N 547 Draft report of Houston meeting Nov 2011

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Date: 23 January 2012

Secretariat of ISO/TC 67/SC7
Offshore Structures for Petroleum and Natural Gas Industries

To: ISO/TC 67/SC7 P- and O- Member Bodies
For forwarding to their National Delegates

and to

ISO/TC 67 Secretariat
ISO Central Secretariat

Secretariat report of the thirty first meeting of ISO/TC 67/SC7 'Offshore structures for the petroleum and natural gas industries' held at the Chevron Conference Room, 1600 Smith Street, Houston, Texas, USA on the 2nd & 3rd November 2011

Secretary's note: I have included hyperlinks to documents presented at the meeting in this report. These will only work for members who have access to ISO Livelink and know their password. They will need to login to see the documents.

1 Opening

The Chairman thanked Chevron for hosting this meeting of ISO/TC 67/SC 7 (31st) and welcomed members to the meeting.

On behalf of the hosts Dave Wisch and Moises Abraham of Chevron welcomed the members to Houston.

The Chairman announced that there would be a dinner in the evening (2 Nov 2011) sponsored by ExxonMobil. He thanked Ward Turner of ExxonMobil for organising the dinner.

Roland Goodman of API welcomed delegates to the meeting and discussed current API focus with regard to standards. He commented that API is very busy preparing new standards for the new regulatory framework.

The Chairman thanked API SC 2 leadership for their work on harmonizing API and ISO offshore standards.
2 Roll call of delegates

Each delegate introduced themselves and described their area of expertise.

A list of delegates attending the meeting is given in Annex A.

The attendance sheet is in N 546.

3 Adoption of agenda

The agenda (N 503) was adopted with no modifications.

4 Appointment of the resolutions drafting panel

The following Members were appointed as the Resolutions Drafting Panel:

Andrea Mangiavacchi (US for the English language)

Michel Birades (France for the French language).

5 REPORT FROM THE SECRETARY (N 512)

The Secretary reported that since the last meeting in Singapore on 12th - 13th January 2011, there have been the following achievements:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
<th>Information/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO/NP 19901-1</td>
<td>Petroleum and natural gas industries -- Specific requirements for offshore structures -- Part 1: Metocean design and operating considerations</td>
<td>Registered with ISO as an NP on 2011-10-23. To progress to CD.</td>
</tr>
<tr>
<td>ISO 19902:2007 (Ed. 1)</td>
<td>Petroleum and natural gas industries -- Fixed steel offshore structures</td>
<td>Systematic review closed 2011-03-17. Amendment is to be submitted to ISO. NWIP required for amendment.</td>
</tr>
<tr>
<td>ISO 19905-1</td>
<td>Petroleum and natural gas industries -- Site-specific assessment of mobile offshore units -- Part 1: Jack-ups</td>
<td>Passed FDIS on 2011-09-09 (see N 490), could be published soon. However, some technical comments were made at FDIS and a second FDIS may be required.</td>
</tr>
</tbody>
</table>

In addition a number of corrigenda have been put into the ISO process:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
<th>Information/Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 19901-6:2009/CD Cor 1</td>
<td>Petroleum and natural gas industries -- Specific requirements for offshore structures -- Part 6: Marine operations -- Technical Corrigendum 1</td>
<td>Sent to ISO, should be published by the end of 2011</td>
</tr>
</tbody>
</table>

The Secretary reported that there are a number of items for action at the plenary:

1. Confirm Moises Abraham as convenor of WG 3
2. Confirm Paul Erb as convenor of WG 5
3. Confirm Dan Masterson convenor of WG 8
4. Confirm Jean Louis Colliat convenor of WG 10
5. Agree NWIP on the amendment of ISO 19902:2007

6. Agree NWIP on the revision of ISO 19901-2

7. Agree how to progress ISO 19905-1

8. Agree NWIP on ISO 19905-3

9. Agree NWIP on ISO 19901-8

10. Agree NWIP on the revision of ISO 19901-4

The Chairman thanked to BSI for continuing to proving the Secretariat for ISO/TC 67/SC 7 and formerly welcomed the new Secretary Dr Charles Whitlock.

Resolution 310

Resolution 310 was agreed.

5.1 Members of ISO/TC 67/SC 7

It was reported that there are 23 “P” Participating members of ISO/TC 67/SC 7 as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Argentina</td>
<td>IRAM</td>
</tr>
<tr>
<td>2. Brazil</td>
<td>ABNT</td>
</tr>
<tr>
<td>3. Canada</td>
<td>SCC</td>
</tr>
<tr>
<td>4. China</td>
<td>SAC</td>
</tr>
<tr>
<td>5. Denmark</td>
<td>DS</td>
</tr>
<tr>
<td>6. Finland</td>
<td>SFS</td>
</tr>
<tr>
<td>7. France</td>
<td>AFNOR</td>
</tr>
<tr>
<td>8. Indonesia</td>
<td>BSN</td>
</tr>
<tr>
<td>9. Iran</td>
<td>ISIRI</td>
</tr>
<tr>
<td>10. Italy</td>
<td>UNI</td>
</tr>
<tr>
<td>11. Japan</td>
<td>JISC</td>
</tr>
<tr>
<td>12. Kazakhstan</td>
<td>KAZMEMST</td>
</tr>
<tr>
<td>13. Korea, Republic of</td>
<td>KATS</td>
</tr>
<tr>
<td>14. Malaysia</td>
<td>DSM</td>
</tr>
<tr>
<td>15. Netherlands</td>
<td>NEN</td>
</tr>
<tr>
<td>16. Norway</td>
<td>SN</td>
</tr>
<tr>
<td>17. Qatar</td>
<td>QS</td>
</tr>
<tr>
<td>18. Romania</td>
<td>ASRO</td>
</tr>
<tr>
<td>19. Russia</td>
<td>GOST R</td>
</tr>
<tr>
<td>20. Singapore</td>
<td>SPRING SG</td>
</tr>
<tr>
<td>21. Spain</td>
<td>AENOR</td>
</tr>
<tr>
<td>22. UK</td>
<td>BSI (Secretariat)</td>
</tr>
<tr>
<td>23. USA</td>
<td>ANSI</td>
</tr>
</tbody>
</table>

Total 23

Malaysia and Spain have moved from O to P member. Iran is a new member of SC 7.

It was reported that there are 9 “O” Observing members of ISO/TC 67/SC 7 as follows:

<table>
<thead>
<tr>
<th>Country/Affiliation</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Belgium</td>
<td>NBN</td>
</tr>
<tr>
<td>2. Egypt</td>
<td>EOS</td>
</tr>
<tr>
<td>3. Germany</td>
<td>DIN</td>
</tr>
<tr>
<td>4. India</td>
<td>BIS</td>
</tr>
<tr>
<td>5. ISO Central Secretariat</td>
<td>ISO</td>
</tr>
<tr>
<td>6. Poland</td>
<td>PKN</td>
</tr>
<tr>
<td>7. Saudi Arabia</td>
<td>SASO</td>
</tr>
</tbody>
</table>
India has become an O member. For completeness the Secretary said he has also added ISO Central Secretariat as an O member.

5.2 Liaison

Liaison and other organisations, which are actively participating in the work of ISO/TC 67/SC 7, include:

5.2.1 Liaison with Other Organisations

- IACS - classification
- IADC - drilling
- IMO
- OGP

5.2.2 Other Technical Committees in liaison with ISO/TC 67/SC 7 are:

- ISO/TC 8
- ISO/TC 8/SC 4
- ISO/TC 8/SC 8
- ISO/TC 38
- ISO/TC 71
- ISO/TC 98
- ISO/TC 167

5.3 Election of convenors

Each convenor introduced themselves and discussed their CV. It was agreed to:

- confirm Moises Abraham as convenor of WG 3 - Fixed steel structures
- confirm Paul Erb as convenor of WG 5 - Floating systems
- confirm Dan Masterson convenor of WG 8 - Offshore Arctic structures
- confirm Jean Louis Colliat-Dangus convenor of WG 10 – Foundations

Resolution 311

All convenors were approved and the committee thanked their organisations for supporting their participation in ISO/TC 67/SC 7.
6 Report of 30th Meeting (Singapore) N 481

The Secretariat report of the Singapore meeting (document N 481) was considered and the following items were discussed:

6.1 Actions and corrections

Referring to the action on page 8 of N 481, Mike Hoyle reported that with regard to the possibility for a NWIP for a TR 19905-3 (“Petroleum and natural gas industries — Site-specific assessment of mobile offshore units — Part 3: Improved guidelines for the prediction of geotechnical performance of spudcan foundations during installation and removal of jack-up units”), JIP are unhappy with turning the InSafe JIP document into an ISO. However, it is agreed that it can be a technical reference in an ISO standard.

Referring to the action on page 9 of N 481, Mike Efthymiou reported that a suitable candidate for convenor of WG 9 Marine operations has been found.

Referring to the action on page 10 of N 481, the Secretary reported that Jean-Louis Colliat-Dangus’s CV has been received and circulated to members along with other nominees for WG Convenors.

Referring to the action on page 14 of N 481, Suzanne Lacasse reported that she had been the contact on ISO/TC 182 Geotechnics and that this TC was now inactive so no liaison with ISO/TC 67/SC 7/WG 10 was appropriate.

It was noted that there is a typing error in section 7.10 on page 10 line 2 the reference to ISO 19908-1 should be replaced with ISO 19901-8.

It was noted that there is a typing error in section 14 page 14 resolution 297. The reference to ISO/TR 19905-5 should be replaced with ISO/TR 19905-2.

7 Report on progress from ISO/TC 67/SC 7 working groups

Each WG convenor reported on progress within their WG.

7.1 Report on WG 1 - Tom Brown

7.1.1 ISO 19900 General requirements (N 513)

Tom Brown gave a presentation to update Members as to the activities and progress of WG 1 which met the day before the ISO/TC 67/SC 7 meeting (1st November 2011 in Houston). The recent meeting was the fifth meeting of WG 1, which has a wide membership, however, it was noted that there is no representation on WG 1 from WG 9.

WG 1 has completed its review of the comments made on the CD draft. A total of 313 comments received of which:

- 245 prior to deadline
- 68 subsequent to deadline

- Of these,
  - 145 comments were technical
  - 34 comments were general
  - 134 comments were editorial
The response to these comments is as follows:

- 218 comments accepted
- 28 comments no action
- 67 comments required discussion by the WG approximately 10 of these have been assigned to individuals to clarify

A technical panel (TP1) has been formed to rewrite the Annex in the light of the comments received. Their work is to be complete by January 31 2012.

Dave Wisch gave a presentation on the API 2 GEN work (N 514).

WG 1 passed two resolutions as follows:

a) Continue with the development of the second edition of ISO 19900 in its current form (as per the CD).

Resolution 312

b) Create a technical panel to liaise with the API 2GEN working group on a common set of exposure levels and structural requirements.

Resolution 313

Since the London meeting in March 2010, there have been two working drafts produced and circulated, the first one in August 2010 attracted some 47 pages of comment. The second draft, which took account of the comments, was issued in December 2010 and was the subject for consideration at the WG 1 meeting on 1st November 2011. Tom Brown added that from this fruitful meeting it is expected that a CD will be circulated at the end of March 2011.

On this basis it is anticipated that the revised ISO will be published in September 2013.

The table of contents for the revised version were noted, adding that there have been significant changes and all clauses have been subjected to major review.

Significant material has been added in clause 4 with new sections for General requirements, robustness, planning, marine operations plus the sections on hazards and location have been extensively revised.

A new extensive section 5 has been added regarding exposure levels and clause 6 has been expanded regarding Accidental limit states.

Tom Brown added that in clause 7 there has been some reworking and re-titling of the sub-clauses plus two new sub-clauses added to cover earthquakes and abnormal actions.

The new clause 8 was formerly clause 7 in the previous version and this clause has undergone significant re-working together with the adding of three new sub-clauses covering characteristic values, design process and reliability.

Other changes are in clause 9, this clause has been re-titled 'Analysis and re-modelling – abnormal actions added, reliability' - small addition.

Clause 10 has been re-titled to 'Quality management' with some re-working of the sub-clauses.

Clause 11, it was noted that there have been no significant changes to the clause.

Tom Brown reported that there is a new Annex which has been added with extensive additional information on reliability, risk, ALARP, hazard curves and probabilistic analysis.
7.2 Report on WG 3 - Moises Abraham

Moises Abraham gave a presentation (N 515) to discuss the organisation and work schedule for WG 3. Each technical panel convenor gave a presentation on his standard.

7.2.1 ISO 19901-1 Metocean - Don Smith

Don Smith gave a presentation of the work on ISO 19901-1 (N 516).

There are 20 panel members and they have held 4 meetings since October 2009. Most work is done at meetings as they find teleconferences and email not so effective.

The revised document will be ready to send to the ISO editor once JIP have worked on it. JIP expect to take 10 days. It was hoped that the document will be ready for ISO by the end of 2011. In view of the comments at the NWIP, it may take another 2 months. It should be ready for Feb 2012. Approximately 600 hours has been spent on the document.

7.2.2 ISO 19901-2 Seismic - Doug Stock

Doug Stock gave a presentation on this standard (N 517). He reported that there had been a technical panel meeting on Monday 31 October 2011. It was agreed that ISO 19901-2 is a good document. It needs revision to include new technology and to correct some minor errors.

Yoo Sang Choo from Singapore said Malaysia should be involved with this work. Nigel Nichols of Petronas was considered to be a possible representative for Malaysia as he had recently been reviewing the seismic criteria for the region. It was agreed that Malaysia should liaise with the Secretary.

Action: Secretary

A resolution to approve the NWIP for ISO 19901-2 was approved unanimously.

Resolution 314

It was requested that member countries nominate experts to work on ISO 19901-2.

Action: All members

7.2.3 ISO 19901-3 Topsides:

Philip Smedley gave a brief presentation on the current status of ISO 19901-3 (N 518).

The standard was published in Dec 2010 and a corrigendum was sent to ISO in April 2011. ISO have agreed it will be republished as an updated standard by the end of 2011.

Canada said they would like to add a regional annex to the standard. The Secretary said he would try to get this included in the corrigenda. Secretary’s note: ISO agreed to include this annex.

Action: Secretary

7.2.4 ISO 19902 Fixed steel offshore structures:

The Secretary reported that he has sent the corrigendum for ISO 19902 to ISO (N 500). ISO want this to become an amendment and a NWIP needs to be agreed.

The Canadian delegation said they wanted to add some additional text to the amendment.

There was a lengthy discussion of the need for a definition of caisson in ISO 19902 (See N 526). This discussion was deferred and concluded under Item 7.9.3.
Under 13 Pat O’Connor gave a talk on SIM (Structural integrity management) and ISO 19902. He said he would like to discuss updating ISO 19902 to include SIM at the next meeting. Pat O’Connor said the JIP did some work on this in ISO 19902 Section 17. It is also covered in API RP 2SIM, which will be published soon. He would volunteer to recreate panel 8 (which he ran) to decide how to include SIM in ISO 19902.

There was some discussion as to whether this revision should include floaters as well as fixed structures. France suggested that it should first focus on fixed structures.

The consensus was initially to mirror API RP 2SIM in the ISO 19900 standards only for fixed structures. If SIM is later considered for floaters, this may need a separate panel. It was suggested that someone experienced in SIM for floaters should be on the panel for fixed structures to facilitate the inclusion of SIM in floaters later.

It was agreed that the committee supports the inclusion of SIM guidance for all types of structure.

7.3 Report from WG 4 - ISO 19903 Fixed concrete structures - Steinar Leivestad

ISO 19903 was published in 2006. The Chairman reported that the Convenor of WG 4 Steinar Leivestad was not planning to attend the meeting as there is at present no ongoing activity in WG4 to report to SC7. There are currently not many concrete projects but he confirmed that ISO 19903 is being used.

7.4 WG 5 Floating offshore structures - Paul Erb

Paul Erb the new convenor of WG 5 gave a presentation. He expressed his thanks to Bob Wolfram for the work he has done on WG 5.

7.4.1 ISO 19901-7 Stationkeeping which was issued in 2005.

Bob Wolfram gave a presentation on the second DIS of 19901-7 which closed on August 24 2011.

He reported that there were 122 comments many are purely editorial. Five comments were beyond the scope of the current revision and to be addressed at the next revision.

With regard to section 6.4.2.3.1 (Mobile moorings for structures not in proximity to other installations), there was a long discussion about length of the return period and also the definition of proximity. It was agreed that the return period should be left at 5 years. The note in 6.4.2.3.1 should be text as it is normative or the wording needs changing. Bob Wolfram said he may remove most of 6.4.2.3.1 and just leave the first paragraph. A resolution was passed confirming this.

Resolution 315

It is planned is to submit FDIS to ISO CS by end Q1 2012

7.4.2 ISO 19904-1 Floating offshore structures -- Part 1: Monohulls, semi-submersibles and spars

This has already been subject to a Systematic Review and was confirmed in March 2010. It is being used by industry. However, a number of comments have been received and should be actioned. There are also areas where the standard can be enhanced:

- Updates following new ISO 19900 revision
- Review new API RP 2FPS (modified adoption of ISO 19904-1) and incorporate changes as appropriate. For example:
  1. Disconnectable FPSOs
2. Hurricane survival and design reassessment
3. Air gap for semisubmersibles and spars
4. Monohull structural design
5. Import/export systems
6. Robustness check

The objective is to identify a project leader and prepare a NWIP for next SC 7 meeting.

**Action: WG 5**

7.4.3 **19904 Strategy - TLPs & Other Platform Types**

7.4.3.1 **Possible ISO 19904-2 (TLPs)**

Paul Erb reported that WG 5 has reviewed API RP 2T 3rd Edition which was published in July 2010. This is with regard to preparing an ISO version on TLP. The conclusions of this review are as follows:

- A substantial effort is foreseen to develop an ISO version
- There is no apparent urgency or imperative to develop this
- WG5 recommends putting on hold any further effort pending guidance otherwise from SC-7 membership

Paul Erb said that resolution 228 for TLP in Delft, Netherlands had recommended postponing a decision on preparing ISO 19904-2 on TLP. A resolution was passed to confirm this.

**Resolution 316**

7.4.3.2 **Other Platform Types**

The possibility of developing standards for other platform types was discussed. These included:

1. Floating LNG
2. “Round” Floaters (Sevan-type)
3. Arctic Floaters

For the first two platform types it was recommended doing gap assessment against 19904-1 by accessing industry engineering experience.

For Arctic Floaters it was recommended postponing further work pending development of more industry experience.

7.5 **WG 6 – Weight Engineering (ISO 19901-5) - Eivind Worren**

Narve Oma gave a presentation on behalf of Eivind Worren (**N 521**).

He reported that comments have been received on ISO 19901-5 from various users since it was published in 2003 including Brazil, Canada, Norway. All comments have been evaluated by WG 6.

The main areas for revision of ISO 19901-5 are as follows:

- Definitions to be evaluated again (based on comments)
• Revised text for requirements to the weight report (6.3)

• All datasheets/weighing certificates will be posted on ISO net-pages for free usage when the second edition is issued

• New section planned: Requirements for weight management, incorporating API/ANSI requirements

• New annex G: Requirements for weight control during operations

• New annex H: Requirements for topside weight estimation – new builds/green field

• New annex I: Executive summary description, part of weight report

• New annex J: Weighing result uncertainty, a description of K=2, Guide to the expression of uncertainty in measurement

• New annex K: Weight control database structure

The aim of WG 6 is to release second edition of ISO 19901-5 in 2014 based on the following schedule:

• Mar-12 Working Draft Revision 5 issued for editorial check

• Jun-12 Committee draft, CD

• May-13 Draft International Standard, DIS

• May-14 Final Draft International Standard, FDIS

• Nov-14 Publication of International Standard

The possibility of skipping the CD stage and going directly to DIS was discussed. This was confirmed by SC 7. A resolution was passed agreeing to move directly to DIS, provided the text is sufficiently mature and supported by WG 6 Resolution.

Resolution 317

7.6 WG 7 Site-specific assessment of jack-ups - Mike Hoyle

Mike Hoyle gave a presentation (N 522).

7.6.1 Status of ISO 19905-1 - Mike Hoyle

The ISO FDIS ballot was closed on 9 September 2011. The ISO vote was 100% in favour as follows:

• 19 of 19 P-members + 2 O-members

• 3 P-member & 2 O-member abstentions.

The EN ballot received 19 in favour; 12 abstentions.

There were 67 comments, 62 from GB and 5 from Canada. Most were WG7 issues that were not picked up in the review, or which arose later. The WG7 comments included 44 additional comments. Of these:

• 33 were purely editorial – errors in cross references, etc.,
• 2 related to [obvious] errors in equations, and
• 9 relate to a single change in limit of applicability of the requirements to run additional dynamic load-cases when close to resonance. This became necessary following results from further “go-by” calculations that were not covered in the original scope, but made possible through recent further funding from Chevron.

ISO have rejected many of the comments on the basis that they are technical changes, which are not allowed to be considered at FDIS. The only way around this is to have another FDIS ballot where the suggested changes are implemented. ISO have agreed to expedite this as soon as possible.

The meeting agreed that ISO 19905-1 should go to a second FDIS. This is another modest delay, but publication in January 2012 seems feasible.

7.6.2 ISO 19905-2

The committee draft of ISO/CD/DTR 19905-2 was issued to SC7 for review on 13th June 2011, with closing date of 8th September 2011. Very few comments were received for ISO/CD/DTR 19905-2. Most comments were made by Paul Frieze (UK). Document should be published at the same time as 19905-1.

The next actions are to:

• Finalise the Figures and an Annex.
• Update the “Go-By” example calculation (developed as part of the benchmarking exercise) to match final FDIS text, account for responses to FDIS comments & expand to cover some additional topics.

This work is in hand & funded now that Chevron have supported the benchmarking. If the WG can find the time, publication is expected in January /February 2012.

7.6.3 ISO 19905-3 - John Stiff

Mike Hoyle gave a presentation on ISO 19905-3 on behalf of John Stiff (N 523).

John Stiff wrote a draft after 11th February 2011 meeting. It is currently 25 pages including a Site Assessment Report similar to Jack-up one. This has been circulated to the TP 53 (which consists of about 10 people) for comment.

Following this circulation and review John Stiff has:

• Included some words on risers
• Marked for deletion much of consequence categories
• Received comments from some reviewers

The revised draft is available (see N 493). The NWIP for part 3 was discussed. A 36 month timetable was agreed for the final NWIP. The NWIP was unanimously approved.

Resolution 318

7.7 WG 8 Arctic offshore structures

Dan Masterson gave a presentation (N 524).

He reported that ISO 19906 has been adopted by many countries and organisations. It has also been applied for offshore wind turbines.

Dan Masterson reported on the “Barents 2020 Project”, which was created in 2007 as a joint venture between DNV (Norway) and Gazprom with the main objective to recommend standards for safe exploration, production and transportation of oil and gas in the Barents Sea. There are now several other major sponsors of the project (Phase 4) including: ENI, OGP, Rosneft, Statoil, Shtokman Development AG and Total.

Barents 2020 is developing a guidance document for design against ice loads on stationary floating structures. It may serve as a common Russian/Norwegian separate supplement to ISO 19906 for the Barents Sea. The Guidance Document may be submitted, partly or in full, to SC 7 for consideration at the next revision of ISO 19906.

7.8 WG 9 Marine operations - TBA

In the absence of a convenor of WG 9 the Chairman reported on ISO 19901-6.

He reported that the corrigendum to ISO 19901-6 should be published before the end of 2011. This is to take into account an issue raised by Michael GIAN of Gulf Marine Fabricators in June 2010 (N 525) regarding hook loads in equation 15 and whether this equation is correct. A corrigendum has been prepared because, although the result is only 6% in error, on the safe side, 6% can have a significant impact on the cost of large lift.

The Secretary was asked to circulate the corrigendum on Livelink. Secretary’s note: See N 548

Action: Secretary

7.9 WG 10 Geotechnical Investigations - Jean-Louis Colliat-Dangus

Jean-Louis Colliat-Dangus gave a presentation on WG 10 (N 526).

7.9.1 ISO 19901-4

There was a discussion of the title of ISO 19901-4. It was agreed that the title should make it clear it is about the ‘foundation elements for offshore structures’. It is not directly about risers.

The intention is to revise the standard 19901-4, gathering all geotechnical guidelines and requirements for the design of foundations, including both shallow foundations (main scope of current ISO 19901-4:2003) and pile foundations (currently part of ISO 19902:2007), as is the case for the newly issued API RP 2GEO (1st ed., 2011).

The current structure of ISO 19901-4 only addresses shallow foundations. Users would prefer a standard entitled “Geotechnical and foundation design requirements” to have recommendations on piles as ~90% of offshore structures are founded on piles.

The revised standard will be applicable mainly to fixed steel structures, but general requirements for shallow (L/B< 1) and intermediate (1<L/B<10) foundations will be applicable to other structures, such as subsea templates or manifolds and riser towers, for which the foundations are not covered by any ISO standard (with the geotechnical appendix F of ISO 13628-12 currently rejected).

There are inconsistencies between ISO 19901-4 and 19902 (“limit state” or material factor approach) and API RP 2GEO (all WSD or global safety factor approach). Since ISO and API have the objective to align their documents, the revised standard 19901-4 should help solve this by highlighting areas of inconsistencies and why they exist. Ideally ISO 19901-4 and 2GEO should be aligned in about 2 years.

A resolution agreeing a NWIP for ISO 19901-4 with a 36 month development track was agreed. Resolution 322
7.9.2 ISO 19901-8 NWIP

This standard will include guidelines and requirements for soil investigating equipment and procedures, interpretation and evaluation of test data and results, and reporting for marine soil investigations. This standard should cover the most common equipments available today for soil sampling, in situ testing and laboratory testing, with comprehensive informative annexes. It will be based on NORSOK G-001.

This standard should be applicable both for marine soil investigations performed by specialized drilling vessels (drilling mode of investigation with down-hole sampling and in situ testing), and for investigations performed by standard survey vessels (sea floor based mode of investigation). The detailed requirements in this standard should only be applicable for the equipment and methods specified by the user (client) in the scope of work for the actual field work.

A critical element in the establishment of reliable soil data for geotechnical design of offshore structures is the marine soil investigation and testing. This is what the NORSOK G-001 currently does. This standard is already used by international oil companies and contractors in their work, and using this as starting point for an international standard will facilitate the input of the worldwide lessons learned and experience that the global users of the NORSOK standard have.

OGP Standards committee conducted a survey of possible new work for international standards, and the proposal to develop an international standard on the basis of NORSOK G-001 Marine soil investigations gained substantial support from API, BP, Petrobras, Statoil, Shell and Total.

It was planned to have a draft of ISO 19901-8 ready for DIS by May 2012. It was agreed that the draft should go directly to DIS with a 24 month development track. This was agreed

Resolution 320

7.9.3 Piles versus Caissons

There was a lengthy discussion of the definition of Piles versus Caissons, shallow and intermediate foundations initiated by John Waegter of Denmark at the 30th SC7 meeting in Singapore (N481).

He said that ISO 19902 gives the impression that any caisson can be designed using the methods in ISO 19902. However, caisson is not well defined by ISO 19902. In addition, ISO 19902 does not cover complex loading situations on such structures. ISO 19902 needs to give an understanding of where the limits are. It was agreed that it will take a significant amount of time to revise ISO 19902 to take into account complex loading situations.

Jean-Louis Colliat-Dangus proposed to the following amendment for ISO 19902 to add to the scope:

There are historical differences in the usage and understanding of the term “caisson”, particularly between its structural meaning in the USA (i.e. minimal, flexible mono-pile structure, braced or free-standing, see clause 6.1.1 of ISO 19902) and its geotechnical understanding in Europe (i.e. shorter and rigid, large diameter chamber or foundation).

Clause 17 of ISO 19902 covering geotechnical design applies to long slender piles (typically with L/D >10, where L/D is the slenderness or length to diameter ratio) for fixed steel structures, and not for caissons as defined in the geotechnical sense of shorter, large diameter foundations.

The geotechnical design of short, large diameter rigid piles with complex loading conditions and predominant lateral loading shall not be based on (p-y) curves defined specifically for long, slender flexible piles.

The design of short, large diameter rigid foundations will be addressed in the future updated version of ISO 19901-4.
It was decided that this wording needed improving. A task group (John Waegter, Jean-Louis Colliat-Dangus, Suzanne Lacasse, Moises Abraham) was set up to refine the wording of the amendment within a month so that it can be submitted to ISO in conjunction with the current amendments to ISO 19902.

**Resolution 319**

The resolution agreeing the NWIP for ISO 19902 including new geotechnical text defined under resolution 319, which will be created by the task group,

**Resolution 321**

7.10 WG 11 Offshore Freight Containers - Dag Steensen

In the absence of Dag Steensen, the Chairman reported that WG 11 is meeting on 23-24 Nov 2011 in Rio at the offices of the DNV. Approximately 20 attendees are confirmed.

8 Review of progress against programme for ISO/TC 67/SC 7

The Chairman presented the current status of the work programme accounting for the updated work items and schedules discussed under agenda Item 7. This is reproduced below (N 527).

The revised project plan, as specified by Chairman, was agreed. The Secretary was asked to attach project plan to the minutes.

**Action: Secretary**
9 Forward strategy for standard development and maintenance

The Chairman gave a presentation on the future strategy of ISO/TC 67/SC 7 (N 528). The table for expectations over the next 10 years from this presentation is shown below.

As discussed in Singapore, the work programme “new-build” phase is nearly complete. There are 13 standards already published as ISOs out of a total of 18 potential projects for SC 7 (see table above). Of the five NWIP agreed at the meeting three are for revision/amendment and two are new standards.

The draft strategy plan was circulated and presented at the Singapore (30th) meeting. The main updates for the Houston (31st) meeting are:

- Addition of table capturing current expectation shown above
- Circulated to Convenors & Project Leaders
- Circulate to Ad-hoc Strategy group for buy-in and wider awareness
- Circulate to all by end of year.

Members of the Strategy Ad-hoc group formed to support the Chairman’s initiative in developing a long-term strategy are as follows:

**API**
Pat O’Connor, BP

**CEN**
Gilles Trican, Total

**CSA**
Jeff Walker, CSA
The Chairman added that ISO/TC 67/SC 7 members should encourage industry to use the standards and feedback their comments to ensure that they reflect the latest practices of industry.

10 ISO/TC 67 Matters

The Chairman reported that he had been unable to attend the ISO/TC 67 meeting in Moscow, Russia on Wednesday, 14th and Thursday 15th September 2011 because of visa problems.

He gave a presentation on the structure and work programme of TC 67 (N 529).

A number of issues arose from the meeting as follows:

- TC 67/WG 11. Chairman to check if the scope of TC 67/WG 11 includes coatings for offshore structures.

  Action: Chairman

- Chairman to clarify TC 67/WG 12 does it impact offshore structures sequestration.

  Action: Chairman

- Change bar is being experimented with for ISO 11960. Both clean (Primary) and the change bar marked (Informative) versions are both published by ISO. There are no plans to introduce this format within SC 7.

- Neil Reeve thanked SC 7 Chairman and members for the large amount of work that SC 7 has done.

- With regard to the revision of ISO 19902, TC 67/WG 8 has offered help with specification for welding materials.

- The ISO/TC67 Chairman is to retire and will be replaced by Mr Andries Otter (Shell, NL)

The next ISO/TC 67 meeting is scheduled for September 2012 in Rio de Janeiro.

11 ISO/TC 67/SC 7 liaisons and other matters

11.1 CEN/TC 12 Materials & Equipment

Gilles TRICAN gave a presentation on CEN/TC 12 (N 530). He talked about the mandatory nature of CEN standards. Regulations are being introduced for safety of offshore oil and gas prospection, exploration and production activities.
Dave Wisch perceived problems with the European Machinery Directive (MD), which means that ships built in Korea may never comply with the MD.

11.2 CEN/TC 250 Structural Eurocodes

The Secretary was asked to liaise with Malcolm Greenley to request a liaison report on CEN/TC 250. It was agreed that it is important we keep the liaison with CEN/TC 250 active.

Action: Secretary

11.3 ISO/TC 8 Ships & Marine Technology

Paul Frieze reported that he has resigned from ISO/TC 8. Alan Spackman said he would be the new liaison.

Action: Alan Spackman

11.4 ISO/TC 38/WG 21

There was no official report

11.5 ISO/TC 44/SC 5

There was no official report

11.6 ISO/TC 92/SC 4

There was no official report

11.7 ISO/TC 98 Actions and loading

It was reported that ISO/TC 98 is updating ISO 2394. It was agreed that Tom Brown should act as the new liaison.

Action: Tom Brown

11.8 ISO/TC 182 Geotechnics

Suzanne Lacasse reported that she has written all the standards in ISO/TC 182 and currently the TC is inactive. Suzanne Lacasse said the SC 7 should watch this committee but there is no need for a liaison.

It was agreed to remove the item from the agenda in future.

Action: Secretary

11.9 IADC (Drilling)

Alan Spackman said the Macondo incident has caused some issues to come to light. He reported that there will be a need to make some changes in the code.

11.10 Confirmation of liaisons and nominated

The liaisons as discussed above were confirmed.
12 Requirements for subsequent meetings

The Chairman said he would like to hold two meetings in 2012. Ideally they should be in May and November.

Total offered to host a meeting at their offices in Pau, France. If any WG meetings were planned in conjunction with the SC 7 meeting, they could also be hosted in the Total offices in Pau. This was gratefully accepted by SC 7.

It was agreed that the next ISO/TC 67/SC 7 meeting would be on 23-24 May 2012 in Pau, France.

Resolution 323

The location of the meetings in November 2012 and summer 2013 were left for discussion. However, Brazil and Denmark were mentioned as possibilities.

13 Any other business

13.1 Prof. Yoo-Sang Choo

Yoo-Sang Choo gave a presentation on Grouted structures (N 531).

13.2 Paul Freeze

Paul Freeze gave a presentation on Metocean Parameters (N 532).

13.3 Pat O'Connor

Pat O'Connor gave a talk on SIM (Structural integrity management) (N 545). This is discussed in 7.2.4 above.

13.4 SC 7 Website

The Chairman asked whether anyone would volunteer to update and manage the SC 7 Website. With no offers made, the chairman agreed to update the website before the next SC 7 meeting.

Action: Chairman

14 Approval of resolutions

The following resolutions were agreed by ISO/TC 67/SC 7:

Resolution 310 (Houston, 2011) - SC 7 welcomes Dr Charles Whitlock as Secretary to SC 7 and expresses its appreciation to BSI for continuing to support the role of Secretariat to SC 7.

Resolution 311 (Houston, 2011) - SC7 confirms the appointment of the following WG Convenors for an initial term of 3 years and thanks their respective Companies for providing the resources necessary for them to undertake their roles:

- WG 3 Mr Moises Abraham (Chevron)
- WG 5 Mr Paul Erb (BP)
- WG 8 Mr Dan Masterson (Chevron)
- WG 10 Mr Jean-Louis Colliat (Total)
Resolution 312 (Houston, 2011) - SC 7 welcomes the work-in-progress by API on the definitions and categorisation of exposure levels. SC 7 endorses the proposal made by WG 1 that a focussed technical panel, reporting to WG 1, be established to work with the API RP 2GEN Task Group to develop a revised definition of exposure levels and structural performance for consideration for future integration in the ISO 19900 series of Standards.

Resolution 313 (Houston, 2011) - SC 7 endorses the proposal by WG 1 that the development of the current ISO 19900 draft should proceed according to the current schedule, in parallel with the activities of the WG 1 technical panel.

Resolution 314 (Houston, 2011) - A NWIP for a revision of ISO 19901-2 “Seismic design procedures and criteria” with a 36 month delivery schedule was unanimously approved by ballot taken at the meeting. SC7 requests the Secretary to forward the completed paperwork to ISO CS.

Resolution 315 (Houston, 2011) - SC 7 approves the proposal by WG 5 to amend ISO 19901-7 clause 6.4.2.3.1 to retain a minimum return period of 5 years, and eliminate, if seen appropriate, the possibility to reduce the return period to 1 year, while maintaining the wind speed to a minimum of 30 m/s.

Resolution 316 (Houston, 2011) - Further to Resolution 228, Delft, 2006, and to the publication of the document API 2T – Tension Leg Platforms, SC 7 accepts WG 5 reassessment of the strategy concerning the development of ISO 19904-2 “Tension Leg Platforms”, which concluded that no compelling business reasons exist at the moment to initiate the development of ISO 19904-2, and therefore no further action is expected.

Resolution 317 (Houston, 2011) - SC 7 accepts WG 6 proposal to proceed expeditiously with the revision of ISO 19901-5, moving directly to the DIS stage.

Resolution 318 (Houston, 2011) - A NWIP for a development of ISO 19905-3 covering site-specific assessment of floating mobile offshore units with a 36 month delivery schedule was unanimously approved by ballot taken at the meeting. SC7 requests the Secretary to forward the completed paperwork to ISO CS.

Resolution 319 (Houston, 2011) - Further to the discussions on the definition of “caisson structures” and the applicability of the design methodology currently in ISO 19902 to the lateral behaviour of these structures, SC 7 requests the preparation by Nov 30th 2011, of some additional clarifying text to be added to the draft of the ISO 19902 Amendment currently under preparation (see Resolution 321).

Resolution 320 (Houston, 2011) - An updated NWIP for ISO 19901-8 “Marine Soil Investigations” with a 24 month delivery schedule was unanimously approved by ballot taken at the meeting. SC7 requests the Secretary to forward the completed paperwork to ISO CS.

Resolution 321 (Houston, 2011) - A NWIP for an Amendment to ISO 19902 covering corrections to the document identified since publication was unanimously approved by ballot taken at the meeting. SC7 requests the Secretary to forward the completed paperwork to ISO CS.

Resolution 322 (Houston, 2011) - A NWIP for a revision of ISO 19901-4 “Geotechnical and foundation design consideration” with a 36 month delivery schedule was unanimously approved by ballot taken at the meeting. SC7 requests the Secretary to forward the completed paperwork to ISO CS.

Resolution 323 (Houston, 2011) - SC 7 confirms that the 32nd meeting will be held in Pau, France, on May 23-24, 2012.
15 Closure of meeting

The Chairman thanked all participants for their contributions, both during the meeting and in the associated WG meetings and social gatherings.

In particular, the Chairman thanked the hosts Dave Wisch and Moises Abraham of Chevron for their excellent hospitality and efforts to make the meeting a logistical success.

The Chairman also thanked Ward Turner of ExxonMobil for organising a very enjoyable dinner for SC 7 participants.

Dr Charles Whitlock

For the BSI Secretariat of ISO/TC 67/SC 7
## Annex A – Attendees at the ISO/TC 67/SC 7 Houston meeting 2-3 November 2011

<table>
<thead>
<tr>
<th>First Name</th>
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<th>Company</th>
<th>Email Address</th>
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