



ALTAIR ENGINEERING INSPECTIONS PTE LTD

8. **Project Name:** Periodic & Shutdown Inspections

Client: Singapore Refining Company (Chevron Company), Singapore

Project Year: 2013-Till Date

Description

- Altair is awarded 5-year contract to provide UT, PAUT, TOFD & 3D Laser Scanning services (Inservice, Project & upgrades).
- Inspection scope-Welds in Piping, Pressure Vessel, Towers, Columns, Exchangers, Header Boxes, Storage Tank, Structures & Corrosion Mapping of pipes & tanks shell plates in carbon steel, stainless steel, Duplex Stainless steel, Overlay Material & Welds, Socket welds etc
- Our Specialization is HIC, Wet H2S Cracking, HTHA, De-carburization & socket weld inspection. We have specific procedures for each of the examination.
- Technicians were qualified by Mockup exam conducted by **chevron CVX** for individual material & techniques.
- Onsite Inspection activities were witnessed by SRC representatives. Inspection data & report were randomly (especially in critical inspection) reviewed by **Chevron CVX, Australia**. We often won the appreciation to our work.



- Performed PAUT of in-service high temperature header box DSS welds periodic inspection to monitor the discontinuities reported at initial fabrication stage.
- Successfully detected & sized the fabrication stage discontinuities as reported earlier.
- Job Ref-D1908


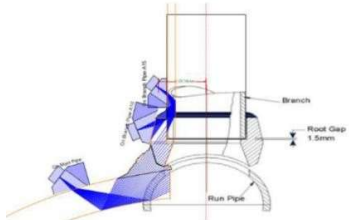


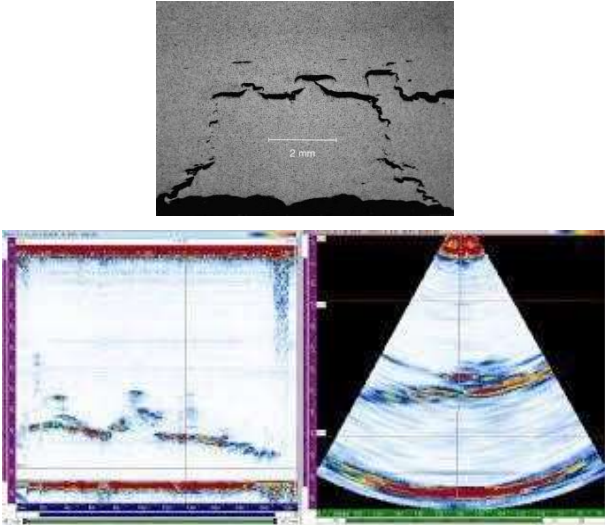


- Performed PAUT header box DSS welds at fabrication stage.
- Procedure & Technique developed with standard calibration & validation blocks.
- Inspection done for **Aztech Heat Exchangers, Singapore (SRC vendor)**
- Job Ref-D1920, D2111





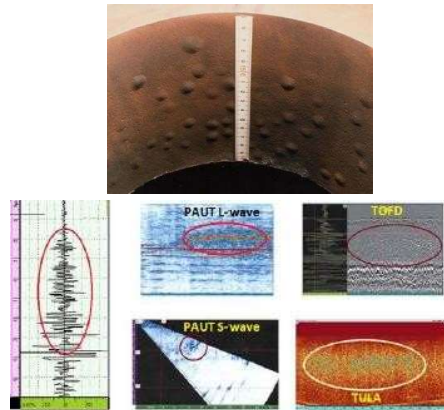
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<ul style="list-style-type: none"> Performed PAUT on various Nozzle welds in different orientation. Inspected, detected & located discontinuities successfully on various complex nozzle welds. Job Ref-D1679, D1912, D1931 	
<ul style="list-style-type: none"> Performed PAUT on suspected Crack detection on complex weld-o-let joints. Proposed valid technique for inspection approach. Job Ref-D1944 	
<ul style="list-style-type: none"> Performed Corrosion mapping on pipes & elbows. Utilized Flex-o-form scanner, DLA corrosion scan probes for corrosion mapping. Performed tank bottom plate corrosion mapping. Job Ref-D1691, D1904, D1918, D2020, D2020, D2125, D2128 	
<ul style="list-style-type: none"> Performed Wet H2S/SCC inspection on pressure vessels at hydrogen sulfide induced environment & damage. Procedure & Technique developed with standard calibration & validation blocks. Job Ref-D1940, D2131 	
<ul style="list-style-type: none"> Performed HIC inspection on pressure vessels hydrogen induced environment & damage. Procedure & Technique developed with standard calibration & validation blocks. Job Ref-D2113 	

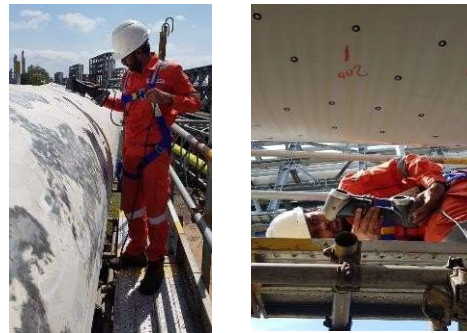


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- Performed **HTHA** inspection on reactors & pressure vessels prone to hydrogen induced environment & damage.
- Procedure & Technique developed with standard calibration & validation blocks.
- Data & results were analysed & reviewed by trained certified personnel for HTHA inspection.
- Inspection technique utilized advanced PA equipment capable of performing UT, PAUT, TOFD & TFM. Advanced probes like DMA,TULA.
- Job Ref-D1929, D1941



- Performed 3D Laser Scan on Piping & Pressure Vessels.
- Utilised Creaform 3D laser Scanner to measure the external corrosion of pipes & pressure vessel, Ovality & straightness of pipelines & to capture the damage pattern on components.
- Job Ref-D1679, D2001, D2026, D2034



Person Involved:

Procedure/Technique Sheet: Shaik Khaja Mohiuddin/Siraj Hameed Masroor/Mohsin

Technique Qualification: Ganesh/Martin/Meera/Aziz

Field Inspection: Ganesh/Martin/Meera/Aziz