API-AGA JOINT COMMITTEE ON
OIL AND GAS PIPELINE FIELD WELDING PRACTICES
2006 ANNUAL MEETING MINUTES
JANUARY 18, 19, and 20, 2006
SAVANNAH, GEORGIA

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<td>E. L. Von Rosenberg</td>
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<td>Yong-Yi Wang</td>
<td>Engineering Mechanics Corp. of Columbus</td>
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2006 ANNUAL MEETING MINUTES

1.0 OPENING SESSION – First Day (January 18, 2006)

1.1 The meeting was called to order by the former Chairman, Bob Wright at 1:03 PM.

1.2 Bob Wright introduced his replacement on AWS committee. Pam Michalski works with Dominion East Ohio, and will be the AWS representative.

1.3 Bob introduced the new officers: Chairman Dave Culbertson (El Paso Corporation), Vice Chairman Scott Metzger (Moody Inspection), and Secretary Jim Ibarra (BP America).

1.4 Dave Culbertson presented a citation of appreciation from API to Bob Wright for his service as Chairman of API 1104.

1.5 Andrea Johnson made some announcements. Sign in sheet, and roster were passed out.

1.6 Dave Culbertson invited everyone to introduce themselves and their affiliation. He welcomed the visitors and hope they participate fully.

1.7 The Minutes of the 2005 Annual Meeting held in San Diego, on January 19, 20, and 21, 2005 were approved.

1.8 It was moved that we approve the agenda. No additions or changes to agenda.

1.9 Status of API 1104, 20th Edition emerged November 2005. It has been approved, and sent as an electronic copy. Eight members had problems printing a copy of the Edition. Figure A-6 was a problem in printing for two of the members. Bill Bruce was wondering about potential acceptance by DOT. Richard Huriaux (DOT) did not think there would be a problem for adoption since it was not that different, but he would have to submit it. He felt it would be approved sometime this year. It was pointed out that the 20th Edition was not available electronically yet. Andrea Johnson said she would check on this.

1.10 Joel Sprague has asked to be dropped from the general interest group so we need a new member. Anyone interested in becoming a voting member for general interest group, be sure and provide resume to Dave Culbertson.

1.11 PRCI/OPS API 1104 Appendix A Update. Yong-Yi Wang has been working to provide technical basis for revision of Appendix, started in 2003 and funded by PRCI and OPS. It will be completed this year (2006). The objective is to provide ECA procedures for stress based design. The second objective is to provide ECA procedure for strain based design, where pipeline will see plastic deformation. In end of December 2004, the first stress based design section was completed. The stress based design section will become a draft for a new Appendix A. The task of this year’s fracture mechanics sub committee is to approve the draft portion for addition to Appendix A. Robert Gatlin (Fracture Mechanics subcommittee chairman) further clarified what is being done to this new addition to Appendix A.
1.12. Review of SubCommittee Roster. Don Thorn was asked to be chairman for nominating committee to select a new member for general interest committee. A list of the 2005 sub committee membership was passed around so that everyone could see if they were listed on the correct sub committees.

1.13 The rooms available for sub committee meetings were identified. If you need any assistance in audio or visual assistance, be sure to use API office. Please have presentations electronically, so that they can be added to minutes.

1.14 Bill Bruce announced that the DOT/NIST Advanced Welding Technical Workshop would be held the week of January 23\textsuperscript{rd} in Boulder, Colorado. He was looking for a volunteer to discuss API research programs.

1.15 Presentations for Thursday afternoon session were:

“Guidelines Development for Strain-Based Design of Welded Pipelines”
Bill Mohr, Edison Welding Institute

Strain-based design has now been used in many situations as a supplement to traditional stress-based design based on pressure stresses. Axial compression strain resistance depends very little on weld properties. Axial tension strain resistance can depend critically on weld geometry, weld imperfections and weld area mechanical properties. The sensitivity to these parameters has been found to increase for higher strength base material, such as X-80 steel. Development of guidelines has been included in several recent and current projects, helping to describe the required conditions of the weld area to achieve desired levels of strain capacity. The effect of pipe internal pressure on axial strain capacity still needs experimental confirmation. Since this information is expected soon, it is worthwhile to consider the best form of industry practice documents for this area for the future.

“Line 600 Saddle T Attachment Failure Analysis”
Marshall Farley, CMS Energy

Complete copies available by contacting Marshall at:
mlfarley@cmsenergy.com

Meeting was adjourned to allow for Subcommittee meetings.

2.0 OPENING SESSION CONTINUATION – Second Day (January 19, 2006).

2.1 Dave Culbertson convened the opening session continuation of the meeting at 2:45 PM.

2.2 Bill Mohr, presented an EWI program on Strain Based Design. Strain based design is important for pipelines. In particular those in Alaska affected by the tundra, for reeling, pipe laying with local high strain, and for downhole tubing.
2.3 Marshall Farley presented an Overview of Line 600 Rupture at Consumers Energy. The May 1, 2005 incident occurred in Michigan and was the result of errors in installing a reinforcing pipe section.

2.4 OPS/DOT Activities Report - Richard Huriaux (OPS)

- Introduction: Role of Richard Huriaux as OPS' Director of Technical Standards.

- New organizational structure. Office of Pipeline Safety (OPS) and Office of Hazardous Materials Safety are now unified under a new administration, the Pipeline and Hazardous Materials Administration (PHMSA).

- Gopala Vinjamuri retired in November 2005.

- Importance of welding standards—importance in pipeline safety; need for improved usability and enforceability; move away from 'prescriptive' toward 'performance' standards.

- Thanks to Dave Culbertson and Andrea Johnson for contributions to pipeline standards.

- How to reach any OPS personnel on e-mail: first name.last name@dot.gov

- Pipeline Standards-Developing Organizations Coordinating Committee (PSDOCC) meets several times a year to provide a forum to discuss new and revised standards that should be considered for incorporation by reference in the Federal pipeline safety regulations. Next meeting is at AGA headquarters in Washington, DC on February 21 at 8:30 am. Representatives of OPS and several of the standards organizations (AGA, API, NACE, etc.) will attend.

- A final rule will be published in February to update references to as many as 39 technical standards. In most cases, we will incorporate by reference most recent edition of each standard.

- Recent and upcoming meetings of interest:
  - 01/24/06 Workshop on advanced welding research needs at NIST (Boulder, CO).
  - 12/15/05 Held public meeting to discuss operator qualification program and report due to Congress in late 2006 comments sought on OQ.
  - 02/27/06 OPS Mechanical damage workshop, Houston, TX.
  - 03/31/06 OPS public meeting to discuss increasing allowable stress on selected gas transmission to 80% SMYS.

- Regulatory actions:
  - 12/15/05 Proposed rule on control of internal corrosion in new pipelines.
  - 01/17/06 Issued advisory bulletin on safe excavation practices.
– 01/19/06 Final rule on definition and regulation of gas gathering lines being readied; will employ API RP 80 and will limit choice of gathering end-points.
– 03/01/06 Will begin preparation of 2006 docket to update selected standards to most recent editions and to make miscellaneous correction, clarifications, and updates to the text of the gas and hazardous liquid pipeline regulations.
– Work continues through several committees to develop concepts for application of integrity management principles to gas distribution systems; NPRM likely later in 2006.

2.5 API Washington DC office – Andrea Johnson of the API Standards Group presented a report on API activities of interest to the members.

New or Revised API Pipeline Standards
Publication 1133 – Guidelines for Onshore Hydrocarbon Pipelines Affecting High Consequence Floodplains
Publication 1163 – In-line Inspection Systems Qualification Standard
Publication 1166 – Excavation Monitoring and Observation

Other Standards relating to Pipeline
New or revised API standards in development in the following subject areas:

- 1165 SCADA Display
- 1110 Hydrostatic Pressure Testing
- 1113 Developing a Supervisory Control Center

ISO Standards Published (but none adopted as US/API standards):
13623 Pipeline Transportation Systems
13847 Pipeline Welding
15590-1 Induction Bends
ISO 15589-1 - Cathodic protection of pipeline transportation systems - Part 1: On-land pipelines
21329 Testing Procedures for Mechanical Connectors
15590-2,3 Fittings Flanges
15589-2 Cathodic Protection - offshore

ISO Standards Under Development:
16708 Reliability based limit state methods for design
21809 External Pipeline Protective Coatings
3.0 Closing Session - Third Day (January 20, 2006)

3.1 Dave Culbertson convened the final session of the meeting at 8:02 AM.

3.2 SUBCOMMITTEE REPORTS

3.2.1 Mechanized Welding – Don Thorn

- Discussion of weld cap 1/16 (1.6 mm) height as stated in 7.8.2 (field interpretation being requirement vs. “should” as stated) – referred to WP & WQ subcommittee for change consideration.
- Discussion of requirement in 20th edition to qualification of welders on heaviest wall pipe vs. need to also have welders trained on lighter wall-thickness to prevent production start-up problems.
- Discussion of use of “Automatic” vs. Mechanized in Section 13 – as Tiny Von Rosenberg pointed out before arc start there is some operator involvement.

3.2.2 Interpretations Subcommittee – Scott Metzger

(Due to inclusion of inquiries and responses, the Interpretations Subcommittee minutes are Attachment I found at the end of the minutes)


Attendees: 4 - Subcommittee Members: Scott Metzger, Wayne Klemcke, Ronnie Wise, Don Thorn

Minutes:

1. Due to scheduling conflicts with other members of the Subcommittee, Wednesday’s meeting of the Modification, Interpretation and Policy Subcommittee did not meet.

2. The Chairman called the meeting to order at 8:00 am, Thursday, January 19, 2006. An agenda for the meeting was made available to all attendees.

3. Previous Inquiries addressed at this meeting and suggested responses are shown in Scott Metzer’s meeting minutes which will be attached at the end of these minutes as Attachment 1.
3.2.3 NDT Subcommittee – Chuck Woodruff, Tom Reeder Co-Chairs

Item a: Single nominal wall thickness used for sensitivity (1104) on elliptical shot versus two wall sensitivity. ASME 1742-05 allows in Annex the use of two walls for sensitivity.

Tom Reeder and Dave Culbertson have agreed to perform techniques utilizing both single and double wall sensitivity for comparison. They will bring to next sub-committee meeting.

Item b: Tom Reeder to send copy of Q packet and wire selection drawings. We agree to look at suggestions and make a decision on incorporating into Standard. Assigned to Reeder and Culbertson to formulate a final draft.

Item c: Recommendation to put acceptance criteria into a tabular format by Allen Beckett. The imperfections would be listed in a format to summarize the defects and the acceptance criteria in a tabular format. The defect would listed on one side of the table and the acceptance criteria in a separate column. The sub-committee determined that the paragraphs as written contain the information needed. A tabular format would expand the section and lead to omissions and not considering all the variables in the paragraphs.

Item d: Interpretation and evaluation of parallel indications. Ask Andrea if interpretations to parallel indications other than slag lines have been addressed in any previous interpretations specifically parallel indications such as internal undercut. In Paragraph 9.3.11 does aggregate mean the accumulation of IU on both sides of the weld is that counted as one indication or two. Consider clarification that parallel internal undercut lines should be added together as an aggregate length per 9.3.11.a.

Action item: Make inquiry to interpretations sub-committee.

Item e: Modify wording of Paragraph 6.6 to include UT. Chuck Woodruff to do and incorporate into sub paragraphs.

Item f: Create separate sections for AUT and manual. Chuck Woodruff and Don Stevens to work out.

Item g: Stacked flaws, send request to fracture mechanics to resolve.

Other items discussed included:

Aligning manual UT sensitivity with that of radiography, i.e. 2 to 4%. Implement a 5% notch requirement instead of 10.

Preparing a section covering Manual UT only.
Technical Inquiry NO 1104-I-1019-05

Question (s)

9.3.3 The committee feels that since inadequate cross penetration only occurs with a two sided weld configuration, i.e. ID and OD welding passes, (see also figure 15), that criterion for weld lengths less than 12-inches in length (4-inch diameter) is not necessary.

9.3.5 The requirement in 9.3.5c applies to welds of any length. Please note that all the conditions apply, that is a, b, and c; therefore the weld must meet all listed criterion.

9.3.12 Again all the listed criterion applies.

3.2.4 Welding Procedures and Welder Qualifications – Alan Holk

The Subcommittee met jointly with the Maintenance Welding Subcommittee over two days. This report covers only the items the fall under the scope of the Weld Procedure and Welder Qualification Subcommittee.

New Business Items

1. Definition of “Branch Weld”

The 2005 letter ballots included adding a definition of “Branch Weld” to API 1104. This item passed letter ballot during review of ballot comments it became apparent that the definition resulted in a change that was not technically justifiable. This flawed definition was published in the 20th Edition as paragraph 3.2.2.

Branch weld: The completed weld joining a branch pipe or a branch fitting to a run pipe.

The technical problem with this definition is that a tee is a branch fitting and so the weld connecting a tee to the run pipe is being defined as a branch weld rather the a butt weld as it was under all editions of API 1104 up to the 20th edition. This will affect both the welding procedure qualifications and the welder qualifications related to this weld.

To correct this problem the Subcommittee modified the definition of a branch weld to be:

branch weld: The completed groove and/or fillet weld joining a set on or set in branch pipe or a set on or set in branch fitting to a run pipe.

Welds connecting a tee to the run pipe do not meet this definition and so will continue to be treated as butt welds as they historically have been.

The Subcommittee presented this changed definition to the main Committee for letter ballot in 2006.
The Subcommittee also recommended that the Committee ask API, subject to it passing letter ballot, to issue this changed definition as an errata, supplement, or addendum rather than waiting until the 21st edition to make the change.

2. Diameter Groups for Welding Procedures

The classification of Diameter as a nonessential variable for welding procedure qualifications was discussed. The Subcommittee determined that this has not been a problem and so there was no need to make it an essential variable.

3. Filler Metal Classifications

A Subcommittee member asked about adding additional filler metal classifications to those listed in Table 1. This Table can be modified as needed upon request to the Subcommittee. If a formal request for change is submitted, the Subcommittee will consider it.

4. Definition of Trepanning

A Subcommittee member mentioned that use of trepanning is prohibited by API 1104 but is not defined in this Standard and that some users of the Standard may not know what it means. The usage of trepanning in this Standard is not different from its normal meaning. The Standard refers to AWS 3.0 for terms and definitions. The standard dictionary definition is also adequate. The Subcommittee determined there is no reason to include a definition in this Standard.

5. Recommended Joint Dimensions

Paragraphs 7.8.2 and 7.9.2 contain required (shall) dimensions for the height of the weld cap as well as recommended (should) dimensions. Apparently there are still users who confuse should and shall. This issue has come up before in regards to the dimensions shown in the joint design example sketch in Figure 1. The Subcommittee discussed several possible options including adding “unless otherwise specified in the welding procedure” as well as omitting them entirely and adding more requirements to paragraph 5.3.2.4. Robert Robinson will review these paragraphs and the sketch to determine if additional clarification can be made.

Old Business Items Discussed

1. Automatic/mechanized welding in Sections 5 and 6

Clarify which sections are to be used for mechanized welding; which sections for mixed welding procedures; qualifications of mixed welders &
welding operators; qualification using AUT. This may affect Mechanized Welding Subcommittee.
Responsible: Jordan Hunter and Ronnie Wise

2. Welder qualification

Review specific test locations
Review use of segments of pipe vs half of pipe
Responsible: Jordan Hunter and Ronnie Wise

A draft markup of changes was submitted and discussed. This draft is appended to the end of this Subcommittee report. During the discussion there was disagreement on whether this Standard already allows a welder to qualify for a specific weld pass without making a complete root to cap weld. One member thought that the Committee had made a determination on this issue. That will have a large effect on the changes needed to address these business items. Further action on these two business items was deferred until the API 1104 records can be checked.

Old Business Items Not Discussed.

The following business items were not discussed due to the late publication of the 20th edition of the Standard. There was not sufficient time between publication and this meeting to allow proposed changes to be suggested. These items are still active.

1. Branch and Fillet Weld Revisions

This is an old item that was held back from the 20th edition in order to prevent conflicts with Appendix B. The use of “branch” and “fillet” in the main body and in Appendix B needs to be reviewed and standardized to prevent confusion over using different terms for the same welds. This will be coordinated with the Maintenance Welding Subcommittee.

2. Definition of position welding

To be reviewed

3. Cutting, notching and breaking of nick break specimens

Currently very specific on allowed methods. Review current practices. Consider referring to AWS B4.0

4. Removal of external line up clamps

Currently requires at least 50% of root pass be completed. This is not always possible on small diameter pipe due to the size of the line up clamp. Review wording and suggest new wording.

5. Alternatives to API 1104 bend test fixture
The use of ASME bend test fixtures has been discussed many times and all agree in principle that the tighter bend test should be made acceptable. Review test fixtures, roller jigs, wrap around jigs, etc. Review specimens thickness differences. Review AWS B4.0 weld testing requirements.

3.2.5 Fracture Mechanics – Robert Gatlin and Yong-Yi Wang

Yong-Yi Wang presented a review of the fracture mechanics methodology being used for the new proposed Appendix A.

Addressed Old Business
- Assign defect height to the workmanship criteria
- Chuck Woodruff outline the issue to the sub-committee
- Workmanship criteria accesses length
- AUT offers height information
- Can the sub-committee supply height requirements
- The issue has no clear solution

New Business - Review "New" Proposed changes of the Appendix A
- No technical inquiries
- Briefly discussed Shell’s letter of suggestions
- Began reviewing by section

Thursday (1/19/06) 8:00 AM to 2:30 PM
Continued working through proposed draft
- completed review
- recommended constructing the strain-based work in a Appendix C
- met with chairman about voting on the new Appendix A in 2006
- plan to clarify a few paragraphs over the next few weeks
- propose to send proposed draft to committee members
- propose to conduct online committee discusses on the proposed draft
- construct final draft
- offer new draft for ballot

SC requests chairman to assign a group to review material to be placed on API website (example problems, commentary, etc.)

3.2.6 Repair Welding Task Group - Alan Beckett

PURPOSE

The purpose of this task group is to investigate industry practices used in qualifying welding procedures and welders to perform weld
repairs and then to make recommended changes to API 1104 Section 10, “Repair and Removal of Defects.”

2005 PROGRESS

It was reported at the 2005 API 1104 Meeting in San Diego that the task group had these recommendations for changes in Section 10:

1. Clarify the details for qualification of repair weld procedures. Permit the use of pipe segments for weld repair procedure qualification (e.g., ½ circumference).

2. Provide guidance on the repair types that should be qualified.

3. Require separate qualification of repair welders, and specify essential variables, and test types. Permit the use of pipe segments for welder qualification.

4. Address requirements for qualification of a double repair procedure.

5. Establish weld repair length limits.

6. Change the requirement in Section 10.1.2, third sentence, by replacing the word process to filler metal, to read “A qualified repair welding procedure is required to be used whenever a repair is made to a weld using a filler metal different from that used to make the original weld or when repairs are made in a previously repaired area.”

7. Change the requirement in Section 10.2, second sentence, by specifying the type and number of destructive tests required for procedure qualification. Rewrite the second sentence to “Mechanical properties and soundness shall be determined by destructive testing in accordance with the requirements specified in Section 5 for butt welds.”

The Task Group did not work on these recommendations any further and has no additional progress to report.

3.2.6 Maintenance Welding Subcommittee – Bill Bruce

The Maintenance Welding Sub-Committee was called to order at 8:00 AM on January 19, 2006 (the preceding day, the majority of the Maintenance
Welding Sub-Committee attended the Welding Procedure and Welder Qualification Sub-Committee meeting. A total of 17 participants (including some Welding Procedure and Welder Qualification Sub-Committee members) attended the meeting.

The following is a description of the significant items that were discussed:

**Review of Revisions to Appendix B for 20th Edition** – The significant revisions that were made to Appendix B for the 20th edition were reviewed. These include clarification of discrepancies that exist between the appendix and the main body, changes to procedure qualification requirements (allowance of trade-offs that may be made between the carbon equivalent of the materials and the thermal severity of the pipeline operating conditions without requalification), changes to welder qualification requirements (provisions for a multiple qualification for in-service welders, a relaxation of diameter range essential variables for a single qualification, and simplified guidance for allowing a welder to demonstrate aspects of the procedure intended to avoid the development of crack-susceptible microstructures), and the addition of guidance pertaining to suggested welding sequence and time delay prior to inspection. The chairman offered to distribute a document outlining the changes that were made to Appendix B for the 20th edition for reference.

**Technical Inquiries** – Three technical inquiries were provided for the Maintenance Welding Sub-Committee to review following the January 2005 meeting. The proposed responses to these inquiries were reviewed. Several revisions and additions were proposed and agreed upon for two of these. Following the incorporation of these revisions and additions, these three technical inquiries will be returned to the Modification, Interpretation, and Policy Sub-Committee. One new technical inquiry was provided for the Maintenance Welding Sub-Committee to review. The issues raised in this inquiry have all been addressed by the revisions that were made to Appendix B for the 20th edition. Based upon this, the inquirer, who was in attendance, withdrew his inquiry.

**Branch and Fillet Weld Revisions** – The discussion from the previous day (Welding Procedure and Welder Qualification sub-committee) pertaining to the definition of a branch weld and differentiation between branch and fillet welds for procedure qualification was continued. At the January 2005 meeting, a resolution had been made for the two sub-committees to work together on this issue, since changes that are made to main body of API 1104 might have an impact on Appendix B. After an extended discussion, proposed revisions to the new definition of branch weld that is now in the 20th edition were drafted and agreed upon. The chairman of the Welding Procedure and Welder Qualification Sub-Committee, Alan Holk, agreed to draft a letter ballot containing the proposed revision.

**Procedure and Welder Qualification for Weld Deposition Repairs** – The status of revisions necessary for future editions of API 1104 to allow procedure and welder qualification for weld deposition repairs was
discussed. A first draft of the necessary revisions, which was produced by Bill Amend following the January 2005 meeting, and the new section pertaining to this in CSA Z662 were discussed. The group reconfirmed that this would be a useful addition to Appendix B and accepted the offer of Bill Amend, who was unable to attend this meeting, to continue his work on this. The chairman offered to distribute the draft produced by Bill Amend and the relevant sections of CSA Z662.

ASME In-Service Welding Activities – The activities of the ASME Post-Construction Sub-Committee regarding in-service welding were discussed. This sub-committee is in the process of producing a document that addresses the requirements and precautions associated with in-service welding. Jim Cox offered to attend the next meeting of this sub-committee and to act as a liaison person between these two groups. The chairman offered to distribute a draft of the ASME document and the minutes of the latest Post-Construction Sub-Committee meeting, if possible.

Other Discussion Items – A variety of other issues were discussed. One of these was the determination of chemical composition for pipelines in operation. Various methods for doing this were discussed. The chairman offered to distribute a technical paper that reviews these various methods.

The meeting was adjourned at approximately 12:00 PM.

3.0 Closing Session (Continued) - Third Day

3.3 New Business Presentations for next year

1. Discussion on how to link to API web page. Difficulties to log in from main page. Should set as favorite. Andrea will send link to 1104, tech inquiries (interpretations),
2. Replacement in general interest group. Send resumes to Don Thorn. Anyone interested, let us know.
3. The 2007 meeting location has not been determined. It may be in Phoenix, Arizona or San Antonio, Texas.

3.4 Meeting Adjourned at 11:30 am.

Respectfully Submitted,

Jim Ibarra, Secretary
Attachment I - Interpretations Subcommittee Minutes

API 1104 - Subcommittee on Modifications, Interpretations and Policy

Thursday - January 19, 2006

Hyatt Regency Savannah
Savannah, Georgia


Attendees:

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<th>4 - Subcommittee Members:</th>
<th>1 - Other Guests:</th>
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<td>Scott Metzger</td>
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<td>Wayne Klemcke</td>
<td>Dave Culbertson</td>
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<td>Ronnie Wise</td>
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<td>Don Thorn</td>
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Minutes:

4. Due to scheduling conflicts with other members of the Subcommittee, Wednesday's meeting of the Modification, Interpretation and Policy Subcommittee did not meet.

5. The Chairman called the meeting to order at 8:00 am, Thursday, January 19, 2006. An agenda (attachment) for the meeting was made available to all attendees.

6. Previous Inquiries addressed at this meeting and suggested responses:

   a. 1104-I-0227-03 Appendix B, 19th Edition

   Question 1: When performing a procedure qualification for in-service welding, does it recommend the branch be taken with the sleeve?
   Response: No. The user has the option to qualify a procedure for either a sleeve or a branch.

   Question 2: Does API recommend this in-service procedure qualification be incorporated in another already qualified procedure?
   Response: No.

   Question 3: Does the sleeve part of the procedure qualification test also require flowing media?
   Response: No. The use of flowing media is recommended for either a sleeve or a branch to simulate the ability of the flowing contents to remove heat from the pipe wall.

   Question 4: Should the sleeve portion of the procedure qualification
test have a backing strip?
Response: If so required by the welding procedure specification. The use of a backing strip is recommended in Section B.4.1.2

Question 5: Is the use of a backing strip considered an essential variable? (joint design)
Response: No, for the welding procedure (Ref. Section B.4.1.2). Yes, for the welder qualification if a backing strip required by the welding procedure specification is eliminated.

Question 6: If this procedure qualification is performed in a 5G position, and a welder performs his welder qualification in a 6G, does this qualify a welder to weld in any position?
Response: Yes, for butt welds and lap fillet welds.

Question 7: If the in-service procedure is qualified on 6" pipe, up to what pipe diameter does this allow you to weld to?
Response: There is no upper limit, provided the welding procedure specification outside diameter range is not exceeded.

Question 8: What testing should be performed to qualify and re-qualify the welders?
Response: As specified in B.3.2

b. 1104-I-0527-03 Sec. 5 - Weld Procedure Qual., 19th Edition

Question 1: Is there any applicable clause / table in API 1104: 1999 that covers the welding procedure qualification test requirements of full penetration T-butt (branch connection) for new pipe fabrication? {Ref. 8" weldolet (branch) to 28" pipe.}
Response: Yes. Sec. 5.3.2.4 refers to joint design, and a sketch of the full penetration weld is to be shown in the procedure. All procedure test requirements are noted in Sec. 5.8 – Testing of Welded Joints – Fillet Welds. The joint design described is a combination of a bevel and fillet welds. Such welds are treated as fillet welds in the Standard.

Question 2: What are the types of mechanical tests to comply with, in order to qualify the welding based on API 1104: 1999 requirements?
Response: Sections 5.7 and 5.8 refer to the test requirements.

Question 3: Is there any provision for re-test should any of the coupons for mechanical test failed?
Response: No

c. 1104-I-0723-03 Sec. 2.4.2.2 & 3.3 – Weld Proc. Qual. & Multiple Qualification of Welders, 18th Edition

Question 1a: The Committee understands your question to be whether an established welding procedure for X56 to X56 pipe can be used to support a butt weld for X42 to X42 pipe, if there are no other essential variable changes.
Response: Yes.
**Question 1b:** The Committee understands your question to be whether an established welding procedure for X56 to X56 pipe can be used to support a butt weld for X56 to Grade B pipe, if there are no other essential variable changes.

**Response:** Yes.

**Question 1c:** The Committee understands your question to be whether an established welding procedure for X56 to Grade B pipe can be used to support a butt weld for X46 to Grade B pipe, if there are no other essential variable changes.

**Response:** Yes.

**Question 2a:** The Committee understands your question to be whether it is permissible to weld different pipe diameters in the butt weld test (14”), and the branch connection test (20”).

**Response:** Yes.

**Question 2b:** The Committee understands your question to be whether it is permissible to weld with different filler metal groupings and weld progression in the butt weld test and the branch connection test (e.g. Group 1 or 2, downhill progression in the butt weld and Group 1 and 3 uphill progression in the branch connection.)

**Response:** Yes. The scope of the multiple welder qualification is defined in Sec. 3.3.2 in the 18th Edition and 6.3.2 in the 19th Edition.

d. **1104-I-0223-04 Sec. 6.2.2.f – Branch Test/Fillet Weld, 19th Edition**

**Question:** Is the weld for attaching sock-o-lets, weld-o-lets and thread-o-lets to a header a fillet weld or should these welds be considered branch welds and the welder only be qualified by an overhead branch test?

**Response:** AP considers the sock-o-let, weld-o-let and thread-o-let welds to a header branch welds and the welder must be qualified with a branch test.

e. **1104-I-0722-04 Sec. 5.3.2.10 – Proc. Qual., 19th Edition**

**Question 1:** The Committee understands your first question to deal with the definition of a lap weld fillet, as noted in Sec. 6.2.2.f.

**Response:** Welding terms in this Standard are defined in AWS A3.0, as noted in Sec. 3.1 - General.

**Question 2:** The Committee understands your question to deal with the welding procedure essential variable, “time between passes”, as noted in Sec. 5.4.2.8, and whether that time may be “one hundred years”, if desired.

**Response:** The requirement for time between weld beads is contained in Sec. 5.3.2.10, and requires the time between beads to be designated. There is no specific time required by the Standard, but as noted in Sec. 5.4.2.8, an increase in the maximum time between the
completion of the root bead and the start of the second bead constitutes an essential variable.

f. 1104-I-0723-04 Sec. 5.4.2.2 & 6.2.2 – Weld Proc., 19th Edition

Ref. the following list of pipe materials, (grades, wall thickness & diameter)

Grd. X70 to Grd. X70, wall thickness .188" to .750", 2" thru 42"
Grd. X70 to Grd. X52, wall thickness .188" to .750", 2" thru 42"
Grd. X70 to Grd. X42, wall thickness .188" to .750", 2" thru 42"
Grd. X52 to Grd. X52, wall thickness .188" to .750", 2" thru 42"
Grd. X52 to Grd. X42, wall thickness .188" to .750", 2" thru 42"
Grd. X42 to Grd. X42, wall thickness .188" to .750", 2" thru 42"

Question 1: The Committee understands your first question to deal with the minimum number of configurations of butt weld procedures required when welding on all pipe grades, diameters, and wall thicknesses shown above.
Response: Three (3) procedures; X42 – X42, X52 – X52 & X70 – X70, are required.

Question 2: What is the true meaning of the first paragraph of Section 5.4.2.2?
Response: When welding pipe of different base materials, the procedure for the higher strength base material group shall be used for the qualification of welding procedures.

g. 1104-I-0806-04 Appendix B, Sleeve/Branch Connect. Proc., 19th Edition

Question: The Committee understands your question to be as follows: Does a welding procedure qualified for branch connection also qualify for welding full-encirclement sleeves?
Response: Yes, but only if the longitudinal welds on the sleeve are fillet welds, and not full penetration, V-groove welds. For in-service procedure qualification, Appendix B refers to Section 5, (See Section B.2). Section 5.4.2.3 states a major change in joint design constitutes an essential variable. A change from a branch connection to a full penetration, V-groove weld is considered a major change in joint design, and thus requires a new procedure to be qualified.

h. 1104-I-0810-04 Sec. 6.2.2 - Welder Qual., 19th Edition

Question: If a welder performs a welder qualification test using an E6010+ on the root pass and an E7018 on all remaining weld passes, is the welder qualified to weld on a full low hydrogen weld w/ all passes
being of the E7018 group?

Response: No. Refer to Sec. 6.2.1 and Sec. 6.2.2, which state, changes in essential variables described in 6.2.2.c, require requalification of the welder.

i. 1104-I-1108-04 Appendix B, Welder Qual., 19th Edition

Question: The Committee understands your question to be as follows: What Sections of Appendix B apply to the testing and coupon locations for a welder qualification sleeve test? Table 3?

Response: No, Table 3 applies only to butt weld test specimens for welder qualification. For in-service welder qualification, Appendix B refers to Section 6.2, Single Qualification. Fillet weld test sample acceptance criteria are contained in Sections 6.4 and 6.5. Sample location information for fillet weld testing is referenced in Section 6.5.6 and Figure 10.

j. 1104-I-1206-04 Sec. 6.5.4, 19th edition & 3.5.4, 18th Edition

Question: In reference to Nick-breaks Section 3.5.4, 18th Edition; If the nick breaks in the base metal, not the weld, does it pass or do you need to make additional specimens and nick it further to assure it will break in the weld area? (The situation arises because of 2 different thicknesses of pipe. One (1) side is thicker, and we have fracture in the base material.

Response: The nick-break must break in the weld metal for the evaluation of the weld.

k. 1104-I-0104-05 Sec. 5 – Weld Proc., 19th Edition

Question 1 – Sec. 5.3.2.3: Is it correct to assume the diameter range of 2-3/8” and larger, as currently outlined in the contractor’s procedures, is acceptable?
Response: Yes

Question 2 – Sec. 5.3.2.5: When a procedure has been established for a SMAW weld, and the electrode size has been recorded for .188” WT pipe, is it acceptable to change the electrode size to weld a .625” WT pipe without qualifying a new procedure?
Response: Yes. Electrode size is not an essential variable, and, therefore, a change in electrode size, alone, would not constitute a requirement for qualifying a new procedure. As specified in Sec. 5.4.1, changes other than essential variables may be made in the procedure without re-qualification, provided the procedure specification is revised to show the changes.

Question 3 - Sec. 5.3.2.6: Is there an acceptable voltage & amperage range/percentage that can be used outside the range recorded in the
qualified procedure?

Response: No. Voltage and amperage are not essential variables for the welding procedure, however, the ranges of electrical characteristic must be identified in the welding procedure, and can not be used outside the ranges listed in the procedure.

Question 4 – Sec. 5.3.2.8: If a procedure has been developed which states the “weld was allowed to cool to ambient temperature then preheated prior to starting next pass”, is a maximum time between such passes, (bead & hot pass), required?

Response: Yes.

Question 5 – Sec. 5.3.2.16: Is there an acceptable range/percentage that can be for recording the travel speed for SAW on various pipe wall thicknesses or an acceptable percentage that can be used outside the travel speed range recorded in the procedure?

Response: No. The travel speed used must be within the ranges recorded in the procedure.

Question 6 – Sec. 5.4.2.2: Can an existing weld procedure for X60 pipe be used to complete a production weld of X60 to X42 pipe?

Response: Yes. Sec. 5.3.2.2 clearly states that materials used in the procedure may be grouped, provided the qualification test is made on the material with the highest SMYS in the group. No cross-grade procedures are required by the Standard.

Question 7 – Figure 3: If two welders are testing on 30” pipe, how many straps are required for each welder?

Response: In accordance with Table 3 of the 19th Edition of the Standard, each welder must have 12 specimens on a 30” pipe weld.

Question 8 – Is it necessary to re-establish weld procedures to the 19th Edition, if originally established under the 16th Edition?

Response: The particular edition of the Standard itself is not an essential variable for procedure qualification. Section 5.4.1 states that welding procedures must be re-established as a new procedure specification and must be completely re-qualified when any of the essential variables listed in 5.4.2 are changed. Changes other than those given in 5.4.2 may be made in the procedure without the need for re-qualification, provided the procedure specification is revised to show the changes.

7. Other Old Business

a. 1.13 – Investigate the handling of abstention votes. Per API Std. Procedures & Bylaws of API-AGA Joint Committed on Oil & Gas PL Field Welding Practices, two (2) conditions must be satisfied: 1) At least 50% of the members who are eligible to vote shall have voted affirmative, and 2) At least 2/3 of combined, valid negative & affirmative votes shall be affirmative. No specific mention of abstention votes in Bylaws
b. 1.19 – Investigate the Bylaws’ letter ballot voting rules. This investigation to include: The members emeritus voting rights & continuing the practice of three negative votes by a represented group preventing approval of a letter ballot. The Subcommittee did not feel it was necessary to re-adopt the previous practice of 2/3 from representative group preventing approval of ballot item and elected to maintain the same practices as the API Stds. Procedures. All ballot items are provided to member emeritus for comments only. All comments shall be considered & resolved. The Subcommittee suggested the following addition to the Bylaws to address the comments from non-voting members: Add (g) to paragraph 8.7- Comments received by non-voting members will be addressed and resolved appropriately.

8. New Inquiries and suggested responses:

a. 1104-I-1012-05 Travel Speed – Welder Qualification, 19th Edition

Question: When qualifying welders, must a company measure and record the weld speed of travel?
Response: No. Speed of travel is not an essential variable for the qualification of welders, therefore measuring and recording speed of travel during the welder qualification process is not required. Welders, however, must follow qualified procedures in which the range for speed of travel is specified for each weld pass, therefore, companies may elect to measure and/or record the speed of travel during welder qualification.

b. 1104-I-1019-05 Sec. 9.3 – Radiographic Testing, 19th Edition

Question 1 – Sec. 9.3.3: The Committee understands your first question to deal with inadequate cross penetration and why there is no specific mention of aggregate length of ICP in welds less than 300 mm in length.
Response: The Committee does not feel that the criteria for ICP for weld lengths less than 12” in length is necessary, since ICP only occurs with a two-sided weld configuration; i.e. ID and OD welding.

Question 2 – Sec. 9.3.5: The Committee understands your second question to deal with incomplete fusion due to cold lap and why there is no specific mention of aggregate length of IFD in welds less than 300 mm in length.
Response: The requirement in Section 9.3.5c applies to welds of any length.

Question 3 – Sec. 9.3.12: The Committee understands your third question to deal with the accumulation of imperfections and why one defect criterion is over 16% of the weld length (exceeds 2” in
continuous 12" of weld length), and the other criterion listed is greater than 8% of the weld length.  
**Response:** All listed criterion applies to the accumulation of imperfections, and both apply to all weld sizes.

c. 1104-I-1116-05 Appendix B, Welder Qual., 19th Edition

It is the Committee’s understanding that all in-service welder qualification questions raised by the inquirer were subsequently withdrawn, due to clarifications contained in the 20th Edition of the Standard. (No response required.)

d. 1104-I-1220-05 Filler Metal Classification, 20th Edition

**Comment:** The suggestion was made to add a SAW filler metal classification for SAW welding; namely: A5.23, used for low alloy double joint welding.  
**Response:** As verbally noted to the individual who suggested the addition of this particular filler metal classification during the annual meeting of the API-AGA Joint Committee on Oil and Gas Pipeline Field Welding Practices on January 20, 2006, the 20th edition of the Standard, as published, does not exclude the use of A5.23. As noted in 4.2.2.1.i, filler metals that do not conform to the specifications listed in the Standard, may be used, provided the welding procedures involving their use are qualified. The Subcommittee will consider adding the A5.23, provided it is also addressed in Table 1- Filler Metal Groups, of the Standard.

No additional action is needed by the Subcommittee at this time concerning this particular issue.