MINUTES OF MEETING
SUBCOMMITTEE ON SUBSEA PRODUCTION SYSTEMS C2/SC17
Wednesday June 27, 2001 Calgary, Alberta

Item 1  Introductions & Call to Order
The meeting was called to order at 9:00 a.m. with members and guests present. Committee Chairman, John Bednar, chaired the meeting, and Vice-Chairman, Gary Hurta, captured the minutes for the Secretary, Bruce Crager.

Review of Agenda and Introductions
John Bednar reviewed the proposed agenda (Attachment 1) and indicated the sequence would be adjusted to cater to Jonathan Jordan who would need to leave early due to family events. Self-introductions of the attendees then followed. (Attendance List – See Attachment 2)

Action Items
John indicated that there were many action items from the last two SC17 meetings that would be reviewed. Those action items that had not been completed will be re-stated as action items in this meeting’s minutes such that the old minutes can be closed.

Item 2  Review of Last Two Meetings’ Minutes
Minutes from the June 21, 2000 Subcommittee Meeting (Attachment 3) were reviewed, with particular emphasis on the numerous action items. Status of the action items from that meeting is noted below:

ACTION: Jonathan Jordan committed to having the guide for adoption of API standard for “Adopt-Back” put on the API website for member access. COMPLETE

ACTION: Jonathan Jordan will notify those persons on the list when additional information becomes available or is posted on the web, regarding the final, approved “Adopt-Back” process. COMPLETE

ACTION: SC17 Leadership needs to ensure that the API representatives to the 13628-1 revision process identified as a New Work Item proposal are identified and formally integrated with the ISO team leading the revision process. COMPLETE

ACTION: SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back the Rev. 0 version of 13628-1 as API 17A. COMPLETE

No. 2001-1

ACTION: Jonathan Jordan is to carry the message forward to the Executive Committee regarding the need to expedite finalization and documentation of the Adopt-Back process. COMPLETE

No. 2001-2

ACTION: API representatives to the 13628-1 task group (Charlie Burton, Brian Skeels, Gary Hurta) are to report back at next year's standardization meeting regarding lessons learned from implementation of the Adopt-Back process for 13628-1, and potential ways to improve the process. (Action carried over to 2001)

ACTION: SC 17 Leadership is to prepare a letter to API requesting that four document numerical changes be implemented. (Replaced with revised Action Items; no plan to assign a 13628- number to API 17 L as that document is currently on hold)

No. 2001-3

ACTION: Olav Inderberg to start the process within ISO to obsolete document 10420.

No. 2001-4

ACTION: Olav Inderberg and Kent Caveny to initiate a New Work Item in ISO to assign 13628- number(s) to API 17B, 17J, and 17K (Note that currently API 17J is covered as 13628-2).

ACTION: Jonathan Jordan is to issue a letter to the SC17 voting membership indicating that the closing date for ballot on API 17B and API 17K has been extended to August 15, 2000. COMPLETE, and both ballots were approved

ACTION: SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back the API 17B and API 17K documents as API standards. DELETED

ACTION: SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back 13628-3 as API 17C. (Replaced with new action item)

ACTION: Jonathan Jordan to issue letter ballot to SC17 voting membership to begin the Adopt Back process for 13628-3 to API 17C.
ACTION: Brian Skeels is to get with Olav Inderberg (ISO) to ensure that all issues related to the subsea tree and wellhead specifications that need to be addressed in the revision process are included in the New Work Item proposal for 13628-4. (Carried forward as action item)

ACTION: SC17 Leadership is to issue a letter to API requesting that API 17I be deleted from the document list in that its contents are now incorporated in API 17 E. (Carried forward as action item)

ACTION: John McManus is to ensure that installation requirements in this combined document are separately identified from the hardware requirements such that the monogram can be applied to the hardware. The “four-part” process (legal review, color-coding, etc.) is to be applied. (Carried forward as action item)

ACTION: SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back 13628-6 as API 17 F. COMPLETE

ACTION: Jonathan Jordan to issue letter ballot to SC17 voting membership to begin the Adopt Back process for 13628-6 as API 17F.

ACTION: SC17 Leadership is to issue a letter to API requesting that an API document number be assigned to 13628-9. (Carried forward as action item)

ACTION: SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back 13628-9 as an API document. (Carried forward as action item)

ACTION: Jonathan Jordan to requestAPI Executive Committee to provide clarification on voting rights of member companies that are acquired by another API member company. COMPLETE (See later section in minutes for Jonathan’s comments)

ACTION: SC17 Leadership to consider the formation of “Sunset Teams” as a means to address questions and issues raised by users of approved SC17 API documents. (Carried forward as action item)
ACTION: SC17 Leadership and Jonathan Jordan to address the overall process of how questions and issues raised by users of approved SC17 API documents are to be routinely handled. 
(Carried forward as action item)

Following the discussion, motion was made by John Yonkers (seconded by Eric Wehner) that the minutes be approved. Motion passed.

Minutes from the Ninth joint meeting of API/SC17 and ISO/TC 67/SC 4/WG6 "Subsea Equipment held on December 6, 2000 (Attachment 4) were reviewed, with particular emphasis on the action items. Status of the action items is noted below:

ACTION: John Bednar and Jonathan Jordan to update all task group membership lists
(Carried forward as action item)

ACTION: Olav Inderberg to forward a proposal for a deep water poster to the applicable standards prior to the summer conference.
(Replaced with new action item)

ACTION: George Wolfe to send list of terms and definitions to William Bakke
(Replaced with new action item)

John Bednar motioned (seconded by David Wilkinson) that a tabulation of abbreviations and definitions, published in ISO 13628 and API 17 series documents, be developed, then issued as an ISO/TC 67/SC 4/WG 6 "N" document for free website distribution. Motion passed.


ACTION: API will send letter to the WG6 Secretariat with the nominated persons—(3)—for the revision work for 13628-1. 
COMPLETE

ACTION: William Bakke to prepare first draft of the revised 13628-1 document to be ready for the Summer Conference in Calgary. 
COMPLETE
ACTION: John Bednar will identify personnel from the GoM to participate in the development of ISO 16389 (Dynamic Risers) (Carried forward as action item)

No. 2001-16

ACTION: Jonathan Jordan will initiate the Adopt-Back process for selected API 17-series documents, with priority given to 13628-1, -3, and -6. COMPLETE

ACTION: John Bednar to generate a proposal for a group to generate a specification for how to tackle reliability for subsea component hardware. DELETED due to lack of champion

Review of minutes complete.

Item 3 Subcommittee Membership

The voting membership for SC17 was not discussed at this meeting. John Bednar indicated that he and Gary Hurta would be working with Jonathan Jordan and the Task Group Leaders to verify and update the SC17 Membership List (Current List – Attachment 5), Operator/Manufacturer/General Interest Matrix (2000 Version – Attachment 6) as well as the rosters for the current task groups.

ACTION: John Bednar, Gary Hurta, and Jonathan Jordan will verify and update the SC17 Membership List, Operator/Manufacturer/General Interest Matrix, and the rosters for the current API SC17 Task Groups.

No. 2001-17

Jonathan Jordan confirmed that the voting status of member companies in SC17 remains as one company, one vote, as described in API S1. Member companies that were previously separate members, but have now merged, are also only entitled, one vote per combined entity.

Item 4 Review of API Task Group Activity

- 13628-1 (Subsea Production Systems)

Olav Inderberg provided status as follows: 13628-1 is due for revision. A meeting was held in Calgary on June 26, 2001. A Task Group is being established and the first TG meeting is to be held in late August with a first draft of the proposed revised document due by the end of 2001.
Alf Reidar Johansen provided a summary of the discussion from the meeting on June 26, 2001. A proposed schedule for revision of 13628-1 was reviewed (it was noted that this schedule was aggressive). Olav Inderberg reviewed a list of the additional technology areas that could potentially be incorporated into the new revision of 13628-1, including: subsea processing, HIPPS, light well intervention, etc.

**ACTION: John Bednar, Gary Hurta and Olav Inderberg are to look at the direction that SC17 should be pursuing relative to the composite suite of API 17 Series general and specific documents that address the broad spectrum of subsea hardware.**

John Bednar encouraged the 13628-1 TG to first focus on the key shortcomings of the current 13628-1 document such that the proposed 2Q 2002 DIS target could be met with the current revision effort. Less urgent enhancements should then be addressed immediately after in a subsequent revision.

- **13628-2 (Flexible Pipe – (API TGI))**

Olav Inderberg provided status as follows: 13628-2 has been published.

The TG met in Houston, prior to the Calgary meeting, and the minutes from the task group meeting are attached (See Attachment 7). From that meeting, the TG Chairman requested that several items be brought forward to the SC17 subcommittee for discussion and approval to release for letter ballot. John Yonkers presented the items at the meeting, the first of which addressed resolution of inconsistencies in FAT utilization factors during hydrotest of flexible pipes. The changes proposed by the TG were presented to the SC17 subcommittee for approval to send out for Letter Ballot approval. If approved by letter ballot, the changes would be made to the approved API 17B document. Motion made by John Yonkers (seconded by John Bednar). Motion passed.

SC17 discussed and agreed that if the API 17B Letter Ballot passed, similar changes should be made in the current draft of API 17K prior to its release for approval.

**ACTION: Jonathan Jordan and Kent Caveny to prepare and submit Letter Ballot on changes proposed by Flexible Pipe Task Group for subsequent implementation in the approved API 17B document.**
John Yonkers also motioned (David Wilkinson seconded) that the following two documents be published as API SC17 Technical Bulletins:
- High Temperature Polymer Evaluation (existing)
- Rilsan Aging (under development – anticipated early 2002)
Motion passed.

**ACTION:** Jonathon Jordan and Kent Caveny to prepare API Technical Bulletins for the following documents:
- **High Temperature Polymer Evaluation (existing)**
- **Rilsan Aging (under development – anticipated early 2002)**

**13628-3 (TFL Systems (API TG6))**
Olav Inderberg provided status as follows: 13628-3 has been published.

No plan for update at this time. The Adopt-Back process is underway (see previous action item in minutes).

**13628-4 (Wellheads & Trees (API TG5))**
Olav Inderberg provided status as follows: 13628-4 has been published as an ISO document, but has not been Adopted Back as an API document due to patent issues. The proposed update to the ISO document has also been delayed due to the patent issues. Court rulings are being appealed and full resolution will likely be a time-consuming process. The subcommittee 17 agreed that a means to move forward with the document upgrade was still very desirable.

John Yonkers motioned (seconded by John Bednar) that a new work item be raised for the revision to 13628-4 to address alignment with the current revision to 10423, First Edition, and the incorporation of new technologies (e.g. deepwater considerations). In addition, references that encompass the designs involved in the patent issues will be deleted. Motion passed.

**ACTION:** Olav Inderberg to generate a New Work Item to address revision to 13628-4 to address alignment with the current revision to 10423, First Edition, and the incorporation of new technologies (e.g. deepwater considerations). In addition, references that encompass the designs involved in the patent issues will be deleted.

**ACTION:** John Bednar, Gary Hurta, and Brian Skeels to recommend API members to participate in the Task Group formed to undertake the New Work Item to address revisions to 13628-4.
**ACTION:** Olav Inderberg and John Bednar to help identify a U.S. operator to lead the New Work Item to address revisions to 13628-4.

No. 2001-23

- **13628-5 (Control Umbilicals (API TG4))**

Olav Inderberg provided status as follows: The FDIS is on its way to NTS/SC4 and will be sent to Geneva by August for FDIS circulation. (Note: Further references to API 17I should be deleted as this document is now obsolete.)

John Yonkers motioned (seconded by Eric Wehner) that Jonathan Jordan initiate a simultaneous letter ballot to get comments on the FDIS and initiate the Adopt Back process for 13628-5 as API 17E. Motion passed.

**ACTION:** Jonathan Jordan to initiate a simultaneous letter ballot to get comments on the FDIS and initiate the Adopt Back process for 13628-5 as API 17E.

No. 2001-24

- **13628-6 (Production Controls (API TG2))**

Olav Inderberg provided status as follows: A New Work Item to revise this document has been accepted and a work group has been formed.

**ACTION:** John Bednar to solicit US participants in the New Work Item to revise the 13628-6 document.

No. 2001-25

- **13628-7 (Completion/Workover Riser Systems)**

Olav Inderberg provided status as follows: DIS will be sent to SC4/CS Geneva in August.

Eric Wehner motioned (David Wilkinson seconded) to circulate 13628-7 DIS to SC17 members for comments prior to it becoming an FDIS, to facilitate input into the Adopt Back process. Motion passed.

**ACTION:** Jonathan Jordan to circulate 13628-7 DIS to SC17 members for comments prior to it becoming an FDIS, to facilitate input into the Adopt Back process.

No. 2001-26
- **13628-8 (ROV Interfaces (TG 3))**

Olav Inderberg provided status as follows: Norwegian Technology Center (NTS) is reviewing the updated version of 13628-8; following DIS circulation. Document will be sent to SC4/CS for FDIS circulation in August.

Eric Wehner motioned (seconded by John Bednar) that Jonathan Jordan initiate a simultaneous letter ballot to get comments on the FDIS and initiate the Adopt Back process for 13628-8 as API 17H. Motion passed.

**ACTION:**

*Jonathan Jordan to initiate a simultaneous letter ballot to get comments on the FDIS and initiate the Adopt Back process for 13628-8 as API 17H.*

- **13628-9 (ROT Intervention Systems)**

Olav Inderberg provided status as follows: This document has been published. (See above for related action item).

- **16389 (Dynamic Risers)**

Olav Inderberg provided status as follows: The CD version of this document is expected to be ready by the end of October. There has been a problem with progress due to lack of funding. (See above for related action item).

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**Item 5 SC17 Work Items**

John Bednar presented the current list of SC17 Work Items (Attachment 8) with little discussion. The Work Item list will be updated to reflect discussion and action items from this SC17 meeting.

**ACTION:**

*John Bednar and Jonathan Jordan to update the SC17 Work Item List to reflect discussion and action items from the SC17 meeting in Calgary.*

Agenda items listed under SC17 Work Items related to flexible pipe were discussed during the Task Group Activity reviews and are covered above.

John Bednar presented a New Work Item (Attachment 9) for a Recommended Practice that addresses subsea wet gas metering. Subsea wet gas meters are required for the Canyon Express pipeline system that
accommodates the King’s Peak, Camden Hills, and Aconcogua subsea developments in the Gulf of Mexico. The Canyon Express partners are developing the meters and have volunteered to lead the effort to develop a companion API RP. The MMS is very supportive of the RP initiative. API has approved funding in the amount of $25k for this initiative.

John Bednar motioned (Eric Wehner seconded) that SC17 approve a proposed New Work Item to generate an RP that covers subsea wet gas meters. Motion passed.

**ACTION:**  
John Bednar to finalize documentation to support the implementation of the API funding for the subsea wet gas metering RP New Work Item.

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**Item 6**  
**Status of Research Project**

John Bednar gave an overview of the current API research projects of which a project addressing Deepwater Buoyancy and Insulation Materials is included, and comes under the ownership of SC17. Work is ongoing.

John also gave an overview of the priority documents that have been identified jointly between API and the MMS (Attachment 10). Included in the list are the three SC17 documents that cover flexible flowlines. John indicated that there is a benefit in promoting completed SC17 documents to the MMS for adoption in regulations, to help influence reasonable regulatory positions on the design and operational requirements for subsea hardware and systems.

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**Item 7**  
**Other Business**

John Bednar gave an overview of a proposal to set up “Sunset Committees” that would perpetually be in place as a reference group for questions that are submitted to API regarding specific SC17 documents. The attached flowchart (Attachment 11) was used to illustrate the process. Setting up “Sunset Committees” would help establish a more defined process for response vs. ad hoc response. Membership would typically include an operator as well as a liason to ISO. Alf Reidar Johansen suggested that an alternate name to “Sunset Committee”, such as “Advisory Committee” or “Revision Task Group”, be considered.

**ACTION:**  
John Bednar and Gary Hurta to complete the definition and formation of “Sunset Committees” (or other title) for the SC17 documents.
John Bednar discussed the proposal to prepare a brochure to advertise the SC17 documents with visuals illustrating application. Alf Reidar Johansen presented a similar document that had been prepared by OGP as an example.

**ACTION:** John Bednar and Gary Hurta to work with Olav Inderberg and Jonathan Jordan to generate a brochure to advertise the SC17 suite of documents.

Gary Devlin made the observation that it is often difficult to get comments back from members on draft documents. He suggested that perhaps a system of interim voting could be implemented to motivate members to provide responses in a timely manner.

**ACTION:** John Bednar, Gary Hurta, Jonathan Jordan, and Gary Devlin to evaluate an interim voting process to ensure response to a DIS to motivate members to provide responses in a timely manner.

Jonathan Jordan discussed the Adopt Back process as documented on the CD distributed during registration. No lessons learned related to using the Adopt Back process for SC17 documents were available at this time.

**Item 8**

Next Meeting and Adjourn

The next meeting is proposed as a joint SC17/WG 6 meeting to be held in December or January. John Bednar volunteered to host the meeting again at the BP offices west of Houston.

A question was raised as to whether the minutes would be circulated for comment prior to the 2002 Standardization Meeting. It was agreed that the minutes should be circulated immediately after the meeting to meeting attendees for comment and accuracy check.

**ACTION:** Jonathan Jordan to circulate the meeting minutes to meeting attendees within two weeks after the meeting and request any necessary corrections within four more weeks.

Meeting adjourned at 1:00 p.m.
ATTACHMENTS
REVISED AGENDA
American Petroleum Institute
SUBCOMMITTEE ON SUBSEA PRODUCTION SYSTEMS (C2/SC17)

9:00 AM ~ 3:00 PM
Wednesday, June 27, 2001

John Bednar, Chair, Presiding
Gary Hurta, Vice-Chair

Hyatt Regency
Calgary, Alberta, Canada

1. Introductions

2. Minutes of Last Meetings

3. Subcommittee Membership
   - See Attachment A
   - Review and Revise as Necessary
   - Update from API on Voting Status

4. Review of API Task Group Activity/Ballot Items/ISO Activities
   - TG 1, Task Group on Flexible Pipe (17B, 17J, 17K, ISO 13628-2) - TBD – K. Caveny, Chair
   - TG 2, Task Group on Subsea Production Controls (17F, ISO 13628-6) - John Bednar, Chair
   - TG 3, Task Group on ROV Interfaces (17 H, 13628-8) - Paul Ritter, Tim Marsh, Co-Chair
   - TG 4, Task Group on Control Umbilicals (17E, 17I, 13628-5) - Fred Brink, Chair
   - TG 5, Task Group on Wellheads and Trees (17D, 13628-4) – Charles Burton, Brian Skeels, Co-Chair
   - TG 6, Task Group on TFL Systems (17C, 13628-3) - John Yonker, Chair
   - API 17A, 13628-1 – Document Status – Olav Inderburg – See Notice in Attachment B
   - API 17G, 13628-7 Completion/Workover Riser Systems – Anthony Muff

5. SC17 Work Items
   See Summary Attachment C
   Spec 17J Proposed Resolution of Inconsistency in FAT Utilization – Attachment D
   Spec 17J Other Supplement Material
   Flexible Pipe Technical Bulletins
     High Temperature Polymer Evaluation (existing)
     Rilsan Aging (under development – anticipated early 2002)
   NWI – RP for Use of Wet-Gas Flowmeters – Attachment E

6. Status of Research Projects
   SC17 has one research project for 2001:
   Deepwater Buoyancy and Insulation Materials

7. Other Business
   - Specification Interpretations / Sunset Committees
   - API/ISO Adopt-back Process – Lessons Learned

8. Next Meeting and Adjourn
## RECORD OF MEETING ATTENDANCE

**GROUP:** SC 17 SUBSEA SYSTEMS  
**CHAIRMAN:** John Bednar  
**MEETING:** SC 17/TC 67/SC 4/WG 6  
**TIME:** 9:00 AM  
**DATE:** 4/20/01

**COMMITTEE MEMBERS SHOULD MAKE CHANGES TO THEIR PERSONAL RECORD ON THE ATTACHED ROSTER. VISITORS ADDING NAMES TO ROSTER WILL NOT AUTOMATICALLY BECOME MEMBERS OF THE COMMITTEE.**

Indicate BEFORE YOUR NAME if you are:  
(M) Member of the Committee in session  
(R) Representing a Committee Member (if so, state member's name)  
(V) Visitor – ONLY voting members or their Representatives may vote  
(S) Staff

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**THIS FORM MUST BE RETURNED TO THE API STAFF**  
**TO SATISFY LEGAL REQUIREMENTS**

**FOR API USE ONLY:**  
TOTAL COMMITTEE MEMBER ON ROSTER:  
TOTAL API CORPORATE MEMBERS ON ROSTER:  
TOTAL COMMITTEE MEMBERS PRESENT:  
TOTAL API CORPORATE MEMBERS PRESENT:  
API MEMBERS MEETING MAN DAYS:
Indicate BEFORE YOUR NAME if you are:

(M) Member of the Committee in session
(R) Representing a Committee Member (if so, state member’s name)
(V) Visitor – ONLY voting members or their Representatives may vote
(S) Staff

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<td>V</td>
<td>GARY DEVLIN</td>
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MINUTES OF MEETING
SUBCOMMITTEE ON SUBSEA PRODUCTION SYSTEMS C2/SC17
Wednesday June 21, 2000 Los Angeles, Ca.

Item 1  Call to Order
The meeting was called to order at 9:00 a.m. with members and guests present. Subcommittee Vice-Chairman, John Bednar, chaired the meeting for Chairman George Wolfe. Meeting minutes were taken by Gary Hurt (Dril-Quip) for Secretary Bruce Crager.

Item 2  Review of Agenda and Introductions
The meeting was opened by John Bednar who reviewed the day’s agenda and asked attendees for self-introductions. John indicated that some discussion was planned regarding the “Adopt-Back” process by which ISO documents are adopted-back to become corresponding API documents. John also indicated that discussion was planned regarding increased interest on the part of the MMS regarding the need for applicable industry standards for deepwater operations.

Item 3  Review of Last Meeting Minutes
Review of last year’s minutes prompted discussion regarding the following past issues:
- How do we conduct revisions according to S-1?
- What is the future/demise of the API monogram program?
- Does API have to ballot/approve the FDIS documents?

Jonathan Jordan (API) discussed the API monogram program indicating that it would continue to be implemented as it has been in the past – no change. Jonathan also stated that API ballots the ISO FDIS documents as part of the approval process. He continued with a discussion of the “Adopt-Back” program by which ISO documents are re-approved specifically to become equivalent API documents. He noted, with additional comments provided by John Yonkers, that any proposed revisions to documents that had been approved as API documents through the Adopt-Back process would be handled as New Work Item Proposals through the U.S. tag. Roger Thomas commented that a potential means to expedite the issuance of information related to new developments or new technology, outside of reissuing an approved revised standard, is by means of a Technical Report.

Jonathan Jordan referenced a draft document entitled “A Guide for API Adoption of ISO Standards” which defines the “Adopt-Back” process (Copy attached).

Gary Devlin (Cameron) briefly explained the steps in the API “Four-Part” Process (included in the above attachment) which is part of the “Adopt-Back” procedure. The “Four-Part” Process included the following:
• Color Coding
• Legal Review
• Review by appropriate API Committee, and
• Review for effect on other standards.

**ACTION:** Jonathan Jordan committed to having the above draft document addressing “Adopt-Back” put on the API website for member access.

John Bednar circulated a sign-up sheet asking for the names and e-mail addresses of those in attendance who were interested in more information regarding the “Adopt-Back” process (list attached).

**ACTION:** Jonathan Jordan will notify those persons on the list when additional information becomes available, or is posted on the web, regarding the final, approved “Adopt-Back” process.

Last year’s meeting minutes were then approved without changes.

**Item 4**

**Status of ISO/API Documents and Task Group Activities**

John Bednar indicated that the ensuing discussion should include a comprehensive review of each document and work activity. ISO status would be provided first, followed by a report by the responsible API task group representative. Lastly, a decision would be made regarding the timing to initiate the “Adopt-Back” process for the individual document.

• **13628-1 (Subsea Production Systems)** The original version of 13628-1 was issued in 1999. Presently, a New Work Item Proposal (Copy attached) has been generated by David Miller proposing that this standard be revised to incorporate changes brought on by the rapid developments of subsea production systems. The New Work Item Proposal has gone out to the membership for approval, but the outcome of the balloting was unknown at this meeting. After some discussion, the meeting attendees voted in favor of supporting the New Work Item Proposal. It was pointed out that at a minimum, representatives of API need to liaise with the ISO members working the New Work Item Proposal. John Bednar asked for volunteers to participate in the proposed revision process for this document – Charlie Burton, Brian Skeels, and Gary Hurta volunteered.

**ACTION:** SC17 Leadership needs to ensure that the API representatives to the 13628-1 revision process identified as a New Work Item Proposal are identified and formally integrated with the ISO team leading the revision process.
John Bednar motioned (seconded by John Yonkers) that the "Adopt-Back" process be initiated for the existing Rev 0 version of 13628-1 such that it would become API 17A. Motion passed.

**ACTION:** SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back the Rev 0 version of 13628-1 as API 17A.

As a side discussion point, Sandor Antal requested that the new API 17A revision task group include in the revised document a definition and means of calculating external pressure as applicable to subsea systems.

The need for clear definition of the Adopt-Back process was again raised and the meeting attendees requested through Jonathan Jordan that the API Executive Committee formalize and document as quickly as possible the specific procedures for the Adopt-Back process.

**ACTION:** Jonathan Jordan is to carry the message forward to the Executive Committee regarding the need to expedite finalization and documentation of the Adopt-Back process.

**ACTION:** API representatives to the 13628-1 task group (Charlie Burton, Brian Skeels, Gary Hurta) are to report back at next year's Standardization Meeting regarding lessons learned from implementation of the Adopt-Back process for this document, and potential ways to improve the process.

- **13628-2 (Flexible Pipe)** Kent Cavney reported on the work session his Task Group on Flexible Pipe conducted on Tuesday, June 15. A copy of the minutes from that meeting is attached.
  
  Kent continued with his status report, indicating that the 17B document was recently balloted, and the task group has several comments that were received and need to be addressed. Similarly, the 17K document was also recently balloted with comments to be addressed. Generation of 17L is ongoing.

  Reviewing the four work proposals that were approved at last year's meeting, Kent indicated the following status:

  - TG1-01-99 regarding aging of PA11 (nylon 11) is ongoing under the direction of Steve Groves (BPA) and is called the Rilsan Users Group and is expected to be complete in 2001
  - TG1-02-99 regarding qualification of high temperature end fittings is now complete. Wording has been added to RP17B appendices.
  - TG1-03-99 regarding issue of Spec 17L for flexible pipe ancillary equipment is ongoing with completion expected in 2002
o TG1-04-99 regarding qualification procedures for high temperature polymers is now complete. Procedures have been presented to API for publication as a technical bulletin.

John Bednar motioned (seconded by John McManus) that the following document numerical changes be made:

- Abolish Document ISO 10420 (original API 17B) in that it is now obsolete
- Assign a 13628- number to the new API 17B which is just now being balloted
- Assign a 13628- number to the new API 17K which is just now being balloted
- Assign a 13628- number to the new API 17L which is currently being generated and will likely be approved in 2002.

Motion passed.

**ACTION:** SC17 Leadership is to prepare a letter to API requesting that the four document numerical changes listed above be implemented.

It was noted that insufficient ballots were returned by the membership for API 17B and API 17K. John Bednar motioned (Brian Skeels seconded) that the closing date of June 14, 2000 for ballot of these two documents be extended to August 15 to give the membership sufficient time to review the documents for approval. Motion passed.

**ACTION:** Jonathan Jordan is to issue a letter to the voting membership indicating that the closing date for ballot on API17B and API17K has been extended to August 15, 2000

The committee proposed that consideration be given to having API initiate the “Adopt-Back” process for documents 17B and 17K.

**ACTION:** SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back the 17B and 17K documents as API standards.

- 13628-3 (TFL Systems) John Yonkers reported that the document is in the FDIS stage with approval targeted for August 2000. John Yonkers motioned, (seconded by Brian Skeels) that a parallel “Adopt-Back” effort for this document be initiated with the FDIS such that the new document would become API 17C.

**ACTION:** SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back 13628-3 as API 17C.

- 13628-4 (Subsea Wellhead & Trees) Publishing of the Rev 0 version was completed in June, 1999. Brian Skeels indicated that a New Work
Item Proposal is likely to be generated soon to cover an update to the document. Brian Skeels agreed to get with Olav Indenberg (ISO) to ensure that all issues related to the subsea tree and wellhead specifications that need to be addressed in the revision process are included in the New Work Item Proposal.

**ACTION:** *Brian Skeels is to get with Olav Indenberg (ISO) to ensure that all issues related to the subsea tree and wellhead specifications that need to be addressed in the revision process are included in the New Work Item Proposal.*

The meeting attendees discussed a letter from FMC (Brian Skeels) to API (George Wolfe) regarding the fact that the horizontal tree design captured in the approved ISO 13628-4 document is subject to patent rights held by Cameron and has not been released for general public use. (Copy of the letter is attached). John Yonkers reported that he is investigating an appeal to ISO on behalf of AWHEM regarding the issue. Sykam Patel, current president of AWHEM, commented on AWHEM’s position and letters that AWHEM has sent to Cameron’s legal department. These letters address the fact that the proprietary nature of the hardware was revealed only after the ISO document had been approved – earlier mention of the patent protection should have been emphasized during the document generation, review, and approval process. After additional discussion, the meeting attendees agreed to defer any actions to initiate the Adopt-Back process for the 17D document until this legal issue is resolved.

- **13628-5 (Subsea Production Control Umbilical)** This document is currently in the DIS stage. Documents 17E and 17I are to be combined and covered jointly in 13628-5. The API task group is currently reviewing the DIS comments. Brian Skeels motioned (John McManus seconded) that API delete document 17I from the document list as its contents are now incorporated in document 17E. Motion passed.

**ACTION:** *SC17 Leadership is to issue a letter to API requesting that API 17I be deleted from the document list in that its contents are now incorporated in API 17E.*

Further discussion was held regarding the ability to apply the monogram relative to the new combined document in that it addresses both hardware and installation. To ensure applicability of the monogram process, the following actions were defined:

**ACTION:** *John McManus is to ensure that the installation requirements in this*
combined document are separately identifiable from the hardware requirements such that the monogram can be applied to the hardware. The “four-part” process (legal review, color-coding, etc.) is to be applied.

- 13628-6 (Subsea Production Control Systems) This document was published April 2000. John Bednar motioned (Brian Skeels seconded) that the Adopt-Back process be initiated for this document. Motion passed.

**ACTION:** SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back 13628-6 as API 17F.

- 13628-7 (Subsea Completion/Workover Riser Systems) Committee Draft (CD) is being circulated for comment by July 24, 2000. API comments on the document are due July 3, 2000. Meeting attendees agreed not to address Adopt-Back of Rev 0 at this time as an updated version of the document is imminent. Adopt-Back process will likely be initiated when the current revision reaches the FDIS stage.

- 13628-8 (ROV Interfaces) FDIS submitted to Secretariat this year. Tim Marsh is looking to be replaced as chairman of this task group. The meeting attendees recommended that the Adopt-Back process for this document be initiated in parallel with submission of the FDIS for ballot approval.

- 13628-9 (ROT Intervention Systems) FDIS is approved and document is to be published by ISO. Brian Skeels motioned (John Yonkers seconded) that letter be issued requested API to assign and API document number to 13628-9. Motion passed.

**ACTION:** SC17 Leadership is to issue a letter to API requesting that an API document number be assigned to 13628-9.

- Gary Hurta motioned (Brian Skeels seconded) that the Adopt-Back process be initiated for the new API document to be equivalent to 13628-9. Motion passed.

**ACTION:** SC17 Leadership and Jonathan Jordan are to initiate the process for Adopting Back ISO 13628-9 as an API document.

**Item 5** Membership
The list of API 17 Subcommittee members was reviewed, and discussion commenced regarding the impact of the many corporate mergers over the past few years. A problem is now apparent with how committee voting can comply with the rule of one vote per company and still maintain fair
and adequate technical coverage. For instance, if several member companies are acquired by one large corporation, then can only a single voter be designated? Furthermore, how can qualified individuals in related companies maintain their technical responsibility areas? A motion was made by Syham Patel (seconded by Brian Skeels) and passed to request the API Executive Committee consider this problem and provide clarification on voting membership requirements and the definition of a “company”. Examples are Coflexip (who have acquired DUCO, Stena, and Perry Tri-Tech), Halliburton (who have acquired Wellstream, Brown & Root and Otis), and BP (who have acquired Amoco, Arco and Vastar).

Discussion also commenced regarding inactive membership. Listed individuals and companies who have not been active will be dropped. An updated membership table is attached.

**ACTION:** Jonathan Jordan to request API Executive Committee to provide clarification on voting rights of member companies that are acquired by another API member company.

**Item 6**

Research Work Items

The committee briefly discussed the proposed Research Work Item regarding “Deepwater Buoyancy and Insulation Materials” (Copy attached). Jonathan Jordan asked whether anyone in attendance took exception to funding the work – no exceptions were voiced. Discussion ended without any specific action being specified or taken on this item.

**Item 7**

New Work Items

The only New Work Item Proposal that has been submitted for approval was the proposed revisions to 13628-1 which was discussed previously in these minutes.

**Item 8**

Other Business

In closing comments, John Bednar reiterated that there is a potential benefit in establishing API “sunset teams” comprised of several individuals, typically from the original task groups, who would be identified to address any questions or issues raised by users of approved API documents.

**ACTION:** SC17 Leadership to consider the formation of “sunset teams” as a means to address questions and issues raised by users of approved SC17 API documents.

**ACTION:** SC17 Leadership and Jonathan Jordan to address overall process of how questions and issues raised by users of approved SC17 API documents are to be routinely handled.
John Bednar touched on a list of documents relative to deepwater that were identified by the MMS as a "priority" for completion and implementation – (Spec 17K was the only Series 17 document listed as "Priority", but the other 17 series documents are likely to gain MMS interest in the near-future as well). No specific actions were identified.

The meeting adjourned at 12:30 p.m.
To the WG 6 members
To the WG 6 project leaders
To meeting participants

Draft

MINUTES OF MEETING

Ninth joint meeting of API/SC 17 and ISO/TC 67/SC 4/WG 6 “Subsea equipment” on
Wednesday 06 December 2000 at BP Exploration, Inc. in Houston

(Actions are marked with name, convenor or secretary in bold)

1 Opening

John Bednar welcomed the participants to BP Exploration and gave some practical information.
The minutes of meeting of the API SC 17 com. from the API summer conference were reviewed.
These minutes are attached to these joint meeting minutes.

2 Roll call of delegates

The following persons participated in the meeting:

: Mr. Olav Inderberg, Kongsberg Offshore, Norway
: William Bakke, Norsk Hydro
: Jens Henrik Neunkirchen, Statoil
: Jonathan Jordan, API (202-682-8147)
: Pete Stracke, Oceaneering (713-329-4581)
: Gary Hurta, Drill-Quip (713-939-7711)
: Mr. George Wolfe, Southwest Research Institute
: Eric Wehner, Cameron
: William Banner
: Larry Odelius, Cameron Controls
: Mr. John Bednar, BP Amoco
: Helge Krisiansen, Kvaerner Oilfield Products
: Michael Hayes, ENI SpA
: Mr. John Yonker, Halliburton Energy Services
: Charlie Burton, Unpocal
: Richard Meronek, Kvaerner (713-685-5700)
3 Adoption of the agenda (N 165)

The convenor of WG6 presented the draft agenda.
The agenda was adopted with the following amendments:
The following was added under AOB: Discussion on reliability; Communication to the industry.
The points 5 and 6 to 15 were combined into one review of the status and action plan (N 167, attached)
The agenda is attached to these minutes.

4 Minutes from last meeting (N 165)

The convenor reviewed the minutes and reminded outstanding actions.
The minutes were approved.

6 Status and action plan update (N 167)

The convenor presented and commented the status per 2000-12-06 of ISO 13628, Petroleum and natural gas industries - Design and operation of subsea production systems - Part 1 to Part 9, and ISO 16389, Petroleum and natural gas industries - Drilling and production equipment - Dynamic production risers. An updated status report is attached, see Attachment N 167.
The convenor informed about the “Subsea system approach” and earlier experience where the majority of failures where found to be due to design weaknesses. This sparked a discussion as to the need for a system approach into the standards.

It was informed that revisions of standards can be much faster than going through all the steps of a new standard.
John Bednar stated that it will be a good idea to maintain a core group per document.
An option forwarded by John Yonker would be to “maintain” the project leaders of the task group.

API needed to update task group members / John Bednar and Jonathan Jordan

A proposal for a deep water poster with reference to the applicable standards will be forwarded prior to the summer conference / Action: Olav Inderberg

Definitions study (N 149), see Attachment to last minutes of meeting. Nothing has been done related to definitions and clarifying of these.
Action: George Wolfe to send the list to William Bakke.

Ted Zaleski still has an action to lift this subject up for discussion on the SC or TC level since the clarification need is common to the whole industry.
Action: Olav Inderberg will check with Ted to see what action is ongoing.
API will send letter to the WG 6 secretariat with nominated persons (3) for the revision work of 13628-1. **Action: Jonathan Jordan**
The first draft of the revised document shall be ready for the summer conference June 24th in Calgary. **Action: William Bakke.**

A proposal for updating the 13628-4 will be forwarded due to the need for getting the document into sync. With 10423 and resolve the patent issues. API will not adopt the document in it’s current version.

It was proposed to issue an amendment excluding the reservation in foreword regarding the patented claims related to some of the content in the current version. This would make it an API adoption possible.

John Yonker recommended that US should participate in the work on this standard as the 17D is becoming obsolete.

Nominated personnel from the GOM to participate in the development of ISO 16389 were requested. It is understood that this would possibly be from other SC than SC 17. **Action: John Bednar**

The need for combined meeting was discussed and it was stated by John Bednar that a useful frequency would be twice a year. One meeting held as part of API summer conference. Status and action items should be handled combined.

The minutes should be taken by API in order to make it a formal API meeting.

7 **Adoption process.**
The need for a formal adoption process within the API environment was discussed.
API SC 17 will initiate the process with priority on 13628-1 and 3 and 6. **Action: Jonathan Jordan**

**Action Olav Inderberg** to contact Ted Zaleski to get advise in order to speed up the process.

API would prefer adoption simultaneous with the ISO issue of the standards.

8 **Reliability**
John Bednar proposed to establish a group proposing how to address reliability. The group should propose a “specification” for how to tackle reliability to be discussed during the meeting at the summer conference. **Action: John Bednar**
George Wolfe suggested that Deep Star could be a relevant group due to their existing funding.

9 **Emerging Subsea Technologies**
A proposal from John Bednar was discussed as to how do we handle new technologies.

**Find a Home:**
- New standards
- Add in revisions
- Technical reports (recommended practises)
Monitor: New technologies

10 Next meeting

The next meeting will be held at the summer conference June 24th in Calgary. With a separate session on 13268-1 and other standards as found useful prior to the combined meeting.

12 Closure

The convenor thanked John Bednar for his kind hospitality and closed the meeting.

API web site: www.api.org/ecsoem
User: ecs
Password: production
STATUS REPORT AND ACTION PLAN
PER 2000-12-04

ISO 13628, Petroleum and natural gas industries - Design and operation of subsea production systems

Part 1: General requirements and recommendations
Project leader: William Bakke, Norsk Hydro

Status ISO 13628-1:
Published 1999-02-15. Ballot on revision of the standard terminated 2000-06-13. Revision was rejected because only four members (Brazil did not count as O-member) wanted to participate in the revision work (five P-members are requested). However, ISO/TC 67 agreed in plenary meeting on 2000-09-21/22 to approve the NWI TC 67 N 692 for a revision of the standard, subject to the nomination of an expert from France, Italy, or another P-member country within three months, noting that Brazil, after offering an expert, also intends to change its SC 4 membership from O to P status.

Status API RP 17 A:
To be updated.

Status per 2000-06-26:
The 17 committee voted to recommend initiating the "adoption back" process for 13628-1 for RP 17A. The 17 committee also agreed to the scope of the planned NWI, but was concerned that there is a lack of US participation. Charlie Burton - Unocal, Gary Hurta - Dril Quip, and Brian Skeels - FMC have volunteered to look into and assist in the NWI being prepared in Europe.

The 17 committee was confused as to which version to "adopt" (start the process now for the released version, or wait until the new version of 13628-1 is released). The volunteer group will investigate and advise the 17 committee as to the ISO work group’s schedule, etc.
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Part 2: Flexible pipe systems for subsea and marine applications
Project leader: Kent Caveny, Exxon

Status ISO 13628-2:
The standard was published 2000-12-01.

Status API RP 17 B/ SPEC 17 J/ SPEC 17 K:
To be updated.

Status per 2000-06-26:
The 17 committee voted to request the US TAG group to inform and lobby ISO to obsolete and delete ISO 10420 from publication, since it refers to an obsolete version of RP 17B no longer published by API. The 17 committee also wants to clarify to the US TAG group that API Spec 17J corresponds to 13628-2 only.

The 17 committee voted to set up a new Specification, designated Spec 17L, for flexible pipe ancillary equipment. The committee 17 flexible pipe work group is initiating the effort to write a CD for the new specification. The 17 committee also voted to request the US TAG group to assign new "13628-X" numbers to correspond with RP 17B, Spec 17K, and Spec 17L.

The next revision of 17B and the new release of Spec 17K are out for letter ballot through August 15, 2000. This due date has been extended by committee vote to supercede the original June 14 end date for voting. The 17 committee also voted to recommend initiating the "adoption back" process for 13628-2 for Spec 17J.

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Part 3: Through flowline (TFL) systems
Project leader: John Yonker, Halliburton Energy Services

Status ISO 13628-3:
The standard will be published 2000-12-15.

Status API RP 17 C:
To be updated.

Status per 2000-06-24:
The 17 committee voted to recommend initiating the "adoption back" process for 13628-3 for RP 17C.

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Part 4: Subsea wellhead and tree equipment
Project leader: Dave Garnham, CAMERON

Status ISO 13628-4:
Published 1999-06-15. Revision of the standard will be proposed.

Status API SPEC 17 D:
To be updated.

Status per 2000-06-24:
The 17 committee learned that ISO 13628-4 is under ISO appeal pertaining to the inclusion of exclusive proprietary information in the document. In addition, FMC has gone on record as saying it will vote NO, on any "adoption back" process to replace Spec 17D with 13628-4, while it is in its current form.

The 17 committee also learned that there is a NWI being drafted with the intent on revising 13628-4 and the committee requested information on the scope of the draft
NWI so that subjects important to committee members (e.g. guidelineless access, bore spacings, spar/TLP tieback interfaces) can be address in the planned effort.

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Part 5: Subsea control umbilicals
Project leader: Ron Dee, SIEP

Status ISO 13628-5:
Draft FDIS was received from Shell on 2000-11-02. NTS will review the draft and submit it to SC 4 for FDIS voting within mid December 2000.

Status API:
To be updated.

Status per 2000-06-26:
The 17 committee voted to recommend initiating the "adoption back" process for 13628-5 for Spec 17E. The 17 committee also voted to remove RP 17I and the dual identity of 17E/I from any future reference since "17I" (covering umbilical installation) is now included as a section in the back of both Spec 17E and 13628-5 documents.

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Part 6: Subsea production control systems
Project leader: J.H.Neuenkirchen, Statoil
Status ISO 13628-6:
Published 2000-04-01. NWIP to revise the standard was circulated on 2000-11-08. Target date is 2001-02-09.

Status API SPEC 17 F:
To be updated.

Status per 2000-06-26:
The 17 committee voted to recommend initiating the "adoption back" process for 13628-6 for Spec 17F.

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Part 7: Workover/completion riser systems
Project leader: Anthony Muff, Kongsberg Offshore

Status ISO 13628-7:
CD comments will be resolved within mid January 2001. Effort on the work over riser system part has taken more time than predicted.

Status API RP 17 G:
To be updated.

Status per 2000-06-26:
The CD of 13628-7 is out for letter ballot recommendation to voting 17 committee members through July 3, 2000. The 17 committee will take up the "adoption back" issue when 13628-7 reaches FDIS status.

A concern was raised that the "bore spacing" information in the original version of RP 17G is not found in 13628-7. The committee agreed that this information is better suited within 13628-4 rather than this document, and recommends that the 13628-4 work group take steps to capture this data before it is lost.
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Part 8: Remote Operated Vehicle (ROV) interfaces on subsea production systems
Project leader: Tim Marsh, Shell UK, Aberdeen

Status ISO 13628-8:
DIS voting terminates 2000-12-27.

Status API RP 17 H:
To be updated.

Status per 2000-06-26:
The 17 committee will take up the “adoption back” issue when 13628-8 reaches FDIS status.

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Part 9: Remote Operated Tools (ROT) intervention systems
Project leader: Johan Bruun-Olsen, Statoil

Status ISO 13628-9:
The standard was published 2000-06-15.

Status API :
To be updated.
Status per 2000-06-26:
The 17 committee voted to request API to assign a new "17-X" letter to correspond with ISO 13628-9. The 17 committee voted to recommend initiating an "adoption" process for 13628-9 for RP "17-X".

**Actions to be taken:**

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<td>05/98 (07/98)</td>
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<td></td>
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Project leader: Bernt J. Leira, SINTEF

**Status ISO 16389:**
The project is seriously delayed due to defections from the task group and is in danger of being cancelled. The project leader is, however, striving to re-vitalize the task group and a meeting is planned to be held during December 2000.

**Status API :**
Not included in the SC 17 work programme.

**Actions to be taken:**

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Annex A: Project stages

20.20: Working Draft (WD) study initiated

30.20: Committee Draft (CD) study/ballot initiated (3 months ballot)
CD circulated to all P-members and O-members of ISO/TC 67/SC 4 for comments and, if desired, to the P-members for voting.

40.20: Draft International Standard (DIS) ballot initiated (5 months ballot)
ISO Central Secretariat circulates the DIS to all ISO member bodies (118 national standard bodies) for voting.

50.20: FDIS (Final Draft International Standard) ballot initiated (2 months ballot)
ISO Central Secretariat circulates the FDIS to all ISO member bodies (118 national standard bodies) for voting.

60.60: International Standard published
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SC17: Subsea Production Systems

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Minutes of Meeting, Subcommittee 17/Task Group On Flexible Pipes
June 19, 2001

Recorded by Kent Caveny, Task Group Chairman

Attendance: See attached attendance list

Date/Time/Place: June 19, 2001/ 8:00 a.m. to 5:00 p.m./EMDC, Houston, TX

Agenda:
- Welcome and Opening Comments
- Status Review of API RP 17B, Spec 17J, 17K and bulletins
- Review of HSE Comments on API Spec 17J, 2nd Edition
- Proposed Resolution of FAT Utilization Issues
- Discussion of Combined Stresses and other Issues raised by MCS
- Old Business and New Business

Minutes:
- The Meeting was called to order and the agenda was proposed without comment
- Jonathan Jordan provided the following status on API documents:
  - Spec 17J – An errata summary has been published.
  - Spec 17K – Two final proof copies were provided for review and comment to API by the end of June.
  - RP 17B – The document is in final editing and should be available for proof reading at the end of July.
  - High Temperature Polymer Evaluation Standards – This document was provided by an MCS lead JIP for publication as an API bulletin.
  - Rilsan Aging Technical Bulletin – This document is being prepared by a sub task group called the Rilsan Users Group and should be provided to API by early 2002.

Jonathan Jordan accepted an action item to add approval of publication for the two bulletins to the agenda for SC 17 in Calgary.

- The HSE comments on API Spec 17J 2nd Edition were reviewed and discussed (see attached copy of HSE comments with summary of task group discussion added in italics.).
- TG1 has previously submitted a proposed revision to Spec 17J to resolve inconsistencies between the Tensile Armor Utilization Factors for Normal Recurrent Operations. Based on comments by the HSE, Dr Joel Witz at University College London, and Rich Thompson at Chevron (see attachments), the task group revisited the subject and after extensive discussion and debate modified the proposal as shown in the attachment to these minutes. The proposal is consistent with both the HSE and normal practice (e.g. API 1111 and MMS requirements) of differentiating riser and flowline stress and test conditions. The attached Summary of Changes Proposed for SC17 Ballot Approval are submitted to SC17 for ballot at the Calgary meeting or by letter ballot.
• MCS along with Wellstream provided three proposals for revisions to Spec 17J (see attachments). Each of the proposals was discussed and several were accepted for recommendation to SC17 for approval as described on the Summary of Changes Proposed for SC17 Ballot Approval. There was extensive discussion of the proposed change to 5.3.1.4 and it was recognized that the paragraph could be revised to more clearly describe how the utilization factors are used for sizing and confirmation that the pipes have adequate strength to resist the global loads. Comments and input on this topic will be solicited by the chairman from the full task group and from external experts in flexible pipe design. Other discussion on this topic related to:
  • The detailed analysis of combined local wire stresses that is conducted during fatigue analysis of dynamic pipes.
  • Peak stresses should be less than structural capacity.
  • Average wire stresses are a closer analogy to what is done for rigid riser analysis than average layer stresses, but their calculation is complex and time consuming.
  • During the manufacturing process yielding is required to form the armor wires to the pipe shape.
  • Because of residual manufacturing stresses and other local conditions, local yielding may occur during FAT hydro testing although the amount of plastic strain is within allowable limits for the materials.

• Under New Business, Mark Kalman issued a call for papers for a 2002 OTC Session on Spoolable Composites.

• There was a general discussion of methods to get greater participation in the TG01 discussions especially from operators and flexible pipe experts. Wellstream (Halliburton) and Shell both offered the use of their video conferencing facilities to allow both US (Houston) and European (London, The Hague, or Newcastle) participation.

• The meeting was adjourned.
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<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
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HSE COMMENTS ON API 17J SECOND EDITION

Note: API SC17 TG01 responses to the HSE comments have been added in Italics.

There were many 'typos' An errata has been issued and is available from API.

It would appear that the changes of the Second Edition were ill thought out. They cannot be effected without a change in the FAT hydrotest requirements. There are many changes in the 2nd edition including a change to the utilization factor for tensile armors. In some cases the Utilization Factor for FAT Hydrostatic Testing will dominate the pipe sizing instead of the Normal Operating Conditions. The utilization factor change was developed over a series of meetings with extensive discussion over a period of more than a year.

- CONCERN
The use of the term 'Design Pressure' in this Second Edition is contrary to common usage and probably contrary to other API specifications. It normally means the pressure at which any piece of equipment can be safely operated for any length of continuous or intermittent duty, (subject to fatigue, temperature, or other limitations). In this edition it does not have that meaning, rather it means an allowable short term, very infrequent pressure. API Spec 17J uses the term 'Design Pressure' as defined in section 3 of the document. There are many other terms used for similar, but not identical terms in national and international standards and specifications. The document is internally consistent and clear. Flexible Pipe is a complex product that has many unique aspects and related definitions. Spec 17J and it's companion volume RP17B were developed to provide consistent understanding of the complexities of Flexible Pipe. People wishing to understand Flexible Pipe need to study the documents and the associated definitions.

This could lead to various problems, particularly if a flexible pipe is transferred from one duty or owner to another, (possibly on the second hand market). As discussed in RP 17B, there are many considerations associated with the reuse of flexible pipe that need to be understood, including the pressure ratings.

- CONCERN
The changes to API 17J appear to have gone through with little if any external consultation. The changes in 17J were developed in public meetings in the US and Europe with interested parties from the industry in attendance and aware of the meetings.

- CONCERN
It is not clear what R&D and testing has been done to justify the use of wires with utilisation above 0.55. Each of the manufacturers and the industry through internal testing and JIPs has conducted many burst tests, crush tests, axial tensile tests and in-plane bending tests on full sized samples and other tests on material samples to determine the quality and consistency of material properties and the accuracy of the analysis methods. The analysis methods and material properties for flexible pipe tensile armors are now well known and consistent with the technical understanding and
utilization factors for rigid pipe systems. The pressure armors materials are also well known, but the analysis models are more complex and less extensively understood. Therefore only the tensile armor utilization factor was increased from 0.55 to 0.67.

(for example the 0.55 factor makes allowance for high residual stresses. a 0.67 factor reduces this allowance. furthermore the 0.55 factor only applies to the average stress according to API 17J. in other words the other stress components are ignored. if we go to a higher utilisation then we should also go to a more sound failure criteria such as von mises.) The utilization factors are generally applied to size flexible pipes against global loads (clarification of this is under discussion at this time) and for static applications and with consideration of the combined effects of axial, hoop and other loads. Current practice for rigid flowlines and pipelines uses average hoop stress over the wall thickness in many cases. More advanced methods are used for fatigue analysis of dynamic flexible pipes that take account of combined stresses at local sites on individual wires using von Mises, Tresca and other models for combined stresses and failure criteria. The fatigue analysis methods have been the subject of substantial R&D, testing in JIPS and internal development by the manufacturers and some operating companies.

Direct comparison with design factors for conventional steel pipe are probably not valid. For static pipes rated at moderate pressures and water depth direct comparison is possible. More heavily loaded and dynamic structures can be more directly compared to the design of thick wall pipes and SCRs where similar issues and technologies are applicable.

- CONCERN
Safety Factors are being reduced, however no differentiation is being made between those pipes where failure could hazard personnel Health and Safety and those which could not. API Spec 17J currently uses a 1.5 factor for pressure testing for all products which is consistent with the higher safety factor used with manned areas. (There is a proposal to reduce the test factor to 1.3 for flowlines and subsea jumpers with all other applications including risers and topside jumpers to continue to use the 1.5 factor. This is a revision of the previous proposed change (Oct 2000) in the FAT that would have reduced all Hydro-tests to a 1.3 factor unless otherwise required by local or national codes. We believe this current proposal is consistent with UK practices.)

Reduced Safety Factors for seabed pipelines may be acceptable. However for any pipes present on, within, or immediately underneath an installation, more stringent requirements may be appropriate. That is, for those parts of risers or other pipes where a failure could lead to a release directly hazarding personnel or a fire or explosion affecting the installation. This would be in line with BS 8010 where risers require a lower design factor, ie higher factor of safety, than seabed pipelines.

- CONCERN
It is understood that API 17J may be further revised to reduce FAT pressure testing from 1.5 x design pressure to 1.3 x design pressure. (See comment above about proposed change.)
(the 1.5 hydrotest factor (& 24 hours) is based on work by hartley et al which pre-dates coflexip. this work is still valid. also the 1.5 factor originates with consideration of the time dependent capacity of flexibles (see blockley). Noted.

- CONCERN
Any pipe supplied with utilisation factors significantly different to the API 17J First Edition could be considered to be a new product. HSE would probably require Appropriate Prototype Tests for any such safety critical pipe.

HSE will continue to recommend FAT at 1.5 x design pressure as required by BS8010. The task group understands the HSE concepts associated with a Safety Case and Duty Holder.

MHH, 16.1.2001

Comments on Utilization Factors

e-mail from Dr Joel Witz:
Joel Witz j_witz@meng.ucl.ac.uk

06/15/01 09:01 AM

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Subject:API17J FAT testing of flexible pipes

Dear Kent
I am writing to you as Chairman of API 17J.

It has been brought to my attention that your committee is considering down rating the factory acceptance test pressure from 1.5DP. It appears that this is a consequence of increasing the utilisation factors for tensile armour in the second edition. As you are aware I disagree with the increased utilisation factors and these concerns are published in the public domain.

I am of the opinion that this next step of down rating the FAT is ill-advised without substantial technical evidence (analysis and experimental work) demonstrating that the reliability of flexible pipe including end fittings is not lowered by a down rating of the FAT. Furthermore significantly tighter QA/QC requirements are necessary if lower test pressures are to be considered.

Please can you send me the technical evidence and the new QA/QC requirements that are being used to justify this down rating of the FAT for my review.

Regards Joel
e-mail from Rich Thompson at Chevron

Kent,
Pedro Vargas and I have read through the proposed changes to 17J, and while we are unable to attend next week, we have provided some written comments below.

1. FAT hydrostatic test pressure
   We do not support the proposed reduction in test pressure from 1.5 times design to 1.3 without a detailed risk assessment to justify this reduction in design conservatism. The design standard as written has provided reliable service, and we are concerned that a reduction in the "robustness" of design could lead to a decrease in reliability. If existing test pressure is causing difficulty in the tensile wire, an alternative would be to decrease the utilization factor back to 0.55.

2. Minimum storage bend radius and strain in the outer sheath
   A reasonable way to deal with the concern seems to be to add a footnote to Table 6 that says something like "During hydrostatic testing of reeled pipe, strain in the outer sheath may temporarily exceed 7.7%. This additional strain does not need to be considered for design purposes."

3. Comments to section 5.3.1.4 utilization factors
   While we think we understand the intent of the proposed change in wording, the new wording is not particularly clear. We think the intent is to say that tensile and bending stress will vary from wire to wire, and that it is inaccurate to assume equal distribution of stresses in each wire around the circumference. Therefore, the stress needs to be considered for each individual wire. If this is the intent, perhaps some better wording could be used. Maybe "The calculated value shall include dynamic loads and be based on average stress in each individual wire at the design cross section."

Thanks for agreeing to pass on our comments to the group.
Regards,
Rich Thompson
Senior Materials Engineer
CRTC Richmond
### Summary of Changes Proposed for SC17 Ballot Approval

#### API Spec 17J, Second Edition

**I. Proposed Resolution of Inconsistency in FAT Utilization**

<table>
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<tr>
<th>Section No.</th>
<th>Comment or Revision</th>
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<tbody>
<tr>
<td>New or revised text is shown in italics.</td>
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</table>
| 9.3.1.1 | The first sentence should be replaced with the following, "The minimum hydrostatic test pressure for flexible flowlines and subsea jumpers shall be 1.3 times the design pressure. For all other applications including flexible risers and topside jumpers, the minimum hydrostatic test pressure shall be 1.5 times the design pressure."
| Insert a new sentence between the first and second that reads as follows: "Higher test pressure may be required by local codes or regulators (e.g. NPD, MMS, HSE)." |
| 9.3.1.3 | Revise the first sentence as follows, "... 110 percent (see API RP17B 11.5.3.3) of the hydrostatic test pressure...." |
| Insert the following new sentence between the 1st and 2nd sentences, "This maximum hydrostatic test pressure shall not cause the allowable utilization factors of Tables 6 and 7 to be exceeded." |
| Revise the last sentence as follows, "Pressure shall then be increased to between the minimum hydrostatic test pressure and the maximum hydrostatic test pressure." |
| Table 5 | Replace the three "X"s for item j. with a note covering all columns saying, “Per tables 6 and 7”. |
| Tables 6 and 7 | Change the Table heading "FAT" to "Hydrostatic Pressure Test – FAT & Field Acceptance" |

**II. Changes Proposed by MCS & Wellstream.**

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<tr>
<td>5.3.4.3</td>
<td>Replace the first two sentences with the following: &quot;For dynamic applications, fatigue calculations using Miner's methods and S-N data per 6.2.4.5 shall be performed for the pressure and tensile armors. Where it has been demonstrated from testing according to 5.3.4.2 and 6.2.4.5(c) that all stresses are below an endurance limit established by testing, Miner's calculations are not required. Where any fatigue stress is above the endurance limit, fatigue damage shall be based on Miner's method using design S-N curves.&quot;</td>
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<tr>
<td>9.5.1.2</td>
<td>Third sentence should read, “All ports in the …” Add a new sentence at the end of the paragraph as follows, “All valves shall be tested for relief pressure.”</td>
</tr>
<tr>
<td>9.5.2</td>
<td>Revise the first sentence to read, “Gas flow shall be confirmed at all ports individually.” Add a sentence between the current 1st and 2nd sentences as follows, “All valves shall relieve at the manufacturers specified relief pressure.”</td>
</tr>
<tr>
<td>Table 6</td>
<td>For Internal and outer sheath layers change the Design Criteria from &quot;Strain&quot; to &quot;Bending Strain&quot;. Delete “tensile and” from footnote a.</td>
</tr>
</tbody>
</table>
API Subcommittee 17 Task Group 1 Meeting
June 19, 2001 – Houston, Texas
Task Group on Flexible Pipe

Discussion Items for Combined Stresses
Kieran Kavanagh - MCS / Mark Kalman - Wellstream

I. Proposal Agreed between MCS and Wellstream

Section 5.3.4.3 Fatigue Analysis

Delete the first 2 sentences.

Insert the following text after the 1st paragraph:
"For dynamic applications, fatigue calculations shall be performed for the presssure and tensile armors. Where it has been demonstrated from testing according to 5.3.4.2 and 6.2.4.5(c) that all stresses are below an endurance limit established by testing, Miner's calculations are not required. Where any fatigue stress is above the endurance limit, fatigue damage shall be based on Miner’s method using design S-N curves with no endurance limit. For purposes of the Miner’s calculations, a reduction of slope of up to one integer value may be considered below the endurance limit stress if such a change is justified by material S-N testing"

Section 5.3.4.2.1 Service Life - Dynamic Applications

Add text to paragraph:
"Alternating stresses shall be maximum local values considering axial and bending components and the effects of inter-layer friction".
II. Other Proposals on behalf of MCS

Section 5.3.1.4

Change the text:
"The calculated value shall include dynamic loads and be based on average stress in the layer" to: "The calculated value shall include dynamic loads and be based on average stress in the wire at the design cross section".

My reason for proposing this is that the existing wording takes no account of the dynamic component of axial wire stress generated by friction between tensile armors and adjacent layers. My understanding is that this is usually considered only in fatigue design. However, as a component of average wire stress, it should also be considered in extreme load design and comparison with the allowable utilizations of Table 6.

Table 6: FAT

Given that the wording of Section 5.3.1.4 takes no account of components of wire stress due to wire bending, I believe that we should ensure that we limit total extreme fibre wire stress, especially under Factory Acceptance Test conditions. I propose that we limit extreme fibre stress due to axial+bending stress in the wire to 1.0 x yield stress (i.e. utilization limit of 1.0), assuming elastic wire behavior. This is to ensure that we do not induce plastic wire strain during FAT, which is not, I believe, what was intended in a factory acceptance test. On this issue, I believe that the Spec. is currently open to criticism from outside for not considering combined axial and bending stress in wires and I suggest we make some provision for its inclusion in the next update of the Spec.

9.5.1 Gas Venting System Test Procedure

I propose that the wording remove any ambiguity about the following issues:

1. Whether there is a vent system test with the valves on the pipe. The wording seems to imply that it is but my understanding is that this is not typically carried out in practice. We should clarify what is required.

2. Whether there is provision for pressurizing the annulus (say to 3 bar) to ensure outer sheath integrity - I suggest this is a good idea as an integrity check.

3. Whether flow through all vent ports (with or without valves) is separately tested. I suggest we clarify that it is.
III. Other Proposal on behalf of Wellstream

I believe that all of the flexible pipe manufacturers define the minimum storage bend radius of a flexible pipe using 7.7% strain in the outer sheath for bending only. However, based on paragraphs 5.3.1.5 and 5.3.2.2 - pipe bending, axial elongation and compression....shall be considered in evaluating the utilization for the outer sheath based on the maximum allowable strain.

When a flexible pipe is hydrotested on a reel to its storage MBR, then subject to internal pressure from the hydrotest, there is axial strain added to the bending strain in the outer sheath. With the combined bending and axial strain, the allowable strain of 7.7% is exceeded.

Our solution to this could obviously be to increase the MBR of the pipe, but we do not feel that this is necessary because there is substantial margin in the allowable strain values.

I propose that we either specify that the 7.7% strain is for bending only, or increase it to about 8.5% where combined loading is considered.
**SUMMARY SHEET (To be completed by SC Chair)**

**PROPOSED 2000-01 WORK PROGRAM**

**APVC 2 /SC 17, SUBCOMMITTEE ON Subsea Production Systems**

The Subcommittee will meet ___ times in 2001 to oversee work summarized below, and plan future work.

**Procedure:**
1. SC Chair assigns sequential item number to each NWI form (write at top of each form); summarizes key data from each NWI form in Columns 1-10; attaches all NWI forms to this summary sheet; and submits to Comm Chair and API staff.
2. API staff includes in or with SC and Comm agendas for review and prioritizing.
3. SC prioritizes all its proposals, and SC Chair enters priorities in Column 11 and submits final proposal package to Comm.
4. Comm prioritizes all proposals from all its SCs, and Comm Chair enters the priorities in Column 12 and submits results to Exec. Comm.
5. Exec. Comm. prioritizes overall work program, and enters priorities and disposition comments in Columns 13 and 14.

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<th>IS STD ON ISO WORK PLAN?</th>
<th>MILESTONE TARGET DATES (NWI p.2)</th>
<th>MEETING MANDAYS (NWI p.1, Resource Req.)</th>
<th>RATING (NWI Form, P.2)</th>
<th>PRIORITY</th>
<th>COM/EX COM DISPOSITION/COMMENTS (Approval or guidance)</th>
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API Exploration & Production (E&P) Standards Committee
NEW WORK ITEM (NWI) PROPOSAL FORM

Type or legibly print all information requested on the form. Failure to provide all information requested may result in rejection or delayed consideration. Submit the form to the applicable API standards subcommittee if known, or to: API E&P Department, 1220 L Street, NW, Washington, DC 20005.

Consult Subcommittee Chair, Secretary or API Staff if uncertain of information for this block.

<table>
<thead>
<tr>
<th>NWI Proposal Number:</th>
<th>_____(unique identifying number); API Subcommittee: 17 ; API Committee: 2</th>
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<tr>
<td>Category of Standard:</td>
<td>A, API/ISO:_____ B, ISO only:_____ C, API only: X (Ref. API S1, ¶ 5.2.1.4)</td>
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<tr>
<td>Sales History:</td>
<td>(API staff enter sales data for affected or similar API standard as indication of industry usage.)</td>
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<tr>
<td>Related ISO Standard Number, Title and Date:</td>
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<tr>
<td>Is the proposed work on ISO work plan? No:_____ Is ISO project active? Yes:_____ ISO SC and WG number:</td>
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<td>ISO Stage Number:</td>
<td>ISO Project Leader</td>
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Title of Proposal:

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<th>Affected API Standard:</th>
<th>New Standard: X Revision: __ (If a revision, fully identify current standard.)</th>
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<tbody>
<tr>
<td>Title: Recommended Engineering Practice For Use of Wet-Gas Flowmeters in Subsea Allocation Measurement Systems</td>
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<tr>
<td>Edition: First</td>
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<td>Effective Date: 1/1/02</td>
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</table>

Relationship to any other standards:

a. List related or existing API, ISO or other SDO’s standard:


b. Identify and justify any potential duplication of this work with above standards:

Relative to differentiation to the above standard, this REP will be specific to subsea applications, specific to wet-gas (GVF > 95%), and inclusive of latest technology, and will address allocation methodology inclusive of relative meter uncertainty.

Work Description and Justification: (Describe scope of new standard or specific revisions proposed for an existing standard. Justify this work by identifying its value to industry. Be specific; use attachment if needed.)

Scope: Develop a REP for the qualification, implementation and operation of wet-gas metering systems, including robust allocation methodologies which accommodate varying degrees of uncertainty within a single system. The principal workforce will be a contractor under the direction of a Technical Advisory Group (TAG). The TAG will be composed of API member company representatives with background in flow measurement and subsea engineering. Activities will center on capturing the collective international expertise on wet-gas metering, including test facility and field application results. The TAG will also be exposed to the testing of wet-gas meters at SwRI for the Canyon Express project.

Justification: The creation of a REP is extremely urgent in order to develop important new fields in the Gulf of Mexico in a timely and economic fashion. Operators and the MMS need guidance concerning the use of this technology given that current industry guidelines and MMS regulations regarding allocation measurement systems do not reflect current technology in this subject matter. It is clear that without a means to allocate production based on wet-gas and/or other non-traditional measurements, many deepwater subsea tieback projects will fail to pass commercial hurdles and proven hydrocarbons will be left behind.

Proposed Project Leader: (Include: Name, Company, Mailing and Street (if different) Address, Telephone, FAX numbers (with country dialing code) and qualification to lead this work. This person will be accountable for the quality and timeliness of the work.)

**NOTE:** Committees cannot consider NWI proposals unless this section is complete.

Thomas Hassold, BP, 501 WestLake Park Blvd., Houston, Texas, 77079, (281) 366-0960, (281) 366-7997 fax

Mr. Hassold is BP’s Project Leader for the King’s Peak Development and the BP company representative on the Canyon Express Pipeline partnership project. This development will utilize subsea wet-gas flowmeters for measurement and allocation of ten wells in three commingled Deepwater fields in the Gulf of Mexico, which will be a Gulf of Mexico “first” for such meters.
# API DEEPWATER STANDARDS PRIORITIES

**Updated 05/24/2001**

1) Standard is incorporated into MMS 30 CFR regulations  
2) Process of evaluating standard for possible incorporation into MMS 30 CFR regulations is underway  
3) Standard is being considered for possible incorporation into MMS regulations (official rulemaking process has not started)

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<th>API Publication</th>
<th>API Staff</th>
<th>Committee Chair</th>
<th>MMS Participant</th>
<th>DWOSC Liaison</th>
<th>Est. Completion Date</th>
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The purpose of the "SUNSET TEAMS" are to provide a means for users of approved API SC1 documents to have questions and issues answered or addressed by responsible and knowledgeable API representatives. The "SUNSET TEAMS", made up of 4 representatives (possibly 5 if an ISO representative is included) of that original "TASK GROUP" to respond to questions passed down by the SC 17 Subcommittee. The questions are received by the ECSoEM, in SC 17's case-Jonathan Jordan, and passed on to the Subcommitte for dissemination to the "SUNSET TEAM(S)". 