

OGP Materials Standards Workshop

7th – 8th February 2007
London

Attendees:

Richard Carroll	BG
Andrew Leonard	BP
Alain Loppinent	CEN
Richard Thompson	Chevron
Desmond Tiong	Chevron
Tiziana Cheldi	ENI
Michael Surkein	ExxonMobil
Alf Reidar Johansen	Hydro
Ragnar Mollan (Chair)	Hydro
Per-Arne Rostadsand	Hydro
Alexandre Meirelles Pope	Petrobras
Milton Quintanilha dos Santos	Petrobras
Soliman Younes Gajam	Qatar Petroleum
Mohammed A. Al-Anezi	Saudi Aramco
Zuhair M. Al Qahtani	Saudi Aramco
Iba F. Al-Abel	Saudi Aramco
Maarten Simon Thomas	Shell
Ken Welsh	Shell
Stein Olsen	Statoil
Thierry Cassagne	Total
Ola Farstad	VMI, Consultant to Hydro
Don Smith	OGP

Apologies

Mike A Swidzinski	ConocoPhillips
Peter A Sandy	Marathon Oil

1. Introduction

Alf Reidar Johansen of Hydro and Chairman of the OGP Standards Committee welcomed everyone to the meeting. He noted that the objectives of the workshop were (Ref: Attachment 1):

- To arrange for global networking of materials specialists
- To evaluate the need for future (international) materials standards
- To seek support for new work proposal(s) for the development of a new international standard on Materials Selection or other subjects as agreed
- To discuss ways to continue this networking effort

2. Introduction to OGP

Don Smith gave an overview of OGP (Ref Attachment 2). He noted that OGP provided the focal point for its member companies to pull together best practices in areas including HS&E, Standards and Offshore Structures.

ARJ gave an overview of the work of the OGP standards committee (Ref: Attachment 3).

He noted some of the benefits associated with international standardisation:

- To facilitate global trade
- To create common understanding
- To accelerate product development and delivery
- Global competition will reduce costs
- ISO offers a global arena for standards work and global experts networking possibilities
- 'Fair' directives for work
- Open meetings, voluntary participation
- Transfer of international experience
- Maintain best practice for improved solutions
- Voluntary use of ISO standards
- Reduce need for company specifications
- May support national regulations

He noted that the OGP position on standards included:

- promotion of the development and use of ISO and IEC standards
- development of standards should be based on a consensus of need
- 'users' should be represented on standards workgroups
- Duplication of effort should be avoided
- Standards should be simple and fit for purpose
- International standards should be used without modification wherever possible
- Company specification should be minimised and written as functional specifications wherever possible

Much of the industry's international standards activities were progressed through ISO TC67, however it was recognised that there were many other ISO Technical Committees which are of relevance to the industry.

ARJ informed the meeting that through ISO TC 67 the industry has published 143 standards. He noted that API had adopted 49 of these standards and CEN 102 of them. The package of globally relevant and accepted standards is growing.

The Standards Committee had undertaken an exercise to identify what new international standards should be progressed by the industry. One of the high level items identified was *Materials Selection*.

ARJ made reference to the report he had been circulated prior to the meeting that gave an overview of Material related standards activities (Ref: Attachment 11). The report listed existing documents and activities in this area. He noted that this was a good opportunity for the Materials experts to push forward its own international standards programme. ARJ sought input from the group on the report he had circulated (Ref: Day 2 for further discussion).

The group discussed how well they were represented on the appropriate materials groups, noting that there may be value in improving the level of engagement with certain groups.

ARJ handed over the chair of the meeting to Ragnar Mollan.

3. Selected Operating Company Presentations

3.1 Hydro Presentation

Ragnar Mollan presented an overview of Hydro and the materials related standards activities within the organisation (Ref: Attachment 4). He noted that Hydro's strategy included the active contribution to the development, maintenance and use of a relevant set of international standards.

He noted that Hydro had few internal material related specifications as they gave priority to standardisation work within Norsok, DNV and ISO. The importance of giving contractors clear information of what the company's requirements were was recognised.

RM reviewed Hydro's experience with respects to the development of the Norsok Materials Standards, 15 of which exist. The intent was to move the Norsok documents (as far as appropriate) into an international arena. An area where good progress had been made was associated with the design/material requirements associated with subsea equipment. The resulting (draft) documents could be accessed via:

http://committees.api.org/standards/isotc67/docs/sc4_ndocs/2006/n360Form04.doc

http://committees.api.org/standards/isotc67/docs/sc4_ndocs/2006/n360docs.zip

http://committees.api.org/standards/isotc67/docs/sc4_ndocs/2006/n360ballotform.rtf

RM agreed to circulate an e-mail providing further information on these documents.

ACTION: RAGNAR MOLLAN

Some learning points identified through the Norsok initiative were:

- Standards should be used without modification wherever possible
- Company specifications should be minimised and written as functional requirements
- Most of the key requirements should be covered within a standard and as a minimum the standards should have options that are 'informative' and that can easily be made 'normative' by the user

Further it was noted that it was important to provide individuals who write ISO documents with training on the ISO requirements.

The problems associated with the use of standards with respects to specific applications was discussed.

The definition of terms used in material selection was recognised as an important issue for the group to discuss.

In summary, RM stated that:

- Hydro would like to work on the development of ISO standards that could cover their needs in a similar way as the Norsok standards have done in Norway
- Even though the Norwegian community is very satisfied with the Norsok standards, better documents can be developed by bringing in more experience, and raising the standards to an ISO level.

Hydro first priority was to develop a new standard for Material Selection, based on Norsok M-001 and other relevant documents.

Other areas where Hydro felt were candidates for international standardisation were:

- Piping
- Structural Steel

- Qualification of non-metallic sealing materials
- Fabrication and installation of GRP piping

3.2 Petrobras Presentation

Milton Quintanilha dos Santos gave an overview of the Petrobras organisation (Ref: Attachment 5) and how it made use of project specific requirements, company standards and external standards.

He noted that Petrobras had a total of 1179 standards in house. He presented examples of the materials standards Petrobras used related to various equipment types. Reference was made to various API, ASME, ISO, NACE and DNV documents which were referred to within Petrobras' internal documents.

Petrobras presented a proposal for future harmonisation and/or international standards work:

1. Companies should provide their in-house company standards to OGP so all organisation can share information.
2. Transform, as a priority, the following standards into ISO:
 - API Std 650: Atm tanks
 - API Std 620: LP Tanks
 - ANSI B31.3: Piping refinery
 - ANSI B31.3: Liquids pipelines
 - ANSI B31.8: Gas pipelines
 - API RP 14E (Already an ISO standard)
 - API PR 1111: Pipelines
 - DNV OS-F-101 Submarine pipelines
 - API RP 2A WSD: Offshore jacket structures (Already a draft ISO standard)
 - API RP 2A (Already an ISO Standard)
 - AWS D1.1 Structural welding code
3. Develop an ISO standard to recognise the existing standards for Boilers and Pressure Vessels
4. Re-establish ISO TC67 WG8 (Materials, Corrosion Control, Welding and Non Destructive Examination)

It was noted that the draft structural ISO standards could be accessed via:

<http://www.galbraithconsulting.co.uk/iso/index.htm>

3.3 BG Group

Richard Carroll gave a presentation on behalf of BG group (Ref: Attachment 6). He noted their main focus was on gas. In the mid-1990s the organisation had moved away from company standards to use externally available standards.

BG had developed seven material related company specifications; this number being limited by the manpower availability within the organisation. The specifications made reference to existing standards (where available) and they placed significant emphasis on contractors to deliver solutions.

In the future BG would be reviewing their in-house standards and technical documents.

In conclusion RC noted that:

- Optimum material selection and corrosion management practice was important as correct design practice to ensure safety and asset integrity
- Material selection standard had missing links related to chain coatings, cathodic protection covered
- Norsok M-001 is a very good document but is regional - what about other regions?
- Where ISO standards exists, BG will use them as a base documents
- Always foresee need for BG standard to capture lessons learnt – quick and simple reactive solution

3.4 Saudi Aramco

Zuhair M. Al Qahtani gave an overview of Saudi Aramco (Ref: Attachment 7). He noted that the organisation had 1183 mandatory standards and ~1000 related documents, with the engineering standards are revised no less frequently than every 5 years.

Mohammed Al-Anezi presented further details on the Materials & Corrosion Control standards within Saudi Aramco (Ref: Attachment 8). His focus was on piping systems (pipes and pipelines) which represent 60 percent of their purchases.

The Saudi Aramco requirements with respects to piping systems were:

- Develop acceptable international purchase specifications for pipe commodity acceptable to all OGP
- Ensure that all commodity suppliers comply with the new purchase specifications
- Establish pipe plant survey procedures for each commodity
- Develop engineering pipe standards to meet all OGP requirements
- Identify resources and mechanisms to maintain the new OGP pipe standards
- Establish a mechanism to approve pipe mills and 3rd party HIC testing labs

MAA provided details associated with each of these areas (Ref: Attachment 8 for details).

He noted that there was a need to improve the standards associated with sour service.

3.5 Chevron

Richard Thompson gave an overview of Chevron position on standards (Ref: Attachment 9). He reviewed the background to Chevron's efforts in this area. They had an ongoing programme of specification development.

Issues associated with material selection in Chevron:

- Subsea materials are mostly standardised
- Topsides and onshore production facilities are generally not;
 - o Material selection often based on engineering judgement and experience
 - o Some guidelines exist and are being better developed

RT felt that any materials selection standards should describe the process for materials selection and not the detailed limits (avoid philosophy).

3.6 Total Presentation

Thierry Cassagne presented an overview of Total's position on material selection (Ref: Attachment 10). He noted that at present, there was no single 'material selection specification' in Total.

Some important issues associated with the use of ISO materials standards:

- Widespread knowledge and availability of the ISO Standard document
- Trained people to make a proper use of it
- To be able to build on the ISO document
- The ISO standard must allow us to make our own choice

The issues such a document should contain are presented in the attachment.

Total supported using the NORSOK document as a basis for a material selection document.

Total were willing to share their in-house specification with others.

3.7 BP

Andrew Leonard presented the BP position on material selection standards. He noted that the BP system was very similar to the system used by Chevron.

BP was currently in the process of developing 2 high level material selection documents.

BP would support the development of ISO related materials documents, however it was likely to maintain its own in-house documents for the foreseeable future.

3.8 ENI

Tiziana Cheldi gave a view on materials standards from ENI. She noted that the organisation made use of a range of internal and external standards.

- Selection and testing of corrosion inhibitors
- Fittings and flanges
- NDT examination
- High pressure systems

She noted the importance of reviewing API 14E (piping on offshore installations) and making it an ISO standard.

3.9 ExxonMobil

Michael Surkein gave an overview of the organisation's approach to material selection. He noted particular problems related to material selection particularly with respects to training suppliers.

He supported the need to develop ISO materials selection standards and indicated that ExxonMobil may be able to share in-house specifications to support this effort.

3.10 Shell

Maarten Simon Thomas noted that developing an ISO material selection standard was fully supported by Shell. They would be willing to share relevant in-house specifications with other organisations.

DAY 2

Ragar Mollan welcomed everyone to the second day of the workshop.

The draft report circulated prior to the meeting describing key inputs related to the Materials Selection arena was reviewed (Ref: Attachment 11). ARJ noted that he would modify the report based on the presentations and information received during the previous day. He invited members of the group to submit further comments on the report (by 1st March).

ACTION: All

It was agreed that companies should provide (to OGP) their Materials selection documents (viewed as relevant) for the group's use. Documents should cover all material types and related protection. OGP would place any documents they received on the website for access by the group.

ACTION: All/OGP

It was felt that OGP should develop a short/medium/long term strategy with respects to the development of materials standards. Iba Al-Adel agreed to write a discussion paper.

ACTION: Iba Al-Adel

4. New Work Item Proposal

RM summarised the New Work Item proposal (NWIP) to develop an ISO standard that covers Materials selection (Ref: Attachments 12 and 13). The base document would be NORSOK M-001, Rev 4, EEMUA 194 and other relevant documents and company specifications such as Shell DEP on material selection. Work will be proposed to and conducted through ISO TC 67 (via a re-established WG8).

It was noted that any future initiative would need to take account of material selection criteria contained within existing ISO documents.

The meeting discussed what type of document should be produced and in particular what the objective of the document should be. It was felt that the document should put forward in sufficient detail that it, together with the design basis would allow a contractor to meet the company's expectation for materials selection.

It was noted that solely the adoption of NORSOK M-001 would go most of the way towards meeting companies' needs.

It was agreed that whatever standard was produced, it should not restrict the ability of companies to choose alternative materials that meet the desired goal.

ARJ noted that it would be up to the ISO workgroup to agree on the contents of the ISO document. The workgroup would likely be composed of users, suppliers and regulators. This meeting should focus its efforts in putting together a good New Work Item Proposal for ISO/TC67 ballot. OGP is a liaison category A member to ISO/TC67 with a possibility to propose new work and it was agreed that was the quickest way forward.

ARJ suggested that the proposed ISO standard should be developed with support from a technical editor funded through an OGP JIP (expected to cost in the region of £5k per funding organisation). This would greatly speed up its production. There was general support for this proposal.

ARJ noted ISO was in favour of twin working arrangements for secretariat support to ISO work and hence Petrobras had been approached to check if Brasil would be prepared to take on the secretariat services for the proposed new ISO/TC67 Work Group 8. ABNT has confirmed their interest such an arrangement in this work.

Once the NWIP was issued, there would be a 3 months ISO voting period during which national standard bodies would be invited to provide experts to participate in the workgroup. Hence a workgroup meeting in June 07 should be achievable. It was agreed for OGP to forward the NWIP quickly to ISO/TC67 to aim for the 1st meeting of the workgroup to take place on 26/27th June 2007, in Houston.

The draft NWI was modified as agreed and would be sent to the ISO TC67 secretariat (and copied to the group) following the meeting.

ACTION: ARJ/DS

Those companies wishing to offer company specification for input to the workgroup and NWI should identify such documents within the next 2 weeks.

ACTION: All

Post meeting note: It is possible to provide technical comments to the base document, i.e. NOSOK M-001, with the NWIP vote from each country. These comments will be taken into consideration at the first work group meeting.

5. Proposal Document

A document summarising the proposals for further work was presented, reviewed and discussed in detail and modified to capture the consensus of the meeting. (Ref: Attachment 14).

NB: Please note the actions contained in the document (copied below).

6. Closing Remarks

DS noted that the minutes and associated document from the workshop would be circulated to all attendees following the meeting.

ACTION: OGP

The workshop attendees supported the establishment of a Materials group within OGP. It was agreed that OGP should establish such a group, the website for which would contain the materials selection documents provided by member companies. Access to this area of the website would be limited to members of the group and nominated company individuals.

ACTION: OGP

RM and ARJ thanked everyone for their participation in the workshop.

Attachments are also available at the OGP Materials group website

Attachment 14

**OGP Material Standards Workshop 2007-02-07 & 08
Proposed Materials Standards or other related work items:**

Proposal in meeting 2007-02-07	Comments & actions	Proposed & support by
<p>(1a) Develop ISO Material Selection standards based on NORSOK M-001, Shell DEP, EEMUA 194 and company specifications and including coatings and cathodic protection issues</p> <p><i>(1b) Reestablish ISO TC 67/WG8 (Materials, Corrosion Control, Welding and Non-Destructive Examination) to make a home for it in ISO. Ref draft NWIP presented before the meeting.</i></p>	<p>ACTION: OGP to propose to ISO/TC67 a NWIP for an ISO standard on Material selection, including the reestablishment of ISO/TC67/WG8 with Brazil holding the secretariat.</p> <p>ACTION: Launch an OGP JIP with e.g. GBP 5.000 tickets to cover the cost of contracting a materials expert to assist convenor and secretariat in putting together a draft standard and further supporting the WG8 with editing text of this standard during its development process.</p>	<p>ALL</p>
<p>(2a) Piping Materials – Options to ASME, ASTM and other frequently used material standards... (NORSOK M-601, M-630)</p> <p>(2b)(7f) Make ISO of API RP 14E</p> <p>(2c) Convert API 14E to an ISO Standard.</p> <p>(2d)(7c) Make ISO standard based on ANSI B31.3 Process piping</p>	<p>ISO 13703 based on API RP 14E includes additions to ANSI B31.3 for offshore piping systems.</p> <p>ACTION: Hydro, Petrobras, ENI to draft a proposal for revision of ISO 13703 by 1st May 2007 to be further discussed and defined by this OGP group.</p>	<p>Hydro Petrobras Eni</p>
<p>(3) Structural Steel Requirements to critical components made from forgings (NORSOK M-122) and castings (NORSOK M-123)</p>	<p>Support to progress.</p> <p>ACTION: All to consider this further and advise OGP of candidate to progress these items (by 8th March).</p>	<p>Hydro</p>
<p>(4) Qualification of non-metallic sealing materials (NORSOK M-710. MERL (Materials Engineering and Research Lab - Rod Martin) proposal to run JIP to make ISO standard.)</p>	<p>Co-ordinate with work ongoing in ISO/TC67/WG7.</p> <p>ACTION: DS to circulate the proposal for comment by group members.</p>	<p>Hydro</p>
<p><i>(5) Fabrication and installation of GRP piping. Revise ISO 14692 based on NORSOK M-622 and other relevant materials.</i></p> <p>Note: ISO 14692 is due for 5-year ISO systematic review in 2007 to maintain, revise or withdraw.</p>	<p>Supported.</p> <p>ACTION: OGP to make a request to ISO for revision of this standard (rather than maintain as is) in its current working place in ISO/TC67/SC6/WG5 with Simon Frost, UK, as the convenor.</p>	<p>Hydro</p>
<p>(6) Companies should provide their in-house company standards to OGP for uploading on a website with OGP access only, for the</p>	<p>Primarily related to material selection and corrosion protection.</p>	<p>Petrobras All participants</p>

purpose of information exchange within OGP member companies.	ACTION: OGP to establish password protected website for this purpose (restricted to this group and nominated individuals).	agreed
(7) Transform, as a priority, the following standards into ISO:		Petrobras
(7a) API Std 650 Welded Steel Tanks for Oil Storage.	Proposal also by Shell in other relations. No action in this group.	Petrobras
(7b) API Std 620 Design and Construction of Large, Welded, Low-pressure Storage Tanks	No action.	Petrobras
(7d) ANSI B31.4 Liquid pipelines (7e) ANSI B31.8 Gas pipelines (7g) DNV OS-F101 Submarine pipelines	<i>ISO 13623 Pipeline transportation systems and the other ISO standards in this SC covers the same subjects as standards in left column. ISO 13623 is under revision with DIS planned Nov 07.</i> ACTION: OGP to check WG participation with a view to assure proper material coverage and report back. DNV OS-F101 Material and welding part under revision based on ISO 3183, 13847, 15589, 15590, etc. Hydro and Statoil is involved in the revision work.	Petrobras
(7g) API RP 1111 Design, Construction, Operation, and Maintenance of Off-shore Hydrocarbon Pipeline and Risers	<i>ISO 13628-12 Dynamic production risers (including catenary risers) is in development in joint API/ISO task group, chaired by Paul Stanton, Technip, Houston.</i> ACTION: OGP to check WG participation with a view to assure proper material coverage and report back.	Petrobras
(7h) API RP 2A WSD Planning, Designing and Constructing Fixed Offshore Platforms—Working Stress Design. (7i) API RP 2A LRFD. Planning, Designing and Constructing Fixed Offshore Platforms—Load and Resistance Factor Design. (7j) AWS D1.1 Structural welding code.	ISO 19902 for Fixed Offshore steel structures basically cover the subjects of the standards in left column. ISO 19902 will be issued as a FDIS for final ballot in a couple of months. Recommend all members to cast a positive ballot. The material and fabrication part of this standard may be split out as a separate standard in next revision.	Petrobras
(8) <i>Develop an ISO standard to recognise the existing standards for Boilers and Pressure Vessels</i>	We have several globally relevant and adequate standards like:	Petrobras

<p><i>Post meeting note: ISO/TC11 has the following standard under revision ISO/FDIS 16528-1 Boilers and pressure vessels -- Part 1: Performance requirements</i></p>	<ul style="list-style-type: none"> • ASME VIII, Div 1&2, • EN 13445, • PD (ex BS) 5500. 	
<p>(9) Develop acceptable international purchase specifications for pipe commodity acceptable to all OGP. Ensure that all commodity suppliers comply with the new purchase specifications. Identify resources and mechanisms to maintain the new OGP pipe standards.</p>	<p><i>ISO 3183 has just been revised, is due for publication 2007-02-15 and will be adopted as the next revision of API Spec 5L. Ref also ISO 15156. NORSOK M-630 "Materials for piping systems" is under revision and will be considered in relation to proposal (2a).</i></p> <p>ACTION: Saudi Aramco to provide purchase specs for consideration by the group.</p>	<p>Saudi Aramco</p>
<p>(10) Establish pipe plant survey procedures for each commodity</p>	<p>ACTION: Saudi Aramco to provide checklist for consideration by the group</p>	<p>Saudi Aramco</p>
<p>(11) Develop engineering pipe standards to meet all OGP requirements</p>	<p>Taken care of via other actions.</p>	<p>Saudi Aramco</p>
<p>(12) Establish a mechanism to approve pipe mills and 3rd party HIC testing labs</p>	<p>Informal network.</p>	<p>Saudi Aramco</p>
<p>(13) Check involvement of E&P organisations (users) in relevant international standards groups where Materials issues are being discussed.</p>	<p>Sharing of information within group.</p> <p>ACTION: Members to identify gaps.</p>	
<p>(14) <i>Definition of material related terms to use in international standards. Collate table of definitions from a selected number of standards and seek to harmonize these.</i></p>	<p>ACTION: OGP to develop tabulation of definitions from the following selected standards:</p> <ul style="list-style-type: none"> • API 5L / ISO 3183 • API 6A / ISO 10423 • NACE MR 0175/ ISO 15156 • ISO 15589 CP pipelines • ISO 15590 Fittings • EFC 16/17 	
<p>(15) Do we need a means of discussion materials related issues within the industry/OGP?</p>	<p><i>Agreed to maintain the representatives of this meeting as a new OGP Material Standards Group, reporting to OGP Standards Committee (tbc by OGP).</i></p> <p>ACTION: ARJ to consider the objectives for this group.</p>	<p>All</p>
<p>(16) Should we develop a long/short term strategy related to materials selection?</p>	<p>ACTION: Saudi Aramco to draft a note.</p>	