Offshore Competency Standards are taking shape

BY ERIC JAS, ATTERIS; AND CHRIS HARVEY, CHRIS HARVEY CONSULTING

A group of key participants in the offshore pipeline industry have come together to identify the competencies needed for pipeline engineering and have begun to draft them into a set of competency standards.

In 2010 APIA published its Pipeline Engineer Competency Standards, which set out the definitions of competency across the breadth of pipeline engineering roles. It identified 220 pipeline engineering competencies. However, while these standards left a place marker for offshore pipeline engineering, they were focused on onshore pipelines, reflecting the bulk of APIA's membership. Since then, there has been increasing interest and involvement in APIA by the offshore industry, so much so that a group of key offshore participants have banded together to identify the competencies needed for offshore pipeline engineering and draft them into a set of competency standards for offshore pipeline engineers.

What is noticeable is that while in many respects the competencies required by offshore pipeline engineers parallel those for onshore, in many more respects they are different because numerous issues to be managed in the offshore setting differ greatly from those for onshore pipelines.

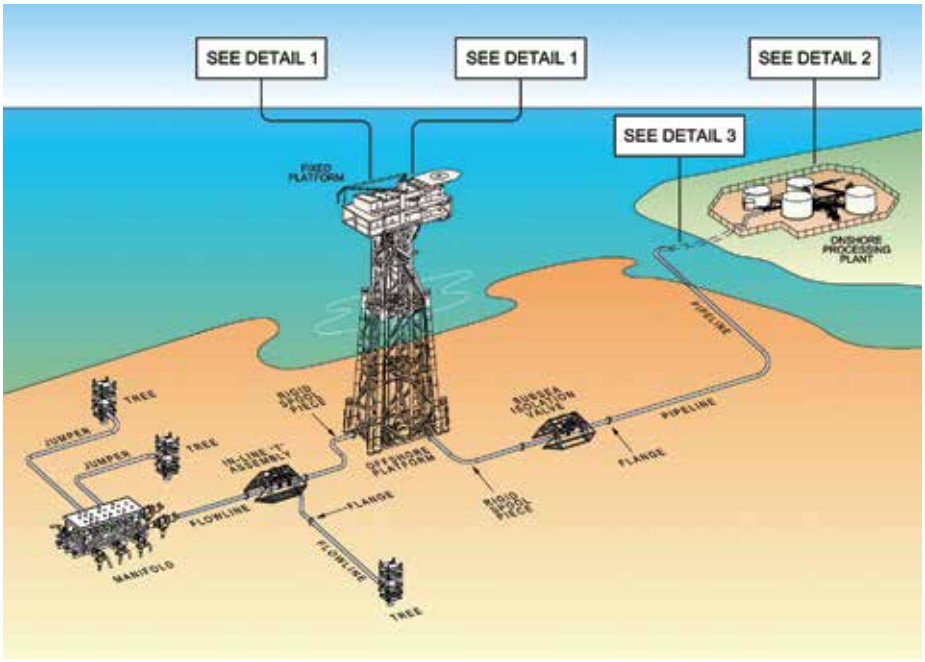
Developing an offshore pipeline engineer training program through APIA will assist in providing the necessary tools to pipeline operators, pipeline engineering consultants and pipeline installation contractors to assess, screen and develop their engineering professionals in the broadest sense.

The offshore pipeline engineer training program will serve the same objectives as those for the onshore pipeline engineers, including:

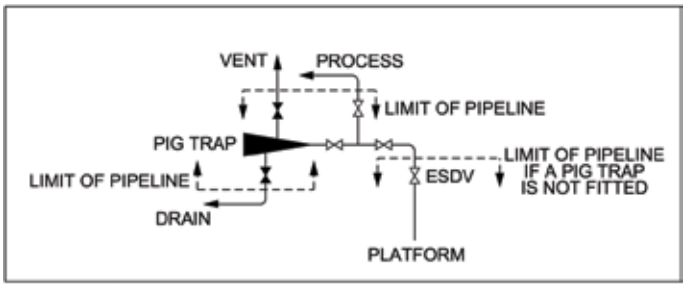
- Accelerating the rate at which engineers develop expertise;
- Providing a clear career path for engineers;
- Providing a new emphasis on the value and importance of pipeline engineers;
- Providing a vehicle to assist communication about pipeline engineering, and raise its profile;
- Helping engineers see themselves differently; i.e. recognise their importance to business and society;
- Placing engineers in a position to better manage their professional liabilities through high standards of competence and expertise; and,
- Increasing the recognition by society that pipelines are safe and reliable means of transporting hydrocarbon products.

The development of the offshore pipeline engineering competencies has followed the same outline as the one that was developed earlier for the onshore pipeline engineering competencies.

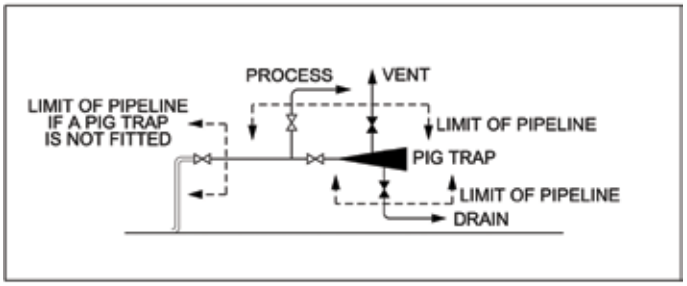
A small reference group of experienced pipeline engineers from a range of different backgrounds and employers, including several reputable Perth-based operators, have teamed up with APIA representatives Chris Harvey of Chris Harvey Consulting and Eric Jas and Allison Selman of Atteris to work on the development of the Offshore Pipeline Engineering Competency Standards. Dr Andrew Palmer, who is a Keppel Chair Professor at the University of Singapore, and Dr Roger King of Corrosion Services, Manchester, UK, are both world-renowned authorities in the field of marine pipelines and have offered their expertise to assist in reviewing the competencies. Recently, several pipeline consultants in Australia have put their hand up to assist in the development and review process. »



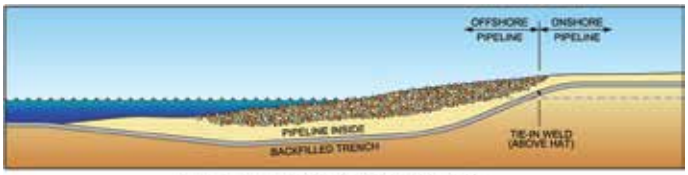
Field development schematic (fixed platform).



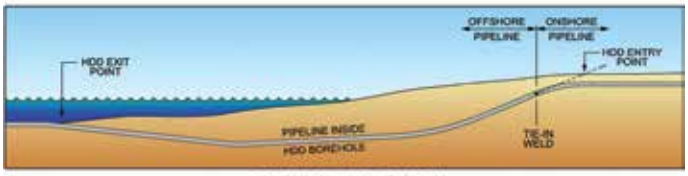
DETAIL 1



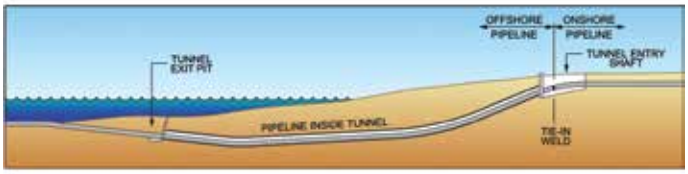
DETAIL 2



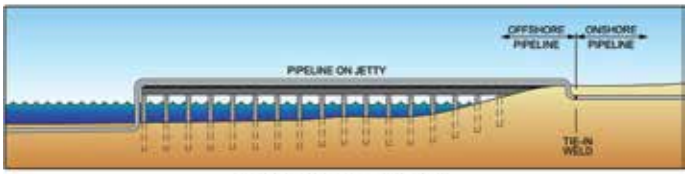
DETAIL 3a - OPEN CUT & COVER DESIGN



DETAIL 3b - HDD DESIGN



DETAIL 3c - TUNNEL DESIGN



DETAIL 3d - JETTY DESIGN

GEN-MS-0014.003 A 07.03.13

«

Battery limits

The following battery limits have been agreed:

Onshore:

» At the tie-in weld with the onshore pipeline, which is typically above the high water mark, where the sandy beach meets dune vegetation or, in the case of a coastal cliff, inland from the cliff face in respect of the pipeline vertical alignment profile (for conventional open-cut and cover shore crossing design). In the case of a horizontally directionally drilled (HDD) shore crossing or tunnel, the onshore battery limit is at the onshore tie-in weld near the HDD/tunnel onshore extremity.

Offshore:

» At fixed platforms, up to and including the pig launcher/receiver;
» At floating facilities, up to the riser hang-off point; and,
» At manifolds/trees, up to the manifold/tree.

Inclusions:

» All rigid pipe (carbon steel, duplex steel, alloys);
» All flexible pipe;
» Bends, mechanical connectors (flanges and the like), in-line tees;
» Fixed (rigid) and flexible risers, including steel catenary risers (SCRs), and jumpers;
» Tie-in spools; and,
» Umbilicals and power cables.

Exclusions:

» Onshore pipelines;
» Platforms, floating facilities; and,
» Subsea pipeline end manifolds, subsea trees, subsea manifolds/skids, subsea valves (this is categorised as subsea engineering).

Competency areas

The development covers the following main competency areas of offshore pipeline engineering:

» General engineering;
» Industry background;
» Flow assurance/process engineering;
» Corrosion control and materials engineering;
» Safety management and risk assessment;
» Commercial aspects;
» Environment and heritage;
» Pipeline corridor management;
» Design of offshore pipelines;
» Design of pipeline related structures;
» Shore approach design;
» Design of risers (rigid, flexible, SCRs) and tie-in spools;
» Seabed data acquisition;
» Metocean data definition;
» Construction engineering and management;
» Offshore pipeline project management;
» Welding;
» Hydrotest, commissioning and preparation for operation;
» Asset integrity management and pipeline operations; and,
» Safety case.

A total of just over 200 competencies have been identified, of which 40 have been written to date, with the target of completing the writing by the end of 2014. They are being classified into a competency structure consisting of three dimensions:

1. Level – Core, Elective, Specialist;
2. Stream – General, Design, Construction, Operations (including maintenance and decommissioning); and,
3. Competency area.

The plan is to have the competencies reviewed by a wider industry group, including operators, consultants, contractors and regulators, to gather valuable feedback.

As with the onshore pipeline competency standards, the offshore competency »

> A total of just over 200 competencies have been identified, of which 40 have been written to date, with the target of completing the writing by the end of 2014.

« standards are designed to be a flexible and effective tool for employers of pipeline engineers, pipeline engineers themselves, training organisations and APIA itself. There are multiple applications for the Offshore Pipeline Engineering Competency Standards including:

- Determining if a pipeline engineer is competent for a particular role or activity;
- Improving clarity of job descriptions;
- Competency gap analysis – at industry, company, department and individual level;
- Recognition of current skills and knowledge;
- Recruitment;
- Creating pipeline engineer development plans;
- Development of pipeline engineer training programs; and,
- Personal career planning.

The standards will be available to all APIA members. While they will be applicable to the Australian offshore regulatory and physical conditions, they will also be compatible to be expanded into the global market, placing Australia in a leading role in this regard.

The Australian pipeline industry has a very good reputation worldwide. It is known to have a vast network of highly reliable, high-pressure, long-distance transmission pipelines onshore. Australia is also highly regarded as a centre of excellence in the field of offshore geotechnics in support of, amongst others, offshore pipeline design. Australia's contribution to improving offshore pipeline design codes, used globally, in particular in relation to pipeline hydrodynamic stability design, is notable.

Offshore/onshore interface

To continue to operate at a high standard, Australia must formalise the competency requirements in a system, which can be used nationally in both onshore as well as offshore pipeline industries. We must also, in this regard, close the gap between onshore and offshore, in particular where both industries sometimes meet, which is at the shoreline. This project is still in its early stages, and will ultimately require involvement from a much wider industry audience, including contractors, consultants, operators and regulators. The objective from APIA's perspective is the continued safety and longevity of the nation's vital hydrocarbon pipeline networks onshore as well as offshore. P