Date Distributed:

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

SUBGROUP ON REPAIRS and ALTERATIONS SPECIFIC

MINUTES

Meeting of January 15, 2013
Mobile, Alabama

"These minutes are subject to approval and are for committee use only. They are not to be duplicated or quoted for other than committee use."

The National Board of Boiler & Pressure Vessel Inspectors
1055 Crupper Avenue
Columbus, Ohio 43229-1183
Phone: (614)888-8320
FAX: (614)847-1828

1. Call to Order

The meeting was called to order at 1:00 p.m.by Chairman J. Pillow.

2. Announcements

Secretary J. McGimpsey presented the announcements of events for the week. The Chair also took this opportunity to welcome the new members of the SG; Mr. Zyad Jabal, Mr. Frank Johnson, Mr. Ray Miletti and Mr. William Vallance

3. Adoption of the Agenda

A motion was made and unanimously approved to adopt the presented Agenda. The following items were added to the agenda:

NB10-0110 Part 3, S6.19.1
No Action Item No. – New Part 3, 1.2 f)
It was also agreed that the requests for interpretations shown in the SC R&A agenda would be discussed, time permitting.

4. Approval of Minutes of July 17, 2012 meeting

A motion was made and unanimously approved to adopt the Minutes of the July 17, 2012 meeting.

5. Review of the Roster (Attachment 1, pages 4-7)

The meeting was attended by 14 voting members with 3 not attending and the meeting had 13 visitors.

6. Action Items (Attachment 2-3, pages 8-25)

NB11-1001 ***Part 3, 3.3.4.9 SG R/A Specific*** – Tube plugging for fire tube boilers. (Attachment 2, page 8)
Task Group members; A. Bramucci (Project Manager), W. Jones, R. Miletti

January 2013
A progress report and proposal was presented to the SG by A. Bramucci. A motion was made to approve the proposal. The motion was followed by a discussion that resulted in the motion being withdrawn. The gist of the comments was that it should somehow be stated that this condition should only be a short term interim repair until the tube can be replaced. The SG members are requested to get their comments to Angelo for the TG's consideration. The Task Group will continue to work on this Action Item.

NB12-0403 ***Part 3 R/A Specific*** – CSEF Weld Repair Options using temper bead welding. Task Group members; G. Galanes (Project Manager) (Attachment 3, pages 9-25)

A progress report and presentation on this Action Item was given by G. Galanes. Use of the word "Normal" in the charts was questioned, i.e., does this mean "normalized"? George said he will clarify this.

NB12-0801 ***Part 3, SG R/A Specific*** – Repair and alteration of Gasketed PHEs in the field. Task Group Project Manager – E. Ortman, J. Pillow, G. Galanes, B. Wielgoszinski.

January 2013
A progress report on this Action Item was given by B. Wielgoszinski and E. Ortman. During discussions it was suggested by R. Wielgoszinski that it may only be necessary to list actions that are considered repairs and actions considered alterations. The Task Group will continue to gather information for the next meeting.

7. New Business (Attachment 4-5, pages 26-32)

NB10-0110 ***Part 3, S6.19.1 TG DOT*** – Combine and clarify requirements within S6.15 for TR Forms, S6.18 Preparation of TR – Forms and S6.19 for Reports of Repairs, Alterations and Modifications. Task Group Project Manager – S. Staniszewski. (Attachment 4, pages 26-30)

A progress report and proposal was given by S. Staniszewski. A motion was made to send a Review and Comment letter ballot to the RA Sub Committee and RA Sub Groups Specific and General. The motion passed unanimously with a vote of 14-0-0.

NB13-1401 ***Part 3, TG DOT –*** New paragraph Part 3 1.2 f) The Sub Group discussed the addition of a new paragraph Part 3 1.2 f) and S. Staniszewski will submit an Action Item Request form to the Secretary for inclusion into the new meeting Agenda. (Attachment 5, pages 31-32)

IN13-0201 ***Part 3, 5.7.2 c*****) –** The SG discussed this request for interpretation (see the SC R&A agenda). It was the SG's opinion that the inquirer should be asked to withdraw the request and a new revision item be opened to address attaching of repair nameplates. Mr. Ray Miletti agreed to take the lead on this. This will be presented to the SC R&A.

IN13-0301 ***Part 3, 3.2.2 c)*** **–** This interpretation (see SC R&A agenda) was discussed. The SG agreed that along with an interpretation a Code revision was needed to clarify the requirements. Brian Boseo and Bob Wielgoszinski agreed to work on this item and make recommendations to the SC R&A.

IN13-0401 ***Part 3, 3.2.5*** **–** The SG discussed this request for interpretation (see SC R&A agenda). It was generally agreed that the Code is not clear about when calculations must be reviewed and accepted by the Inspector except that it must be done before signing of the R Form by the Inspector. It was agreed that the inquirer should be contacted by the Secretary for more information. This will be suggested to the SC R&A.

8. Future Meetings

July 15–19, 2013, Columbus. OH
January 13–17, 2014, San Antonio, TX

9. Adjournment

The meeting was adjourned at 3:30 P.M.

Respectfully Submitted,

Jim McGimpsey
Secretary
:rh

Attendance List Repairs Alterations-Specific Subgroup

Meeting Date: January 15, 2013

James T. Pillow Common Arc Corporation 67 Wyndemere Lane Windsor, CT 06035 Ph: 860-688-2531 Fax: 860-688-2531 E-mail: Jpillow@commonarc.com	Attended: Yes ☑ No ☐ Initial	**George W. Galanes, PE** Metallurgical Consulting Engineer Diamond Technical Services, Inc./Lisle, IL Office Ph: 630-799-8162 Office 312-925-1341 Cell Fax: ggalanes@diamondtechnicalservices.com	Attended: Yes ☑ No ☐ Initial
Angelo Brammucci Alstom Power Inc. 2000 Day Hill Road Windsor, CT 06095 Ph: 860-285-9176 Fax:860-285-3840 Email: angelo.c.bramucci@power.alstom.com	Attended: Yes ☑ No ☐ Initial	**James Sekely** Welding Services, Inc. 716 Vanderbilt Drive Monroeville, PA 15146 Ph: 412-389-5567 Fax: 724-327-7381 E-mail: jsekely@comcast.net	Attended: Yes ☐ No ☑ Initial
Larry McManamon Great Lakes Apprenticeship Program 566 W. 95th Street Oak Lawn, IL 60453 Ph: 708.636.6656 Fax: E-mail: Lmac@gLabap.com	Attended: Yes ☐ No ☑ Initial	**Jim McGimpsey** The National Board 1055 Crupper Ave. Columbus, OH 43229 Ph: 614-888-8320 Fax: 614-847-1828 E-mail: jmcgimps@nationalboard.org	Attended: Yes ☑ No ☐ Initial
Wayne Jones Arise Boiler Inspection and Insurance Company 705 East 4th Street Bay Minette, AL 36507 Ph: 251-937-6225 Fax: E-mail: wayne.jones@ariseinc.com	Attended: Yes ☑ No ☐ Initial	**Brian Boseo** Graycor Services LLC Two Mid America Plaza, Suite 400 Oakbrook Terrace, IL 60181 Ph: 630-684-7380 Fax: 630-684-7116 E-mail: brian_boseo@graycor.com	Attended: Yes ☑ No ☐ Initial

Attendance List Repairs Alterations-Specific Subgroup

Meeting Date: January 15, 2013

Walt Sperko Sperko Engineering 4803 Archwood Drive Greensboro. NC 27406 Ph: 336-674-0608 Fax: E-mail: sperko@asme.org	Attended: Yes ☑ No ☐ *Initial*	**William Vallance** State of Michigan P.O. Box 30254 Lansing, MI 48909 Ph: 517-241-9359 Fax: 517-241-6301 Email: vallancew@michigan.gov	Attended: Yes ☑ No ☐ *Initial*
Benjamin Schaefer American Electric Power (AEP) Manager Fossil Plant Quality Control American Electric Power 1 Riverside Plaza, 18th Floor Columbus, Ohio 43211 P: 614-716-1843 F: 614-716-3204 Email: bschaefer@aep.com	Attended: Yes ☑ No ☐ *Initial*	**Edward Ortman** Alstom Power 175 Addison Road Windsor, CT 06095 Ph: 860-285-2437 Fax: 860-285-3436. E-mail: Edward.m.ortman@power.alstom.com	Attended: Yes ☑ No ☐ *Initial*
Zyad Jabal Tampa Electric P.O. Box 111 Tamapa, FL 33601 Ph: 813-228-4111 Fax: 813-228-4560 Email: zxjabal@tecoenergy.com	Attended: Yes ☐ No ☑ *Initial*	**Rick Valdez** ARB Corporate Quality Control Manager 2600 Commercentre Drive Lake Forest, CA 92630 Ph; 661-331-6024 Fax: 661-833-4409 Email: rvaldez@arbinc.com	Attended: Yes ☑ No ☐ *Initial*
Frank Johnson Owner 9853 Mandell Road Perrysburg, OH 43551 Ph: 419-697-6502 Cell: 419-386-8450 ~~E-mail: fjkeck22@aol.com~~ Frank.Johnson@PBFEnergy.com	Attended: Yes ☑ No ☐ *Initial*	**Chad Wayne Bryan** State of Tennessee Chief Boiler Inspector Department of Labor and Workforce Development Division of Boiler Inspection 220 French Landing Drive, Second Floor Nashville, Tennessee 37243-1002 Phone :615.741.0488 Fax :615.532.1469	Attended: Yes ☑ No ☐ *Initial*

Attendance List Repairs Alterations-Specific Subgroup

Meeting Date: **January 15, 2013**

Ray Miletti B&W Construction Co. 74 Robinson Ave. Akron, OH 44203 Ph: 330-860-2589 Fax: Email: RLMiletti@babcock.com	Attended: Yes ☑ No ☐ RM Initial	Thomas White NRG Energy 12301 Kurland Dr Houston, TX 77034 281-782-1972 tom.white@nrgenergy.com	Attended: Yes ☑ No ☐ Initial
Marty Toth Boiler Supply Co 2950 Foster Creighton Nashville, Tn 37204 615.915.5087 (o) 615.504.9064 (c) mtoth@boisco.com	Attended: Yes ☑ No ☐ mt Initial	Bob Wielgoszinski HSB-CT 860 722 5064 Robert_Wielgoszinski @ HSBCT.com	Attended: Yes ☑ No ☐ Guest Initial
Ron Durham B&W-PGG 20 S. Van Buren Ave. Barberton, OH 44203 330-860-2856	Attended: Yes ☑ No ☐ VIS. Initial	Brian Morelock Eastman Chemical Co. P.O. Box 511, B54D Kingsport, TN 37660 423-229-1205 (w) morelock@eastman.com	Attended: Yes ☑ No ☐ Visitor BRM
William Jallance State of Michigan PO Box 30254 Lansing MI 48909 517 241 9359	Attended: Yes ☑ No ☐ WJ Initial	Paul Edwards Shaw Stone & Webster Visitor	Attended: Yes ☑ No ☐ PE Initial

Attendance List Repairs Alterations-Specific Subgroup

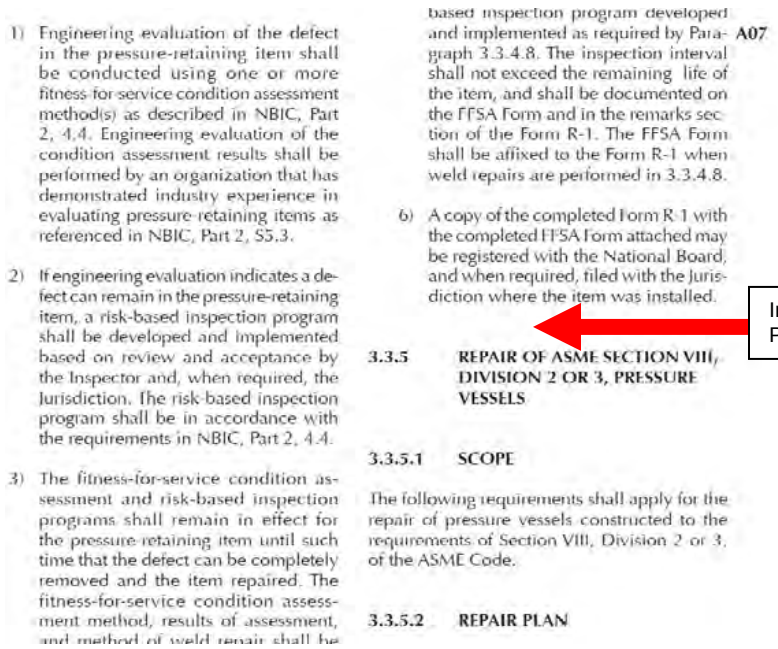
Meeting Date: **January 15, 2013**

WALT SPERKO SPERKO ENG. SPERKO@ASME.ORG			Attended: Yes ❑ No ❑ VISITOR _____ *Initial*
Mike Webb Xcel Energy Mike.Webb@xcelenergy.com 303) 628-2840			Attended: Yes ❑ No ❑ Visitor _____ *Initial*
C Wilkins NB			Attended: Yes ❑ No ❑ _____
EDWARD F. WIGGINS JR LIBERTY MUTUAL INSURANCE EDWARD.WIGGINS@LIBERTYMUTUAL.com 256-497-7092			Attended: Yes ☑ No ❑ VISITOR _____ *Initial*

David Martinez FM Global david.martinez@fmglobal.com 703-262-0311			VISITOR
RANDY CAUTHON ALCOMPOWER INC. randal.t.cauthon@power.alstom.com 860-285-3481			VISITOR

Part 3 – Repairs and Alterations Page 75

Proposed Changes
NB11-1001



1) Engineering evaluation of the defect in the pressure-retaining item shall be conducted using one or more fitness-for-service condition assessment method(s) as described in NBIC, Part 2, 4.4. Engineering evaluation of the condition assessment results shall be performed by an organization that has demonstrated industry experience in evaluating pressure-retaining items as referenced in NBIC, Part 2, S5.3.

2) If engineering evaluation indicates a defect can remain in the pressure-retaining item, a risk-based inspection program shall be developed and implemented based on review and acceptance by the Inspector and, when required, the Jurisdiction. The risk-based inspection program shall be in accordance with the requirements in NBIC, Part 2, 4.4.

3) The fitness-for-service condition assessment and risk-based inspection programs shall remain in effect for the pressure-retaining item until such time that the defect can be completely removed and the item repaired. The fitness-for-service condition assessment method, results of assessment, and method of weld repair shall be

based inspection program developed and implemented as required by Paragraph 3.3.4.8. The inspection interval shall not exceed the remaining life of the item, and shall be documented on the FFSA Form and in the remarks section of the Form R-1. The FFSA Form shall be affixed to the Form R-1 when weld repairs are performed in 3.3.4.8. A07

6) A copy of the completed Form R-1 with the completed FFSA Form attached may be registered with the National Board, and when required, filed with the Jurisdiction where the item was installed.

Insert New Para. Here

3.3.5 REPAIR OF ASME SECTION VIII, DIVISION 2 OR 3, PRESSURE VESSELS

3.3.5.1 SCOPE

The following requirements shall apply for the repair of pressure vessels constructed to the requirements of Section VIII, Division 2 or 3, of the ASME Code.

3.3.5.2 REPAIR PLAN

Section 3.3.4.9 TUBE PLUGGING IN FIRETUBE BOILERS

When tube plugging in a firetube boiler is performed, the following requirements should be met:

1. If tube replacement is not practical at the time the defect is found, plugging of tubes in a firetube boiler may be considered and only conducted after authorization by the Inspector and, where required, the jurisdiction.

2. The manufacturer should be consulted and repair procedure evaluated to determine the scope of repair and address operating or safety concerns.

3. If welded repairs or replacement of pressure retaining parts are conducted, all welding and material shall be in accordance to the original code of construction or as noted in the applicable sections of the NBIC.

4. Plugged tubes impact the pressure boundary and the safe and efficient process of combustion in the boiler unit. Thus, when practical, plugs should be removed and the tube replaced.

Rational: An effort to address many jurisdictions and repair organizations concerns with the tube plugging of firetube boilers and procedures that are performed on a continuous basis and to assist in unifying basic requirements following guidelines of the NBIC.
Tube plugging is presently being performed using various processes such as welding, and mechanical methods such as driving and expanding to existing tubes (sleeved or un-sleeved) or tube sheet holes when tubes are removed.
The Task Group considered the scope of the NBIC should only address the repairs that pertain to replacement of tubing or when tubing involves welding in its repair method. The task group felt that the plugging of a tube or tubes in a firetube boiler is a deviation from its original operating parameters and the manufacturer's original design. The NBIC should not address mechanical repair methods, and could not safely determine a repair procedure or process when the various effects on the pressure boundaries, heat transfer and byproducts of combustion are unknown. The Task Group endorse the use of should vs. shall as documented so cases where it is not necessary to consult the manufacturer, particularly if you have an experienced and knowledgeable R stamp holder who can make the necessary design considerations (both structural and performance related). The original Manufacturer may not even exist in some cases.

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Update of EPRI Project on Weld Repair of Grade 91 Piping and Components

George Galanes, Jonathan Parker, John Siefert

NBIC Meeting, Mobile, Alabama
January 14th -17th

Project Objectives

- Ensure that the repair methods used are selected based on accurate technical understanding. Specific aims are to:
  - Understand how to remove damaged material efficiently and without introducing additional problems which could influence future performance
  - Develop the ability to make repairs in Grade 91 steel, which will provide the required service life
  - Develop follow-up inspection and assessment requirements consistent with safe and reliable operation
- **It is absolutely critical to provide a well-engineered solution**

Phase 1 – Rank Repair Performance

- Discussion of Methods and Extent of Excavation,
- Weld Procedure Considerations (including consumables) and Heat Treatment
- Post Repair evaluation of microstructure, damage etc
- Specimen Geometry and Testing Conditions
- Development of Test Matrix, cross weld creep, others?
- Analysis to identify **best option repairs** – 'best option' to be based on factors such as speed of welding, initial quality, creep life

20 weldments were made and tested to fulfill outlined objectives above

Phase 1 Completed

- 20 weldments completed and analyzed
  - Microstructure
  - Hardness
  - Creep tests (1157°F, 625°C and 11.6ksi, 80MPa)
- Phase 1 results enabled a down selection of consumables for a wide variety of engineering considerations

Phase 2 – Application of Best Option Methods to Ex-service Header

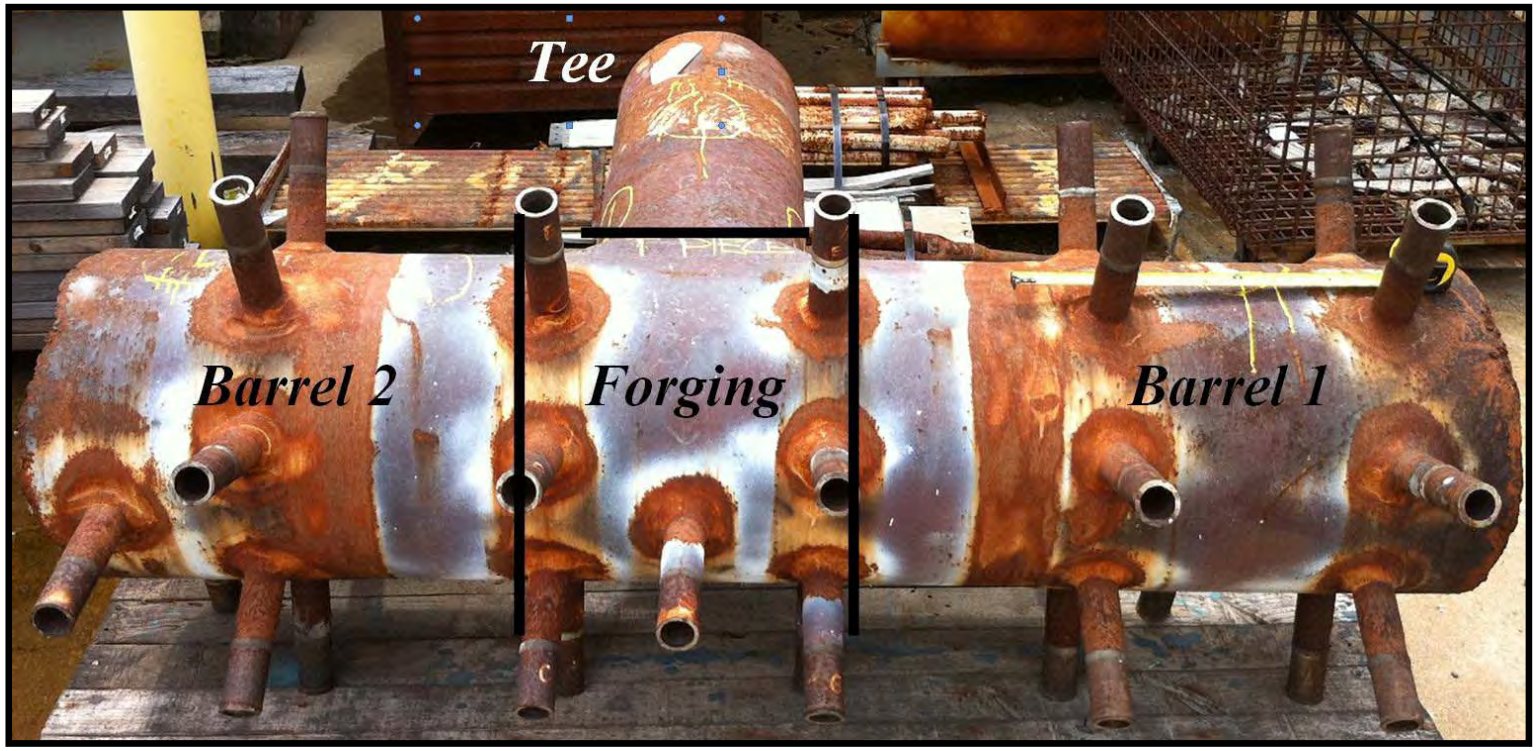
- Discussion of Methods and Extent of Excavation,
- Weld Procedure Considerations (including consumables) and Heat Treatment
- Post Repair evaluation of microstructure, damage etc
- Specimen Geometry and Testing Conditions
- Development of Test Matrix, cross weld creep, others?
- Data Analysis and Report Preparation

Welding Procedures for Phase 2

12 Total Simulations in Ex-service Header

- Three filler metals
  - Single Layer Temperbead + Ni-base Filler Metal (EPRI P87)
  - Single Layer Temperbead + Fe-base Filler Metal (E8015-B8)
  - Normal Welding Procedure + Matching Filler Metal (E9015-B9) + Low PWHT (1250°F, 676°C/2h)
- Four repair scenarios
  - Minor
  - Partial
  - Full (reinforcement left in root)
  - Full (no reinforcement left in root, backing bar utilized)

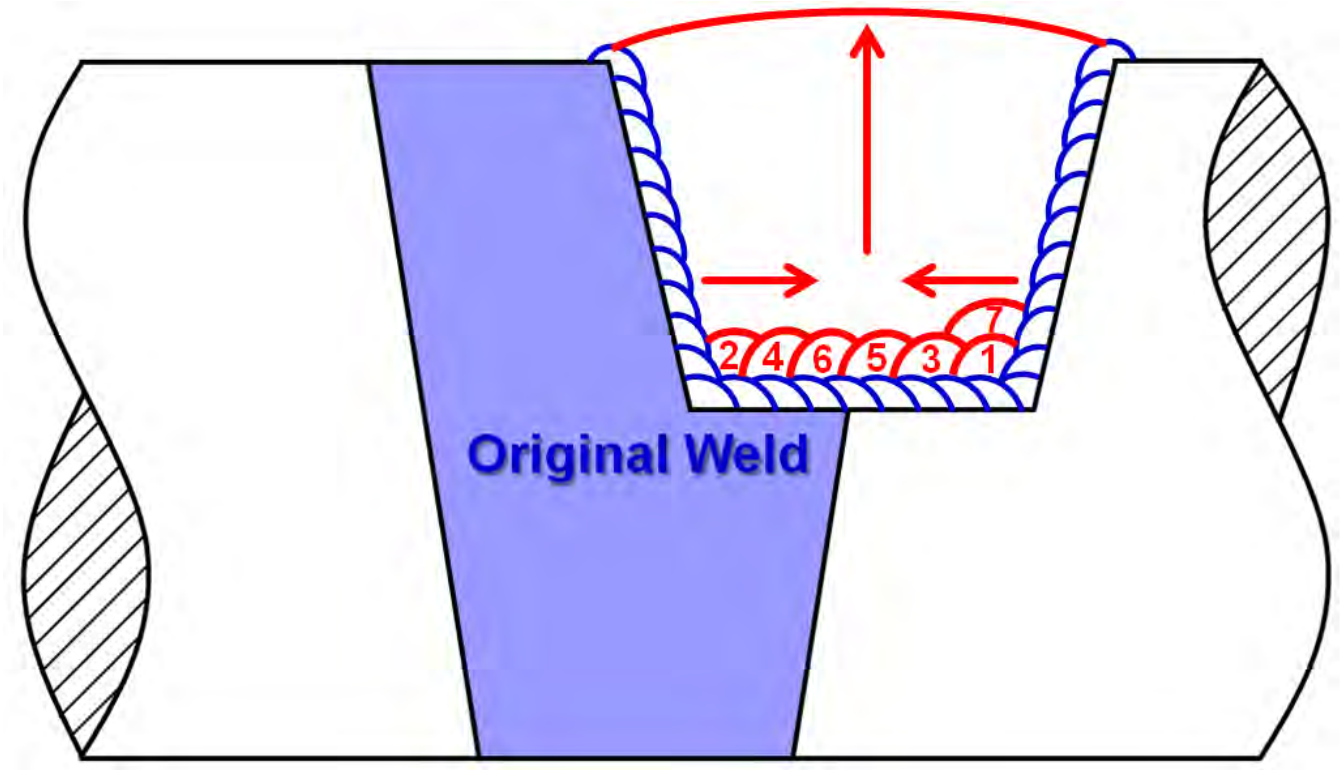
Repairs Conducted in Ex-service Gr. 91 Header



- Minor repair – conducted in barrel 1
- Partial repair – conducted in barrel 2
- Full repair (reinforcement left in root) – conducted in forging
- Full repair (no reinforcement, with backing bar) – conducted between ends cut from barrel 1 and barrel 2

Schematic of Welding Approach – Minor Repair

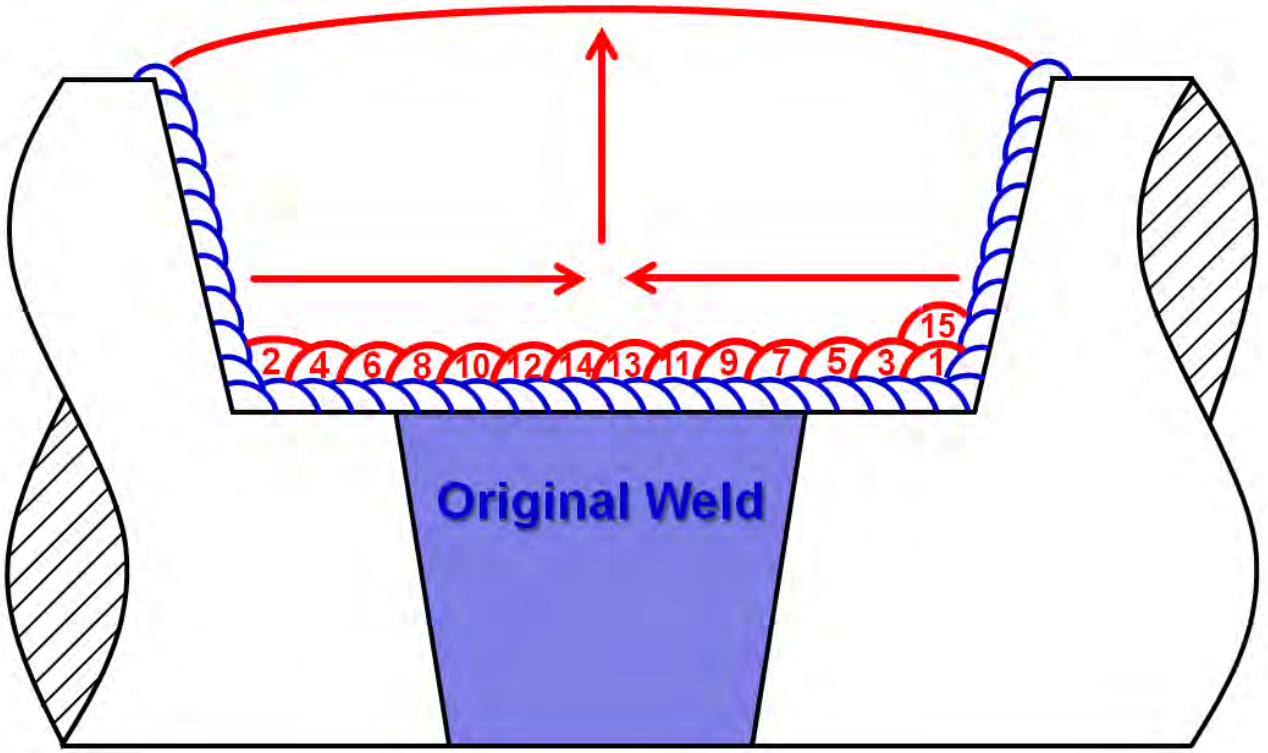
Methodology Specific to E8015-B8 and EPRI P87 Filler Metal



- Blue = 1 single layer of 3/32” (2.5mm) + >50% overlap bead to bead within a layer
  - *Light grind of single layer to remove all slag prior to fill (but NOT half-bead)*
- Red = fill passes of 1/8” (3.2mm) using typical stringer bead procedure
- Note: for E9015-B9, 1/8” (3.2mm) for all fill passes (no single layer temperbead)

Schematic of Welding Approach – Partial Repair

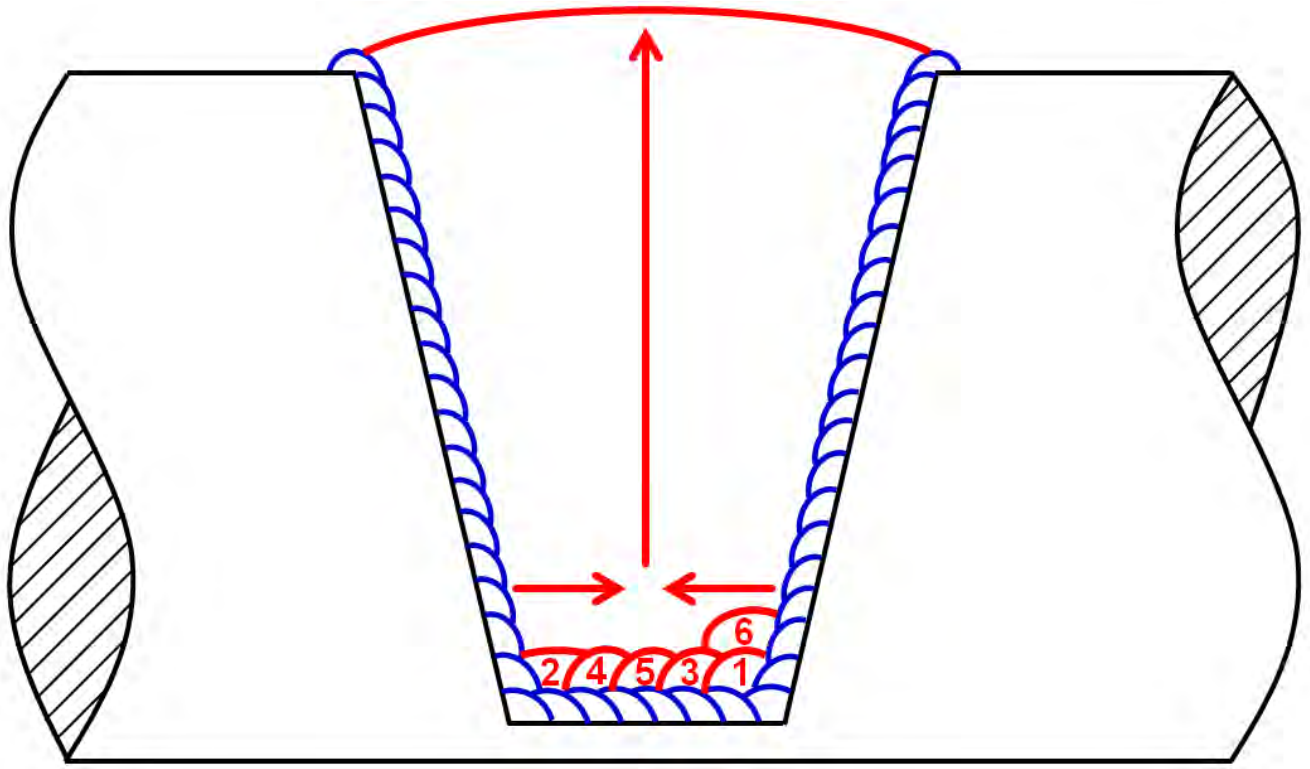
Methodology Specific to E8015-B8 and EPRI P87 Filler Metal



- Blue = 1 single layer of 3/32” (2.5mm) + >50% overlap bead to bead within a layer
  - *Light grind of single layer to remove all slag prior to fill (but NOT half-bead)*
- Red = fill passes of 1/8” (3.2mm) using typical stringer bead procedure
- Note: for E9015-B9, 1/8” (3.2mm) for all fill passes (no single layer temperbead)

Schematic of Welding Approach – Full Repair

Methodology Specific to E8015-B8 and EPRI P87 Filler Metal



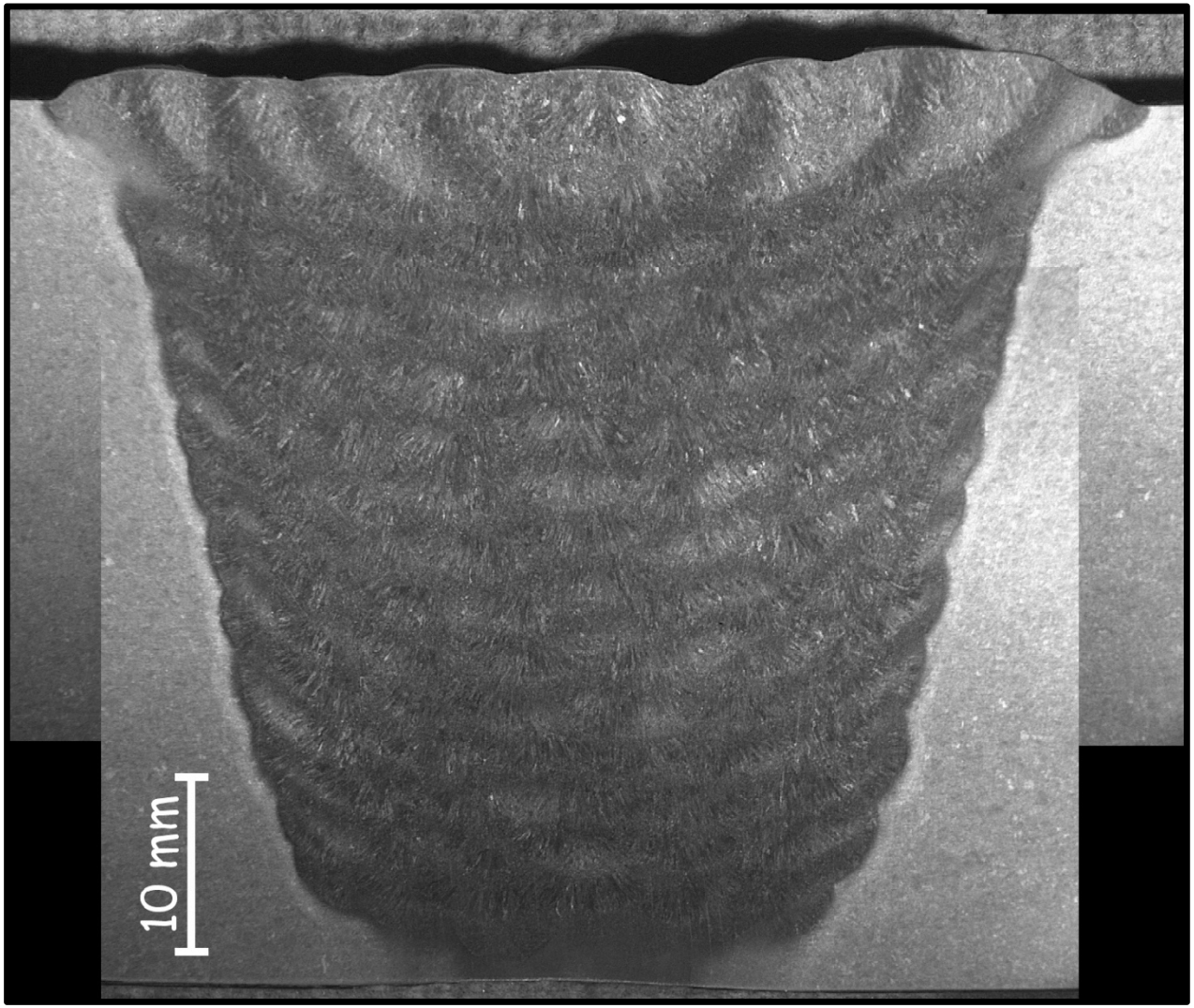
- Blue = 1 single layer of 3/32” (2.5mm) + >50% overlap bead to bead within a layer
  - *Light grind of single layer to remove all slag prior to fill (but NOT half-bead)*
- Red = fill passes of 1/8” (3.2mm) using typical stringer bead procedure
- Note: for E9015-B9, 1/8” (3.2mm) for all fill passes (no single layer temperbead)

Table of Welds and Details for Phase 2

TBW = Temperbead, N+PWHT = Normal+1250°F (676°C)/2h

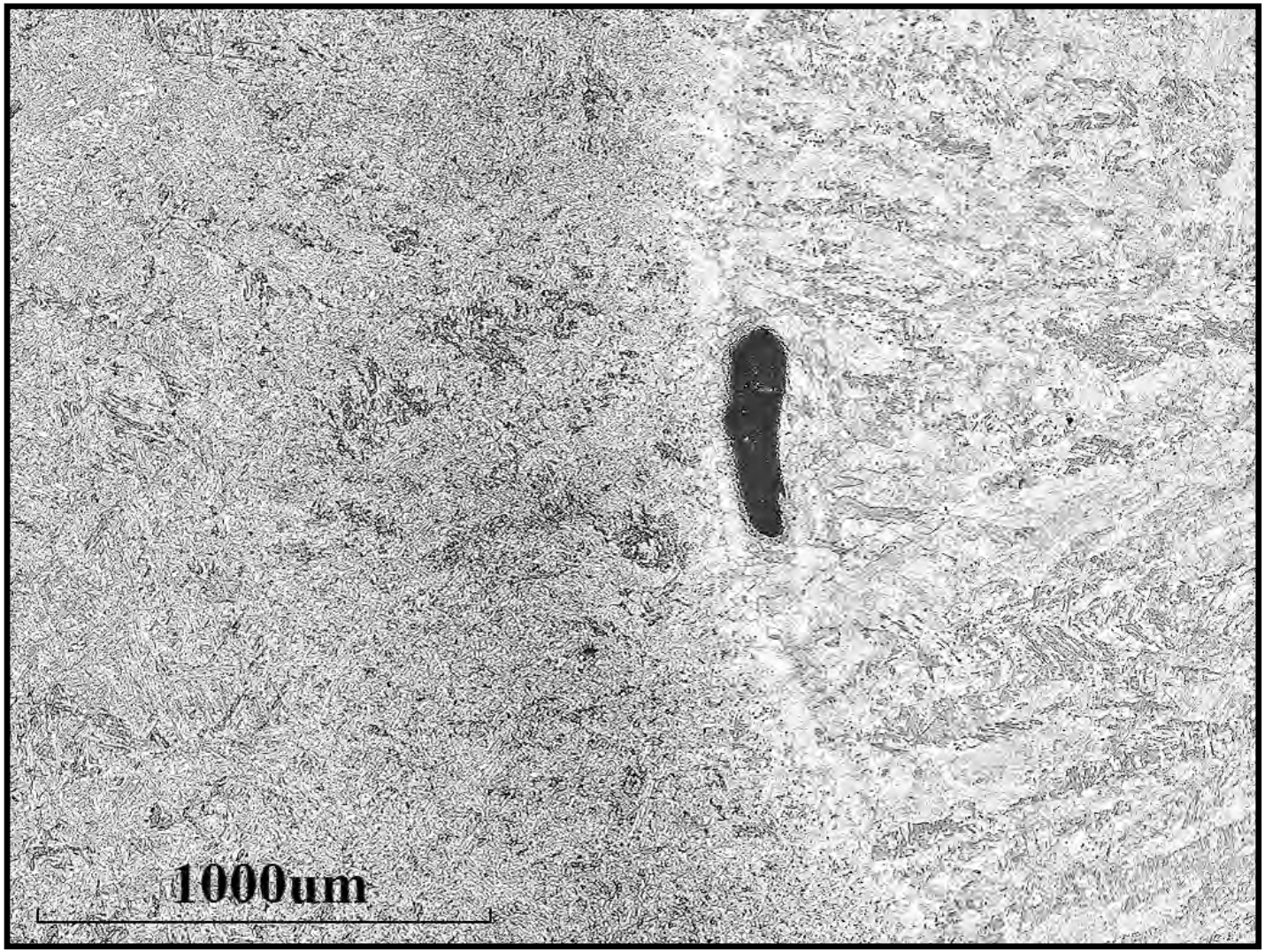
Weld	Procedure	Repair	Weld Metal	
1C	TBW	Minor	3/32” (2.5mm) Butter 1/8” (3.2mm) Fill	E8015-B8
2C	TBW			EPRI P87
3C	N+PWHT		1/8” (3.2mm) Fill	E9015-B9
4C	TBW	Partial	3/32” (2.5mm) Butter 1/8” (3.2mm) Fill	E8015-B8
5C	TBW			EPRI P87
6C	N+PWHT		1/8” (3.2mm) Fill	E9015-B9
7C	TBW	Full *(root reinforcement)*	3/32” (2.5mm) Butter 1/8” (3.2mm) Fill	E8015-B8
8C	TBW			EPRI P87
9C	N+PWHT		1/8” (3.2mm) Fill	E9015-B9
10C	TBW	Full *(backing bar)*	3/32” (2.5mm) Butter 1/8” (3.2mm) Fill	E8015-B8
11C	TBW			EPRI P87
12C	N+PWHT		1/8” (3.2mm) Fill	E9015-B9

Completed Weldment 8C [E8015-B8, TBW, Full]



Completed Weldment 8C [E8015-B8, TBW, Full]

Only one minor defect noted (slag inclusion in butter layer)



EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Update of EPRI Project on T91 Temperbead Approach Using EPRI P87 Filler Metal

George Galanes, John Shingledecker, John Siefert

NBIC Meeting, Mobile, Alabama
January 14th -17th

Scope Planned for 2013 – Destructive Evaluation

- Perform tube-tube weldments (6G position) for two processes:
  - Manual GTAW root + SMAW fill (1/16” diameter electrode preferably)
  - Automated GTAW
- Destructive evaluation should include:
  - ASME Sec. IX + comparison of side and face/root bends
  - Sectioning at 90° intervals to examine the consistency of the procedure
  - *Note – may need multiple weldments to complete scope*

Scope Planned for 2013 – Residual Stresses

- Service exposure (at 1080°F) of tube-tube coupons for each of the procedures
  - Expose for 0.1hr, 1hr, 10hr, 300hr (necessary to determine how fast residual stresses relax)
  - Perform residual stress measurements (method/scope TBD)
    - X-ray diffraction on surface (cap) of coupons (conduct at root if possible – depends on tube ID)
    - Deep-hole drilling to establish stress state through thickness

- ***Anything else NBIC would like to see?***

Together…Shaping the Future of Electricity

NB 10-0110

S6.14 GENERAL STAMPING REQUIREMENTS

The stamping of or attaching of a nameplate to a pressure-retaining item shall indicate that the work was performed in accordance with the requirements of this Code and any requirements of the Competent Authority. Such stamping or attaching of a nameplate shall be done only with the knowledge and authorization of the Inspector and Competent Authority. The "TR" Certificate Holder responsible for the repair or the construction portion of the modification/alteration shall apply the stamping. For a re-rating where no physical changes are made to the pressure-retaining item, the "TR" Certificate Holder responsible for the design shall apply the stamping. Requirements for stamping and nameplate information are shown in NBIC Part 3, Section 5.

S6.14.1 SPECIFIC "TR" STAMPING AND NAMEPLATE REQUIREMENTS

Comment [s1]: Old S6.19.2

The holder of a "TR" *Certificate of Authorization* is required to affix a stamping or nameplate on the Transport Tank that indicates, as appropriate, that the repair, alteration, or modification has been performed in accordance with the requirements of NBIC Part 3, Supplement 6 and the additional requirements of the code of construction. All repairs, alterations, and modifications, after acceptance by the Registered Inspector, shall have the "TR"
Symbol affixed to the stamping or the nameplate.
The stamping or nameplate information shall satisfy the requirements of (a) thru (g) below:

a) The required data shall be in characters at least 4 mm (5/32 in.) high;

b) The markings may be produced by casting, etching, embossing, debossing, stamping, or engraving;

c) The selected method shall not result in any harmful contamination or sharp discontinuities to the pressure- retaining boundary of the Transport Tank;

d) Stamping directly on the Transport Tank, when used, shall be done with blunt-nose continuous or blunt- nose interrupted dot die stamps. If direct stamping would be detrimental to the item, required markings may appear on a nameplate affixed to the Transport Tank;

e) The "TR" Certificate Holder shall use its full name as shown on the *Certificate of Authorization* or an ab- breviation acceptable to the National Board;

f) The stamping, when directly on the item or when a nameplate is used shall be applied adjacent to the original manufacturer's stamping or nameplate. A single repair, alteration, or modification stamping or nameplate may be used for more than one repair to a Transport Tank, provided the repair, alteration, or modification activity is carried out by the same certificate holder;

g) The date of each repair, alteration, or modification corresponding with the date on the Form TR-1 shall be stamped on the nameplate.

S6.14.2 REMOVAL OF ORIGINAL STAMPING OR NAMEPLATE

If it becomes necessary to remove the original stamping, the Inspector shall, subject to the approval of the Competent Authority, witness the making of a facsimile of the stamping, the obliteration of the old stamping, and the transfer of the stamping. When the stamping is on a nameplate, the Inspector shall witness the transfer of the nameplate to the new location. Any relocation shall be described on the applicable NBIC "TR" Form. The restamping or replacement of a code symbol stamp shall be performed only as permitted by the governing code of construction.

S6.15 "TR" FORMS

S6.15.1 DOCUMENTATION

Repairs, alterations, or modifications that have been performed in accordance with the NBIC shall be docu- mented on Form TR-1, *Report of Repair, Alteration, or Modification*, as shown in NBIC Part 3, Section 5. Form TR-2, *Report Supplementary Sheet*, shall be used to record additional data when space is insufficient on Form TR-1.

S6.15.2 PREPARATION OF TRFORMS

Preparation of “TR” Forms shall be the responsibility of the “TR” Certificate Holder performing the repairs,
alterations, or modifications. An Inspector shall indicate acceptance by signing the appropriate “TR” form.

S6.15.3
DISTRIBUTION

a) Legible copies of the completed Form TR-1 together with attachments shall be distributed to the owner or user, the Inspector, and the Competent Authority, as required, and the Authorized Inspection Agency responsible for the inspection.

b) Distribution of the Form TR-1 and attachments shall be the responsibility of the organization performing the repair.

S6.15.4 REGISTRATION OF FORM TR-1 AND FORM TR-2

a) Organizations performing repairs, alterations, or modifications under the “TR” program must register such
repairs, alterations, or modifications with the National Board.
b) The repair organization shall maintain a sequential Form “TR” Log that shall identify the following:

1) Form number assigned for Form TR-1;

2) Identify if the activity was a repair, alteration, or modification; and

3) Date sent to the National Board

.

S6.16 ADDITIONAL REQUIREMENTS FOR REPAIRS, ALTERATIONS, OR MODIFICATIONS

S6.16.1 SCOPE

This section provides additional requirements for repairs, alterations, or modifications to DOT Transport Tank pressure-retaining items and shall be used in conjunction with NBIC Part 3.

S6.16.2 REPAIRS OF DEFECTS

Before a repair is made to a defect in a welded joint or base metal, care should be taken to investigate its cause and to determine its extent and likelihood of recurrence. This information shall be made available to the Inspector.

S6.16.3 MODIFICATIONS

All modifications to the pressure-retaining item shall meet the requirements of NBIC Part 3, Section 6.

S6.16.4 DRAWINGS

Drawings or instructions shall be prepared to describe the repair, alterations, or modification. Drawings shall include sufficient information to satisfactorily perform the activity.

S6.16.5 AUTHORIZATION

Repairs, alterations, or modifications to a pressure-retaining item shall not be initiated without the authorization of the Inspector, who shall determine that the repair methods are acceptable and subject to acceptance of the Competent Authority.

NB 10-0110

Page 217

PART 3 — REPAIRS AND ALTERATIONS 2011

S6.17 EXAMINATION AND TEST

The following requirements shall apply to all repairs, alterations, or modifications to DOT Transport Tank pressure-retaining items:

a) The integrity of repairs and replacement parts used in repairs, alterations, or modifications shall be verified by examination and test;

b) The “TR” Certificate Holder is responsible for all activities relating to examination and test of repair, alterations, or modifications;

c) Examination and tests to be used shall be subject to acceptance of the Inspector and the Competent Authority.

S6.17.1 METHODS

One, or a combination of the following examination and methods, shall be applied to DOT Transport Tank pressure retaining itmes with the concurrence of the Inspector and the Competent Authority.

a) Liquid Pressure Test
Pressure testing of repairs shall meet the following requirements:

1) Pressure tests shall be conducted using water or other suitable liquid. The test pressure shall be the minimum required to verify the leak tightness integrity of the repair, but not more than 150% of the maximum allowable working pressure (MAWP) stamped on the pressure-retaining item, as adjusted for temperature. When original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance;

2) During a pressure test where the test pressure will exceed 90% of the set pressure of the pressure relief device, the device shall be removed whenever possible. If not possible, a test gag should be used using the valve manufacturer’s instructions and recommendations;

3) Hold time for the pressure test shall be a minimum of 10 minutes prior to examination by the Inspec- tor. Where the test pressure exceeds the MAWP of the item, the test pressure shall be reduced to the MAWP for close examination by the Inspector. Hold time for close examination shall be as necessary for the Inspector to conduct the examination;

b) Pneumatic Test
A pneumatic test may be conducted. Concurrence of the owner shall be obtained in addition to that of the Inspector and the Competent Authority where required. The test pressure shall be the minimum required to verify leak tightness integrity of the repair, but shall not exceed the maximum pneumatic test pressure of the original code of construction. Precautionary requirements of the original code of construction shall be followed;

c) Nondestructive Examination
Nondestructive examination (NDE) may be conducted. NDE methods shall be suitable for providing meaningful results to verify the integrity of the repair.

NB 10-0110

Page 218

PART 3 — REPAIRS AND ALTERATIONS 2011

S6.18 REPAIRS, ALTERATIONS, OR MODIFICATION REPORTS

a) If repairs, alterations, or modifications are performed on a Transport Tank, i.e., cargo tank, portable tank, or ton tank, the Owner or User shall have the activity performed by a Repair Organization that has a valid "TR" *Certificate of Authorization* issued by the National Board.

b) The repair, alteration, or modification shall be recorded on the Form TR-1. If additional space is needed to properly record the repair, alteration, or modification, Form TR-2 shall be used.

c) It is the responsibility of the "TR" Symbol Stamp Holder to prepare, distribute, and maintain the Form TR-1 and, if required, Form TR-2. The Form(s) shall be distributed as follows:

1) Owner-User;

2) Registered Inspector;

3) Competent Authority (DOT); and

4) National Board.

d) The Form TR-1 shall be signed by a Registered Inspector as defined in NBIC Part 3, S6.7.1.

Page 219

PART 3 — REPAIRS AND ALTERATIONS 2011

.

Page 220

Action Item Request Form

8.3 CODE REVISIONS OR ADDITIONS

Request for Code revisions or additions shall provide the following:

a) Proposed Revisions or Additions

For revisions, identify the rules of the Code that require revision and submit a copy of the appropriate rules as they appear in the Code, marked up with the proposed revision. For additions, provide the recommended wording referenced to the existing Code rules.

Existing Text:

1.2 CONSTRUCTION STANDARDS FOR PRESSURE-RETAINING ITEMS

e) Piping systems are designed for a variety of service conditions such as steam, water, oil, gas, or air. Design requirements for repairs and alterations are to meet the original code of construction or the code most appropriate for the repair or alteration. These systems shall be designed for the most severe conditions of pressure, temperature, loadings, and expected transients considered for normal operation. All pipe materials, fittings, and valves shall be rated for the maximum service conditions for normal operation. Design corrosion of piping systems should also be considered when determining types of materials and thicknesses.

Insert new 1.2 f) here.

f) For Transport Tanks, the Competent Authority (DOT) shall be consulted for any requirements which it has established since they take precedence for repairs.

1) Transport tanks manufactured prior to the adoption of ASME Section XII by the Competent Authority (DOT) were constructed in accordance with ASME Section VIII. Certain transport tanks manufactured to this Code were required to be stamped with the "U" Code Symbol Stamp in accordance with Section VIII, if the design pressure of the transport tank was 241 kPa (35 psi) (depending on material being transported) and greater. If the design pressure was less than 241 kPa (35 psi) (depending on material being transported), the transport tank was manufactured in accordance with Section VIII, but not stamped with the "U" Code Symbol Stamp.

2) "U" stamped transport tanks are subject to the requirements of this Part, for continued service repairs, alterations, or modifications, unless exempted by the DOT.

Provide a brief explanation of the need for the revision or addition.

To clarify the NBIC requirements relating to DOT tanks certified prior to adoption of ASME Section XII.

c) Background Information

Provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request that will allow the Committee to adequately evaluate the proposed revision or addition. Sketches, tables, figures, and graphs should be submitted as appropriate.

When applicable, identify any pertinent paragraph in the Code that would be affected by the revision or addition and identify paragraphs in the Code that reference the paragraphs that are to be revised or added.

The adoption of ASME Section XII construction and certification rules will create a situation such that there will be existing transport tanks in service with differing certifications (i.e. “T” or “U” marked). Subsequently the rules for these transport tanks also differ (i.e., some are governed by DOT repair rules and some are governed by NBIC rules).