 3/4" ON ONE SIDE & 1 x 3/4" BSPP TAPPED HOLE IN TOP TUBEPLATE
SECTION 4: 1 x 1" ON TOP, 1 x 1" ON BASE, 1 x 1/4" ON CENTRE OF EACH SIDE, 4 x 3/4" ON EACH SIDE
SECTION 5: 1 x 1" ON TOP, 1 x 1" ON BASE, 1 x 1/4" ON EACH SIDE, 3 x 3/4" ON EACH SIDE
SECTION 6: 1 x 1" ON TOP, 2 x 1" ON BASE, 1 x 1/4" ON EACH SIDE, 6 x 3/4" ON EACH SIDE
END PLATE: 1 x 1" & 1 x 3/4" ON VERTICAL CENTRELINE, 2 x 1" ON HORIZONTAL CENTRELINE, 2 x 1" ON LOWER CORNERS (20mm 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

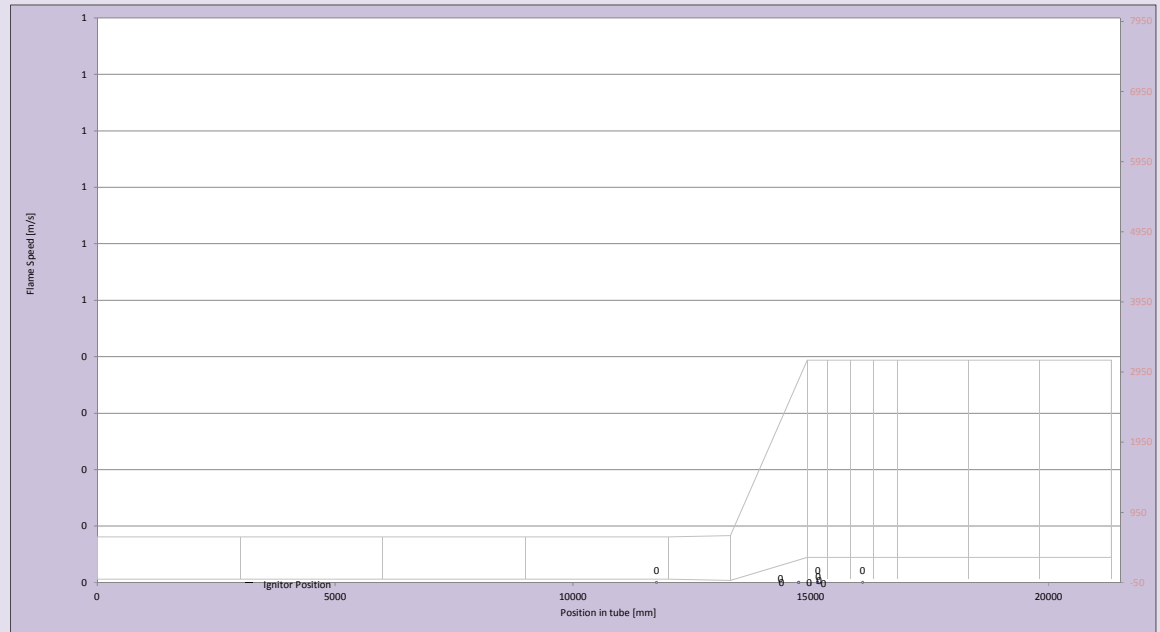
- 4 circular duct sections (CD1 to CD4)
- 6 HRSG sections (HR1 to HR6)
- 3 heat exchanger sections (HE1 to HE3) located between HR3 and HR4

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 | | #DIV/0! |
| IP1 | HR2-L5L | Ionisation probe 1 | 14745 | | #DIV/0! |
| IP2 | HR2-L5M | Ionisation probe 2 | 14745 | | #DIV/0! |
| IP3 | HR2-L5U | Ionisation probe 3 | 14745 | | #DIV/0! |
| IP4 | HR3-R1L | Ionisation probe 4 | 15140 | | #DIV/0! |
| IP5 | HR3-R1LM | Ionisation probe 5 | 15140 | | #DIV/0! |
| IP6 | HR3-R1M | Ionisation probe 6 | 15140 | | #DIV/0! |
| IP7 | HR3-R1U | Ionisation probe 7 | 15140 | | #DIV/0! |
| IP8 | HR3-L1U | Ionisation probe 8 | 15140 | | |
| IP9 | HE2-R1M | Ionisation probe 9 | 16090 | | - |
| IP10 | HR4-L1L | Ionisation probe 10 | 16985 | | |
| IP11 | HR4-L1M | Ionisation probe 11 | 16985 | | |
| IP12 | HR4-L1U | Ionisation probe 12 | 16985 | | |
| IP13 | HR4-R1U | Ionisation probe 13 | 16985 | | |
| IP14 | HR4-R3U | Ionisation probe 14 | 17575 | | |
| IP15 | HR4-L5L | Ionisation probe 15 | 18165 | | |
| IP16 | HR4-L5M | Ionisation probe 16 | 18165 | | |
| IP17 | HR4-L5U | Ionisation probe 17 | 18165 | | |
| IP18 | HR4-R5M | Ionisation probe 18 | 18165 | | |
| IP19 | HR5-L2L | Ionisation probe 19 | 18775 | | |
| IP20 | HR5-L2M | Ionisation probe 20 | 18775 | | |
| IP21 | HR5-L2U | Ionisation probe 21 | 18775 | | |
| IP22 | HR5-R2U | Ionisation probe 22 | 18775 | | |
| IP23 | HR6-L1M | Ionisation probe 23 | 19985 | | |

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

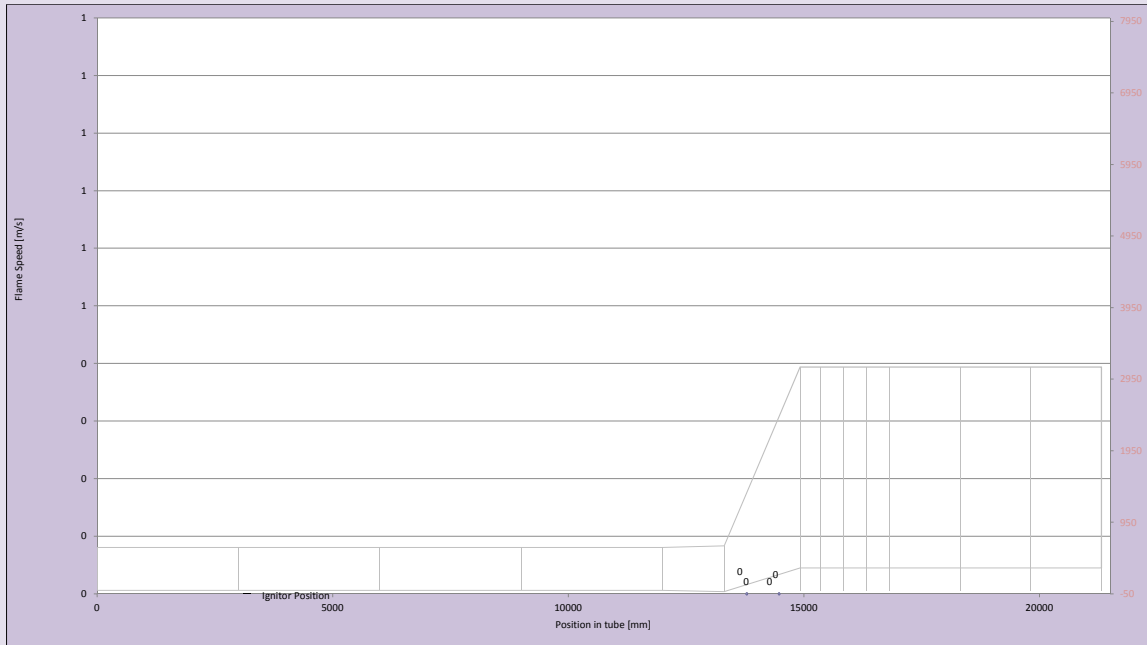
Only a weak responses from sensors after the HE. Many responses too weak to accurately pick out flame arrival time.



Location of igniter mm Time of ignition seconds

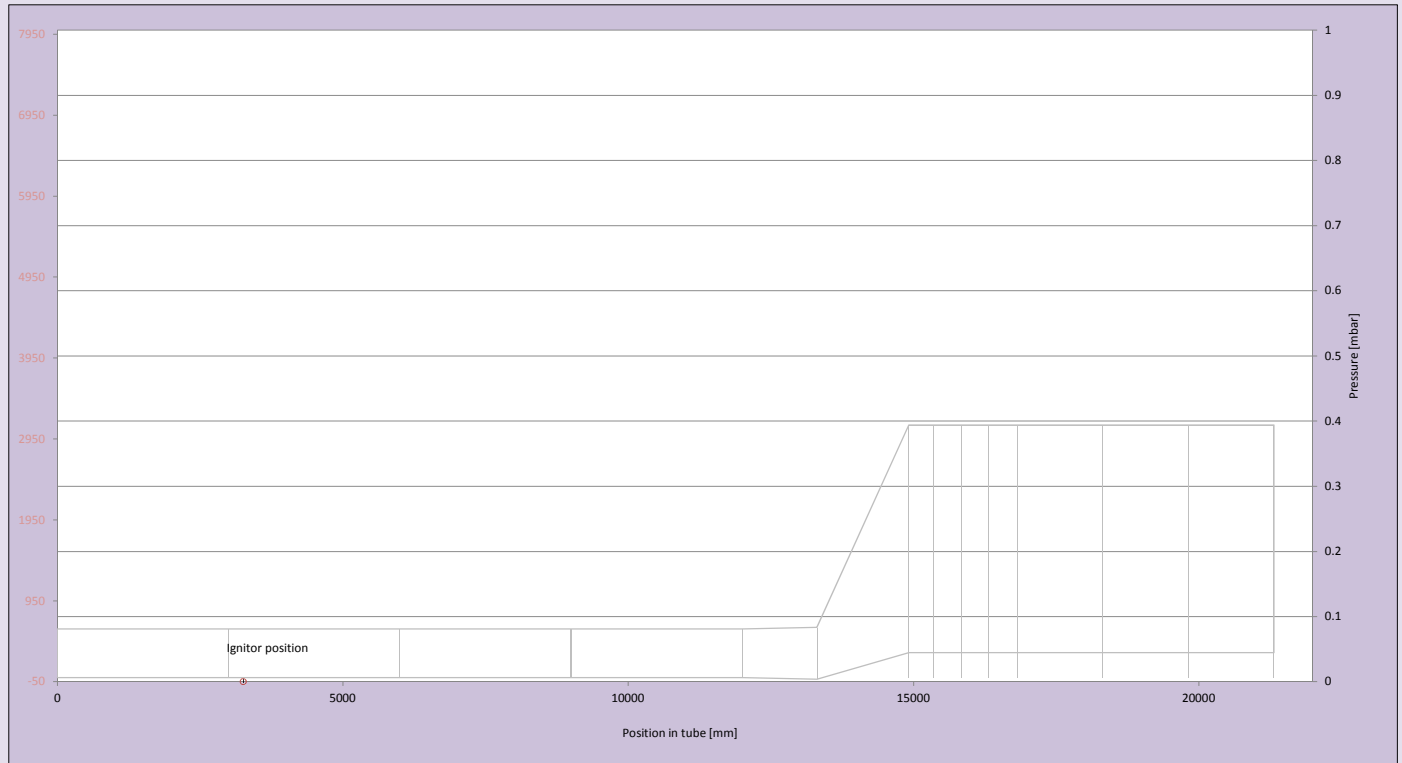
| Rake Number | IP Number | Location label | Data Name | Position in tube (mm) | Flame arrival time (s) | Avg Flame speed from last sensor (m/s) |
|-------------|-----------|----------------|-----------|-----------------------|------------------------|--|
| RA1 | IP24 | HR2-R2M | IP24 | 13785 | | |
| RA1 | IP25 | HR2-R2M | IP25 | 13785 | | #DIV/0! |
| RA1 | IP26 | HR2-R2M | IP26 | 13785 | | #DIV/0! |
| RA2 | IP27 | HR2-R4M | IP27 | 14475 | | |
| RA2 | IP28 | HR2-R4M | IP28 | 14475 | | #DIV/0! |
| RA2 | IP29 | HR2-R4M | IP29 | 14475 | | #DIV/0! |
| RA3 | IP30 | HR4-R3M | IP30 | 17575 | | |
| RA3 | IP31 | HR4-R3M | IP31 | 17575 | | |
| RA3 | IP32 | HR4-R3M | IP32 | 17575 | | |
| RA4 | IP33 | HR4-R3L | IP33 | 17575 | | |
| RA4 | IP34 | HR4-R3L | IP34 | 17575 | | |
| RA4 | IP35 | HR4-R3L | IP35 | 17575 | | |

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



Location of igniter mm

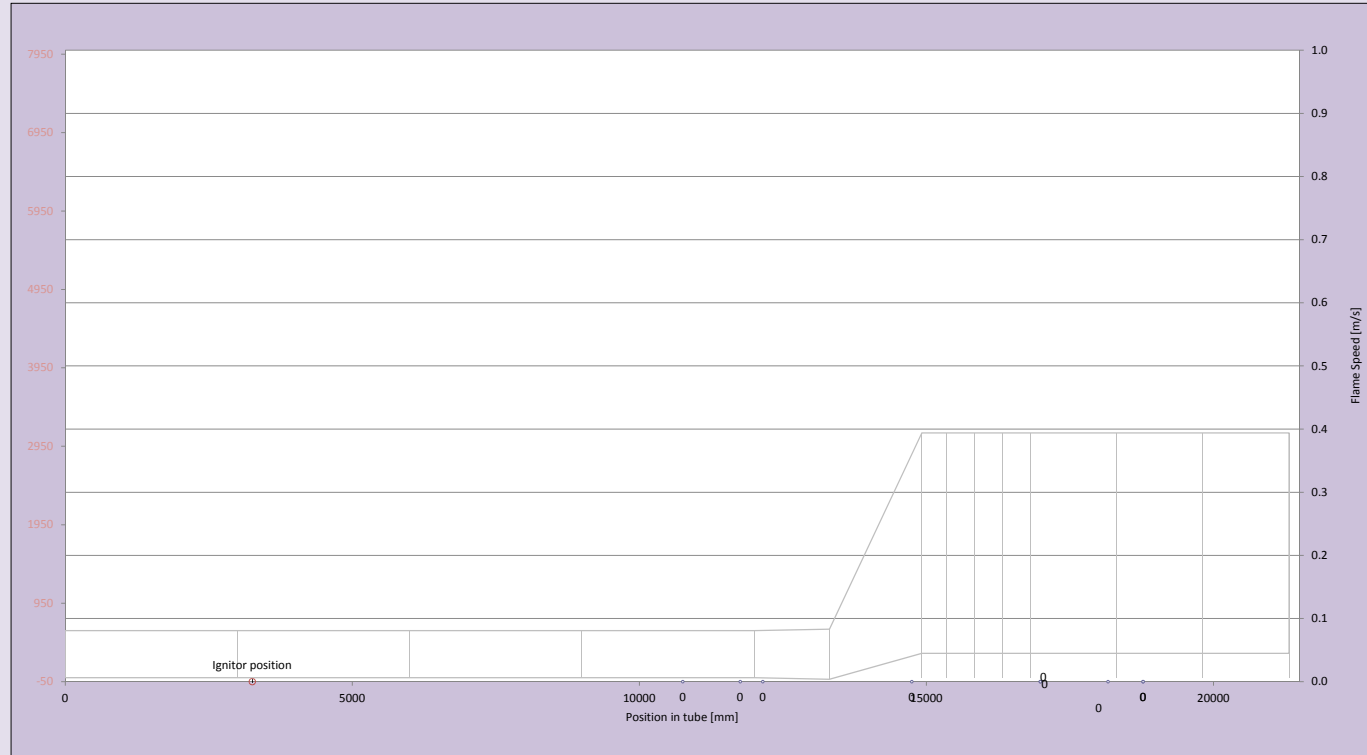
| Transducer number | Location | Position in tube [mm] | ΔP_{max} [mbar] | Time ΔP_{max} [sec] |
|-------------------|----------|-----------------------|-------------------------|-----------------------------|
| KU0 | CD3-R5 | 8258 | | |
| KU1 | CD4-R2 | 9758 | | |
| KU2 | HR2-T5 | 14745 | | |
| KU3 | HR3-L1L | 15140 | | |
| KU4 | HE1-R1U | 15600 | | |
| KU5 | HE3-R1L | 16580 | | |
| KU6 | HR4-R1L | 16985 | | |
| KU7 | HR4-R5U | 18165 | | |
| KU8 | HR5-R2L | 18775 | | |
| KU9 | HR6-R3L | 20575 | | |
| KU10 | HR6-LSL | 21165 | | |
| | | | | |
| | | | | |



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 | | #DIV/0! |
| OP1 | CD4-R6 | 11758 | | #DIV/0! |
| OP2 | HR1-R1 | 12152 | | #DIV/0! |
| OP3 | HR2-R5M | 14745 | | #DIV/0! |
| OP4 | HE1-T1 | 15600 | | |
| OP5 | HE2-T1 | 16090 | | |
| OP6 | HE3-T1 | 16580 | | |
| OP7 | HR4-T1 | 16985 | | #DIV/0! |
| OP8 | HR4-R1M | 16985 | | #DIV/0! |
| OP9 | HR4-R5L | 18165 | | #DIV/0! |
| OP10 | HR5-T2 | 18775 | | #DIV/0! |
| OP11 | HR5-R2M | 18775 | | #DIV/0! |
| | | | | |
| | | | | |
| | | | | |

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



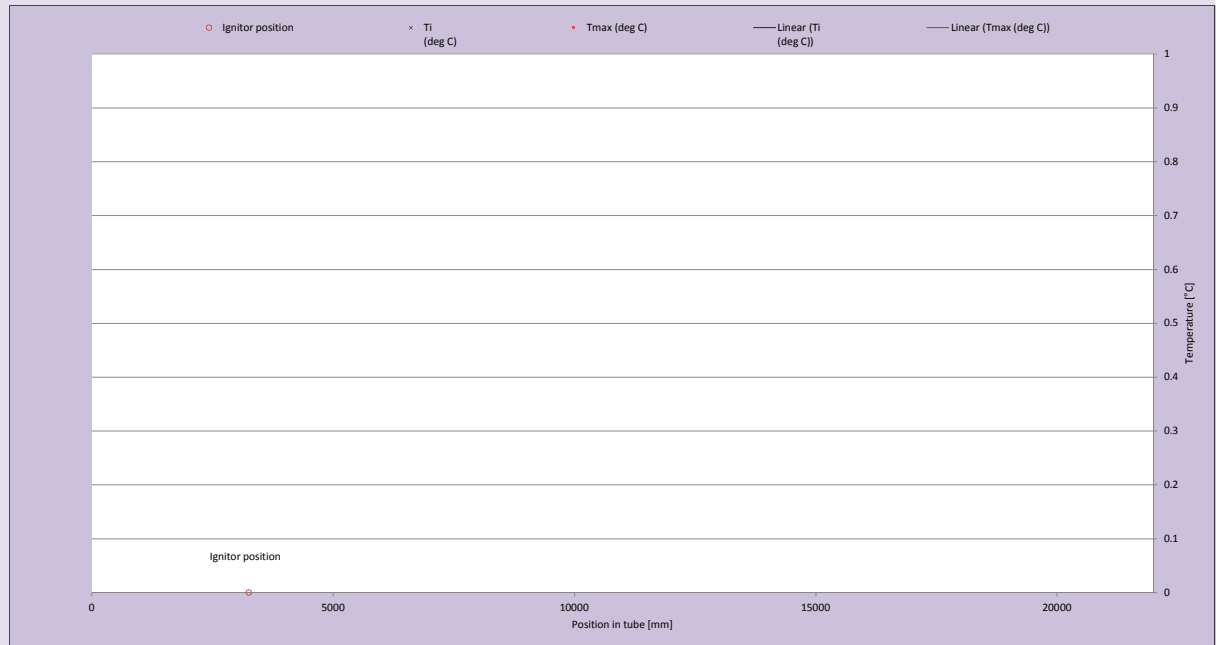
Location of igniter mm

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 | | | | |
| TC2 | CD2-R3 | 4258 | | | | |
| TC4 | CD3-R3 | 7258 | | | | |
| TC6 | CD4-R3 | 10258 | | #DIV/0! | | |
| TC8 | HR1-R2 | 13160 | | #DIV/0! | | |
| TC12 | CD3-T1 | 6258 | | | | |
| TC13 | CD3-L1 | 6258 | | | | |
| TC14 | CD3-B1 | 6258 | | | | |
| TC15 | CD3-R1 | 6258 | | | | |
| TC16 | HR2-R3M | 14140 | | | | |
| TC17 | HR2-R5L | 14745 | | | | |
| TC18 | HR2-R5U | 14745 | | | | |
| TC19 | HR3-L1M | 15140 | | | | |
| TC20 | HE2-R1L | 16090 | | | | |
| TC21 | HE2-R1U | 16090 | | | | |
| TC22 | HR5-R4M | 19375 | | | | |
| TC23 | HR6-R1M | 19985 | | | | |
| TC24 | HR6-R5L | 21165 | | | | |
| TC25 | HR6-R5U | 21165 | | | | |

surface thermocouples [not plotted]

| | | | | |
|-----|--------|-------|--|--|
| TC1 | CD1-T2 | 1508 | | |
| TC3 | CD2-T2 | 4508 | | |
| TC5 | CD3-T2 | 7508 | | |
| TC7 | CD4-T2 | 10508 | | |



| 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 |

