

Case Study 007

Welding Quality Assurance Support for International Oilfield Redevelopment project

1 Background

The welding engineer of Chen Welding Integrity (CWI) Services was engaged by McDermott to provide welding quality assurance support for Total's Tyra Redevelopment Project. The welding quality assurance support was performed by the welding engineer with Certified International Welding Engineer qualification and international project experience. The welding engineer of CWI Services was seconded to McDermott's procurement quality department of Tyra Project for 13 months to provide the required support.

2 Scope of support

2.1 Overview

The scope of support under the welding quality assurance support included welding document review and technical advisory support to the project team. The technical advisory support included compliance advice for project specification and international codes, liaison and propose of solution to Total and vendor for resolving incompliance and technical issues. The scope of support also included provide guidance to the project quality team in resolving issues related to compliance of ISO 3834 requirements and develop an audit checklist as a reference and guideline for vendor audit.

2.2 Project requirements

The equipment and materials under vendor package for Tyra Redevelopment project are required to comply with Maersk's Oil technical specification (MOTS), pressure equipment directive (PED), McDermott technical specification and international codes. Therefore, it is the responsibility of the welding engineer to ensure documents be reviewed to meet the project requirements so that fabrication can be carried out in accordance with the approved documents to avoid product incompliance.

2.3 Welding document review support

2.3.1 Overview

The welding document review focused on assessing the compliance of vendor welding and material related documents in accordance with the requirements of the respective MOTS and international codes, PED and McDermott technical specification. Document review was also carried out to assess the practicality and feasibility of implementation for production based on the technical justifications of the welding engineer. The outcome of document review support was to provide comment specific to project requirements and practicality of fabrication implementation.

The reference documents used as references for document review, the scope of document and the scope of package covered by the welding engineer are given in the sections as below.

2.3.2 Reference documents

The MOTS specifications used in the welding quality assurance are including specification for welding, NDT, piping, pressure, structure and material selection. The international codes used are as follows:

- API

- ASME
- ASTM
- AWS
- ISO
- Norsok

2.3.3 Scope of document

The scope of document covered by the welding engineer in the scope of document review are as follows:

- Corrosion test procedures
- Ferrite measurement procedures
- Hardness test procedures
- Heat treatment procedures
- Pickling and passivation procedures
- Positive material identification procedures
- Post weld heat treatment procedures
- Welder qualification certificates
- Welding procedure specifications and procedure qualification records

2.3.4 Scope of package

The scope of package covered by the welding engineer in the scope of document review are as follows:

- Barred tee
- Blind
- Crane
- Ductwork and HVAC
- Electrical heater
- Fire fighting equipment
- Fire wall
- Fittings
- Flame arrestor
- Flare tip
- Hub and clamp
- Instrument e.g meters, analysers, flowmeter
- Life boat
- Pig launcher and receiver
- Pipe support
- Piping
- Plate and frame heat exchanger
- Pressure gauge spool
- Pressure vessel
- Printed circuit heat exchanger
- Process filter
- Pumps e.g positive displacement, centrifugal pumps
- Riser pipe
- Seawater filter
- Service lift
- Shell and tube heat exchanger
- Skid

- Strainer
- Structure
- Valve e.g SDBB, needle, gate, globe, ball, check, butterfly, control, safety relieve, isolation

2.4 Technical advisory support

Apart from the document review support, technical advisory support was also a major task for the welding engineer of CWI Services. Support related to provide technical advice for meeting the requirements of the project specifications and codes, propose solution to resolve incompliance and issues were also provided to the project team. The welding engineer was responsible to liaise with and propose of solution to the responsible Total engineer and vendor for resolving incompliance issues.

The technical advisory support was a critical task performed by the welding engineer as mutual acceptance between Total and McDermott or between McDermott and vendors are required to achieve to avoid incompliance or potential risk to compromise the quality of product. This task was delivered by the welding engineer via liaison and discussion supported by the strong technical justification, theoretical knowledge, practical experience and understanding of requirements of the welding engineer.

2.5 ISO 3834 compliance support

The specification of Tyra project requires all their contractors or vendors to compliance with the requirements of ISO 3834 or certified to ISO 3834. In order vendors meeting the requirements of ISO 3834, the welding engineer of CWI Services was provided the following support to the project quality team:

- Develop audit checklist as a reference or guideline for vendor audit.
- Review audit reports and assess compliance
- Propose solution to assist vendors to resolve incompliances

3 Outcomes

The welding quality assurance support provided by the welding engineer of CWI Services has assisted McDermott procurement quality team completed review of more than 1000 documents for more 100 packages within the review cycle period and resolved technical issues by meeting the requirements of MOTS, PED, McDermott technical specification and international codes.

The theoretical knowledge, practical experience and competency of the welding engineer were the primary contributing factors for the welding engineer to complete the support in quality and efficient manner without impacting the project progress.

The scope of support and work performed discussed earlier were summarised in the Infograph for Welding Document Review and Technical Advisory Support and Infograph ISO 3834 compliance support.

Contact us

Further information related to welding quality assurance and ISO 3834 compliance services, please visit www.cwi-services.com or contact us at funwee.chen@cwi-services.com

