PROCEDURE CHANGE FORM

SECTION I

DATE 06/03/10 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870-R0-8 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 2, 2.1, 3, 3.1, 9,and 14

CHANGE JUSTIFICATION To add details of tube brush use and change limit of brush use to no more than 50 times, add external drain coolers to purpose statement and to chart in Attachment 10.1 showing acceptable plugging methodology. Reference CR-2010-003052 and CR-2010-004394. See record of changes for details.

PREPARER (Signature/Date) Dean Lystad 06/03/10

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath / Beverly Gilbreath (Printed Name and Signature)

Date: 6/3/10 EXT. 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
MT	Yes	KWS 6.7.10
QC	Yes	RPS 6.7.10

TRAINING/READING RECOMMENDED: YES___ NO_X_ IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES___ NO_X_

IF YES, THEN SPECIFY DATE (effective date or other specified date): _____

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: 06-09-10

APPROVED BY: _____ (Signature) (Print name if not approval authority and change is editorial) DATE: 6.7.10

STA-202-7 Attachment for MSM-GO-5870-R0-8

DFG-3-10

(For Information Only) Record of Changes

Rev/PCN	Affected Pages	Description of Change
0/4	2, 2.1, 3, 14	Added components CP1/2-COCNMC-01/02 and CP1/2-GSCNGS-01/02 as non-ASME components to be included under the tube plugging methodology. Edited tube plugging methodology table to include all heat exchangers listed in procedure. These components are new to the Heat Exchanger Program. Ref. CR-2009-005819.
0/5	14.2	Corrected tag numbers of feedwater heaters. Added that drawing provides fabrication detail and added dimensions to drawing of tube plug.
0/6	5	Step 8.4 - correct tag number for feedwater heaters in directional statement.
	13	Attachment 10.2 - corrected title
	14.1	Added tag numbers to title of attachment. Step 3 added new step to measure ID of hole for tube to be plugged and instruction to fabricate plug per page 2 of Attachment 10.2.
	14.2	Changed plug projection minimum from 3/16" to 1/8".
0/7	14	Added driven plugs as an option for plugging Aux. Gland Steam Condenser and Main Gland Steam Condensers. Added location numbers for high pressure FW heaters, and added more complete description of heaters/heat exchangers/condensers in table.
0/8	2	Step 1.0 - added external drain cooler location numbers. Step 3.2 - added definition for Pop-a-plug.
	2.1	Added Reference 4.10 & 4.18.
	3	Step 5.2 clarified. Step 5.3 - clarified tag numbers as being Section VIII rather than Non- ASME and added external drain cooler location numbers
	3.1	Step 7.1 - added tube cleaning brushes
	9	Step 8.5.2.7, preceding note and substeps - changed brush replacement recommendation from 10 uses to 50 (max) uses. Added detail on brush use and replacement.
	14	Attachment 10.1 - Added external drain coolers and note with location numbers for external drain coolers.

PROCEDURE CHANGE FORM

SECTION I

DATE 04/20/10 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870-R0-7 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 14

CHANGE JUSTIFICATION To add option of using driven plugs in Aux Gland Steam Condenser and Main Gland Steam Condenser and to add more complete description of component to Attachment 10.1. See record of changes for details.

PREPARER (Signature/Date) Dean Lystad 04/20/10

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath Beverly Gilbreath (Printed Name and Signature)

Date: 4-20-10 EXT. 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
MT	YES	N7K 4-20-10

TRAINING/READING RECOMMENDED: YES___ NO X IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES___ NO X

IF YES, THEN SPECIFY DATE (effective date or other specified date): _____

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: 4-20-10 1400

APPROVED BY: _____ (Signature) (Print name if not approval authority and change is editorial) DATE: 4.20.10

STA-202-7 Attachment for MSM-GO-5870-R0-7
DF 4-20-10

(For Information Only) **Record of Changes**

Rev/PCN	Affected Pages	Description of Change
0/2	3, 3.1, 4, 7, 12	Changed verification holdpoint to be in compliance with STA-694, added clarification to welding instructions and separated instructions for ASME and Non-ASME components as some of the components covered in this procedure no longer fall under the jurisdiction of ASME Section VIII, XI or III per System Engineer.
0/3	3	Added Step 5.5 to ensure Weld Data Record in included if needed.
	5	Added directional statement for installing welded tube plugs in inaccessible locations.
	13	Added Attachment 10.2 to list of attachments.
	14.1 & 14.2	Added instruction for installing welded tube plugs in locations inaccessible to drilling and rolling activities. Ref. WO 366884. Added information on typical alternate weld details performed on H.P. Feedwater Heaters.
0/4	2, 2.1, 3, 14	Added components CP1/2-COCNMC-01/02 and CP1/2-GSCNGS-01/02 as non-ASME components to be included under the tube plugging methodology. Edited tube plugging methodology table to include all heat exchangers listed in procedure. These components are new to the Heat Exchanger Program. Ref. CR-2009-005819.
0/5	14.2	Corrected tag numbers of feedwater heaters. Added that drawing provides fabrication detail and added dimensions to drawing of tube plug.
0/6	5	Step 8.4 - correct tag number for feedwater heaters in directional statement.
	13	Attachment 10.2 - corrected title
	14.1	Added tag numbers to title of attachment. Step 3 added new step to measure ID of hole for tube to be plugged and instruction to fabricate plug per page 2 of Attachment 10.2.
	14.2	Changed plug projection minimum from 3/16" to 1/8".
0/7	14	Added driven plugs as an option for plugging Aux. Gland Steam Condenser and Main Gland Steam Condensers. Added location numbers for high pressure FW heaters, and added more complete description of heaters/heat exchangers/condensers in table.

PROCEDURE CHANGE FORM

SECTION I

DATE 04/15/10 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870-R0-6 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 5, 13, 14.1 and 14.2

CHANGE JUSTIFICATION To add location numbers to Attachment 10.2 title and Step 8.4. Corrected plug minimum projection distance from tube sheet in Attachment 10.2 drawing to match text. See record of changes for details.

PREPARER (Signature/Date) Dean Lystad 04/15/10

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath Beverly Gilbreath (Printed Name and Signature)

Date: 4-15-10 EXT. 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
MT	Yes	DWD 4/15/10

TRAINING/READING RECOMMENDED: YES___ NO_X__ IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES_X_ NO___

IF YES, THEN SPECIFY DATE (effective date or other specified date): Effective Date

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: 4-15-10

APPROVED BY: _____ (Signature) (Print name if not approval authority and change is editorial) DATE: 4.15.10

STA-202-7 Attachment for MSM-GO-5870-R0-6

DJ 4-15-10

(For Information Only)

Record of Changes

Rev/PCN	Affected Pages	Description of Change
0/2	3, 3.1, 4, 7, 12	Changed verification holdpoint to be in compliance with STA-694, added clarification to welding instructions and separated instructions for ASME and Non-ASME components as some of the components covered in this procedure no longer fall under the jurisdiction of ASME Section VIII, XI or III per System Engineer.
0/3	3	Added Step 5.5 to ensure Weld Data Record in included if needed.
	5	Added directional statement for installing welded tube plugs in inaccessible locations.
	13	Added Attachment 10.2 to list of attachments.
	14.1 & 14.2	Added instruction for installing welded tube plugs in locations inaccessible to drilling and rolling activities. Ref. WO 366884. Added information on typical alternate weld details performed on H.P. Feedwater Heaters.
0/4	2, 2.1, 3, 14	Added components CP1/2-COCNMC-01/02 and CP1/2-GSCNGS-01/02 as non-ASME components to be included under the tube plugging methodology. Edited tube plugging methodology table to include all heat exchangers listed in procedure. These components are new to the Heat Exchanger Program. Ref. CR-2009-005819.
0/5	14.2	Corrected tag numbers of feedwater heaters. Added that drawing provides fabrication detail and added dimensions to drawing of tube plug.
0/6	5	Step 8.4 - correct tag number for feedwater heaters in directional statement.
	13	Attachment 10.2 - corrected title
	14.1	Added tag numbers to title of attachment. Step 3 added new step to measure ID of hole for tube to be plugged and instruction to fabricate plug per page 2 of Attachment 10.2.
	14.2	Changed plug projection minimum from 3/16" to 1/8".

PROCEDURE CHANGE FORM

SECTION I

DATE 04/13/10 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870-R0-5 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 14.2

CHANGE JUSTIFICATION To add detail to clarify tube plug dimensions and correct location number of heat exchangers on Attachment 10.2. See record of changes for details.

PREPARER (Signature/Date) Dean Lystad 04/13/10

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath Beverly Gilbreath (Printed Name and Signature)

Date: 4-13-10 EXT. 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
MT	Yes	DWD 4/13/10

TRAINING/READING RECOMMENDED: YES ___ NO X IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES X NO ___

IF YES, THEN SPECIFY DATE (effective date or other specified date): Effective Date

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: 4-13-10

APPROVED BY: _____ (Signature) (Print name if not approval authority and change is editorial) DATE: 4.13.10

STA-202-7 Attachment for MSM-GO-5870-R0-5 DF 4-13-10

(For Information Only) **Record of Changes**

Rev/PCN	Affected Pages	Description of Change
0/2	3, 3.1, 4, 7, 12	Changed verification holdpoint to be in compliance with STA-694, added clarification to welding instructions and separated instructions for ASME and Non-ASME components as some of the components covered in this procedure no longer fall under the jurisdiction of ASME Section VIII, XI or III per System Engineer.
0/3	3	Added Step 5.5 to ensure Weld Data Record in included if needed.
	5	Added directional statement for installing welded tube plugs in inaccessible locations.
	13	Added Attachment 10.2 to list of attachments.
	14.1 & 14.2	Added instruction for installing welded tube plugs in locations inaccessible to drilling and rolling activities. Ref. WO 366884. Added information on typical alternate weld details performed on H.P. Feedwater Heaters.
0/4	2, 2.1, 3, 14	Added components CP1/2-COCNMC-01/02 and CP1/2-GSCNGS-01/02 as non-ASME components to be included under the tube plugging methodology. Edited tube plugging methodology table to include all heat exchangers listed in procedure. These components are new to the Heat Exchanger Program. Ref. CR-2009-005819.
0/5	14.2	Corrected tag numbers of feedwater heaters. Added that drawing provides fabrication detail and added dimensions to drawing of tube plug.

PROCEDURE CHANGE FORM

SECTION I

DATE 02/17/10 PREPARER Kathryn Rogge (PRINT NAME) EXT. 5616

PCN MSM-G0-5870-R0-4 /OTPCN _____ WO# _____

TITLE HEAT EXCHANGER TUBE PLUGGING

CHANGED PAGE NO(s). 2, 2.1, 3 and 14

CHANGE JUSTIFICATION Added components CP1/2-COCNMC-01/02 and CP1/2-GSCNGS-01/02 as non-ASME components to be included under the tube plugging methodology. Edited tube plugging methodology table to include all heat exchangers listed in procedure. These components are new to the Heat Exchanger Program. Reference CR-2009-005819

PREPARER (Signature/Date) Kathryn Rogge 02/22/2010

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath Beverly Gilbreath (Printed Name and Signature)

Date: 2/24/2010 EXT. 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
MT2	YES	WTK 2-24-10

TRAINING/READING RECOMMENDED: YES___ NO_X_ IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES X NO___

IF YES, THEN SPECIFY DATE (effective date or other specified date): Effective Date

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: 02/25/10 1200

APPROVED BY: M.R. SMITH M R Smith (Signature) (Print name if not approval authority and change is editorial) DATE: 2.24.10

PROCEDURE CHANGE FORM

SECTION I

DATE 07/22/08 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870- R0-3 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 3, 5, 13, 14.1 and 14.2

CHANGE JUSTIFICATION To provide instructions for installing welded plugs in tube locations that are inaccessible to drilling and tube rolling operations in high pressure feedwater heaters. Ref WO 366884.

PREPARER (Signature/Date) Dean Lystad / 07/22/08

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Beverly Gilbreath / Beverly Gilbreath DG 9-25-08
(Printed Name and Signature)

Date: 9-25-08 EXT. 9/25/08 0870

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____
(Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____
(Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
QC		
System Engineer	Yes	G.T. per Telecon D Lystad 10/6/08
Welding Engineer		

TRAINING/READING RECOMMENDED: YES__ NO_X_ IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES_X_ NO__

IF YES, THEN SPECIFY DATE (effective date or other specified date): effective date

SORC Meeting No. and Date (If Applicable) _____ EFFECTIVE DATE: 10/21/08

APPROVED BY: Thomas P. Winslow for Mike Smith DATE: 10-6-08
(Signature) (Print name if not approval authority and change is editorial)

STA-202-7 ATTACHMENT for MSM-60-5870-R0-3

D. Jupted 7-22-08

(For Information Only)

Record of Changes

Rev/PCN	Affected Pages	Description of Change
0/3	3	Added Step 5.5 to ensure Weld Data Record in included if needed.
	5	Added directional statement for installing welded tube plugs in inaccessible locations.
	13	Added Attachment 10.2 to list of attachments.
	14.1 & 14.2	Added instruction for installing welded tube plugs in locations inaccessible to drilling and rolling activities. Ref. WO 366884. Added information on typical alternate weld details performed on H.P. Feedwater Heaters.

PROCEDURE CHANGE FORM

SECTION I

DATE 08/29/06 PREPARER Linda Rafferty (PRINT NAME) EXT. 5238

PCN MSM-G0-5870-R0-2 /OTPCN _____ WO# _____

TITLE HEAT EXCHANGER TUBE PLUGGING

CHANGED PAGE NO(s). 3, 3.1, 4, 7, and 12

CHANGE JUSTIFICATION Changed verification designator to be in compliance with STA-694, , added clarification to welding instructions and separated instructions for ASME and Non-ASME components as some of the components covered by this procedure no longer fall under the jurisdiction of ASME Section VIII, XI or III per System Engineer.

PREPARER (Signature/Date) Linda Rafferty 08/30/2006

If change is editorial, THEN circle or mark "YES" YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: Timothy Terryah (Printed Name and Signature)

Date: 8/31/06 EXT. 6581

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
QC	YES	WTS 8/31/06

TRAINING/READING RECOMMENDED: YES___ NO X IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES X NO___

IF YES, THEN SPECIFY DATE (effective date or other specified date): Effective Date

SORC Meeting No. and Date (If Applicable) N/A EFFECTIVE DATE: SEP 13 2006

APPROVED BY: W. R. Morrison (Signature) (Print name if not approval authority and change is editorial) DATE: 9/7/06

PROCEDURE CHANGE FORM

SECTION I

DATE 05/19/05 PREPARER Dean Lystad (PRINT NAME) EXT. 5985

PCN MSM-G0-5870- R0-1 /OTPCN _____ WO# _____

TITLE Heat Exchanger Tube Plugging

CHANGED PAGE NO(s). 2, 4, 5 and 12

CHANGE JUSTIFICATION To update reference 4.6, add reference 4.10 and to clarify note at beginning of Section 8.2 regarding requirements for repair/replacement activities per EPG-731. Added tag numbers for TPCW HX and Aux. Condenser to purpose statement. Added step and MM verification to ensure breakaway stub of Pop-a Plug does not get left in system. Also to delete QC Holdpoint for plug material because Work Order holdpoint will be assigned. Ref TOPs 2005-0061.

PREPARER (Signature/Date) Dean Lystad / 05/19/05

If change is editorial, THEN circle or mark "YES". YES

Editorial changes, as limited by STA-202, Attachment 8.F, do not require Technical Review, NSR or 50.59 Review.

TECHNICAL REVIEWER: EP Designs ED Dalton (Printed Name and Signature)

Date: 5-25-05 EXT. 5881

SECTION II

PROCEDURE CHANGE INTERIM APPROVAL

If the change does not change the intent of the procedure and the change must be incorporated immediately, then complete this section; otherwise, route in accordance with Section III for review and approval.

QUALIFIED REVIEWER: _____ (Printed Name and Signature)

Date: _____ EXT. _____

SHIFT MANAGER or UNIT SUPERVISOR: _____ (Printed Name and Signature)

Date: _____ EXT. _____

REMARKS _____

SECTION III

PROCEDURE CHANGE APPROVAL

REVIEW ORGANIZATION	APPROVED (Yes/No)	QUALIFIED REVIEW (Init/Date)
QC	YES	WTS 5/25/05

TRAINING/READING RECOMMENDED: YES___ NO X__ IF YES, THEN SPECIFY: _____

UPDATE OF PROCEDURES/FORMS USED FOR IN-PROGRESS ACTIVITIES REQUIRED: YES X NO___

IF YES, THEN SPECIFY DATE (effective date or other specified date): effective date

SORC Meeting No. and Date (If Applicable) _____

EFFECTIVE DATE: ~~6-2-05~~ JUN 6 2 2005

APPROVED BY: R.S. Gill M Hill (Signature) (Print name if not approval authority and change is editorial) DATE: 5-25-05

COMANCHE PEAK STEAM ELECTRIC STATION

UNIT COMMON, 1 & 2

MAINTENANCE SECTION - MAINTENANCE MANUAL

QUALITY RELATED

HEAT EXCHANGER TUBE PLUGGING

PROCEDURE NO. MSM-G0-5870

REVISION NO. 0

EFFECTIVE DATE: August 29, 2002

PREPARED BY (Print): Roger L. Barckhoff Ext: 5034

TECHNICAL REVIEW BY (Print): Darron Jones Ext: 5619

APPROVED BY: _____ Date: 8-22-02

SMART TEAM MANAGER

1.0 PURPOSE

The purpose of this procedure is to describe methods of tube plugging for the following heat exchangers:

CP1/2-CCAHHX-01/02 CP1/2-MECCJW-01/02 CP1/2-MECCLO-01/02

CP1/2-COHTFH-01 through 08 CP1/2-FWHTFH-01 through 04

CP1/2-COCNAC-01/02 CP1/2-TWAHHX-01

CP1/2-COCNMC-01/02 CP1/2-GSCNGS-01/02 CP1/2-COHTDC-01/02 (8)

2.0 ACCEPTANCE CRITERIA

This procedure contains in-process inspections. The acceptance criteria is the satisfactory completion of all applicable instructions.

3.0 DEFINITIONS/ACRONYMS

3.1 HX - Heat Exchanger

3.2 Pop-a Plug - a brand name of plug featuring a separating tube plug with an expanding seal ring (8)

4.0 REFERENCES

4.1 CP-0049-001, Component Cooling Water Heat Exchanger

4.2 2323-MS-49, CPSES Specification, Component Cooling Water Heat Exchanger

4.3 Trane Company Manual for Retubing

4.4 CP-0024-001 and CP-0024-002, Closed Feedwater Heaters and External Drain Coolers, Struthers Wells (Units 1 and 2) respectively

4.5 STA-606, "Control of Maintenance and Work Activities"

4.6 EPG-731, "ASME Section XI Repair/Replacement Activities"

4.7 Technical Evaluation No. SE-90-2691

4.8 MSM-G0-0907, "Installation and Removal of Anti-Sweat and Thermal Insulation"

4.9 American Power Services, Inc., Explosive Plugging Procedure HPS-EP-021, Rev. 2

4.10 EPG-6.01, "ASME VIII Pressure Vessel Repair and Alteration"

4.11 CR-2010-003052 - adding external drain coolers

4.12 CR-2010-004394 - changing brush use limit to no more than 50 times

4.13 CP-0023-002, "Heat Exchange Equipment Surface Condenser" (Main Condenser)

4.14 CP-0060-001, "Surface Condenser and Auxiliary Equipment" (Aux. Condenser)

4.15 CP-0052-001, "Turbine Plant Cooling Water Heat Exchanger"

4.16 CP-0034-001C, "Associated Publications Volume III BK 1,2, & 3 (Diesel Generator Jacket Water Cooler)

4.17 CP-0003-002, "Steam Turbine Generator- Volume I" (Main Turbine Gland Steam Condenser)

4.17 CP-0003-004, "Related Equipment Manuals Volume II - 2" (Main Turbine Gland Steam Condenser)

4.18 CP-0005-002, "Steam Turbine Feed Pump Drive" (Auxiliary Gland Steam Condenser)

5.0 PRECAUTIONS, LIMITATIONS AND NOTES

(8)

5.1 Discrepancies or unsatisfactory results should reported to Responsible Maintenance Supervisor for follow-up actions in accordance with STA-606and documented in the "Remarks" section of this procedure.

5.2 The components listed below are under jurisdiction of ASME Section VIII and Section III (XI). The work order will indicate as to what ASME section work is to be preformed. Prior to any repairs, replacements, tube plugging alterations, or reratings being performed on pressure vessels Engineering Programs shall be notified of scope of work to be performed. ANII shall be notified and afforded opportunity to review work packages containing ASME Section XI activities and establish hold points prior to beginning work. (8)

CP1/2-CCAHHX-01/02

CP1/2-MECCJW-01/02

CP1/2-MECCLO-01/02

5.3 The following tag numbers are ASME Section VIII components (not under jurisdiction of Section III or XI). (8)

CP1/2-COHTFH-01 through 08

CP1/2-FWHTFH-01 through 04

CP1/2-COCNAC-01/02

CP1/2-TWAHHX-01

CP1/2-COCNMC-01/02

CP1/2-GSCNGS-01/02

CP1/2-COHTDC-01/02 (8)

5.4 Independent/concurrent verifications have been reviewed and are in compliance with STA-694.

5.5 IF welded plugs are to be installed, THEN ENSURE an approved weld data record has been issued.

6.0 PREREQUISITES

6.1 ENTER the following information:

Work Order No. _____

Component Tag No. _____

Unit No. _____

6.2 _____ / _____ For AMSE components, CONTACT AI / ANII (Circle as appropriate) Inspector for review of work package for any reviews or hold points prior to any repairs, alterations, or reratings.

Person Contacted_____

Date/Time _____ / _____

7.0 TEST EQUIPMENT

7.1 Recommended Tools and Materials List

Drill Bit w/pilot

Tube Rolling Tool

Bit for Counterboring

Tapered Pin

Swagging Tool

Stub Removal Tool

Pop-A-Plug Go-No-go gauge

Pop-A-Plug

Explosive Plugs (CMAR 96-000153-00-00 for American Power)

Tube cleaning bruses

8

7.2 Measuring and Test Equipment List

Snap gauge

Outside micrometer

8.0 INSTRUCTIONS

8.1 General

8.1.1 For equipment that is Section XI any repair, replacement, tube plugging modification of pressure boundary part(s) or bolting materials shall be performed in accordance with instructions on work order and procedure EPG-731.

Table of Contents

8.2 Tube Plugging Preliminaries

NOTE: *If the component being worked on is under jurisdiction of EPG-6.01 OR ASME Section XI or III, the work order will indicate as to what ASME section work is to be preformed. Prior to any repairs/replacements, welded tube plugging, sleeving, tube replacement, alterations, or reratings being performed on pressure vessels, Engineering Programs Manager shall be notified of scope of work to be performed. For ASME III heat exchangers the ANII Inspector shall be notified and afforded opportunity to review and establish hold points for packages prior to beginning work.* ②

NOTE: *Mechanical plugs installed in ASME components are considered a "Maintenance Activity" in accordance with EPG-731. Welded plugs, sleeves and tube replacements are Repair/Replacement Activities.* ②

8.2.1 DETERMINE AND MARK tube to be plugged at each end of bundle.

8.2.2 CLEAN tube to be plugged at both ends.

8.2.3 REVIEW Attachment 10.1, THEN INDICATE method of plugging:

Driven plugs ☐ per Step 8.3	Welded plugs ☐ per Step 8.4.	Pop-A-Plug ☐ Per Step 8.5	Explosive plugs ☐ (Per reference 4.9)

THEN RECORD material information as applicable in Table 1. Material does not need to be ASME for mechanical plugs.

Table 1

Material Identification, as available

Material A- _____ RIR/RR * _____

Heat No. _____ Lot No. _____ TSN _____ (Also for plug material)

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QC HOLD POINT - Deleted

ENGINEERING VERIFICATION

[IV] _____ / _____ VERIFY plug material (either manufactured or contractor supplied, as applicable) is correct.

8.3 Driven Plugs

8.3.1 MEASURE I.D. of tube to be plugged at both ends AND HAVE plugs made in accordance with Attachment 10.1.

8.3.2 INSTALL proper size plug in each end of tube AND SET.

8.3.3 _____/_____ ENSURE all tubes identified to be plugged have been plugged.

8.4 Welded Plugs

On High Pressure Feedwater Heaters only (CP1/2-FWHTFH- 01, 02, 03, 04), IF tube to be plugged is inaccessible for drilling and rolling due to being located too close to waterbox wall or partition plate, THEN PROCEED to Attachment 10.2 for alternate instruction.

(6)

8.4.1 SELECT a drill bit with pilot, as near as possible, but not exceeding O.D. of tube end to be plugged.

8.4.2 REMOVE tube to a depth of three inches using proper sized bit and pilot.

8.4.3 REMOVE any thin shell of tubing left in hole.

8.4.4 REMOVE all burrs from end of tube.

8.4.5 ROLL tube end 1-1/2 inches or within 1/8 inch of back of tube sheet, whichever is less.

8.4.6 COUNTERBORE hole with a bit 3/16 inch larger than O.D. of tube. REFER to Figure 1.

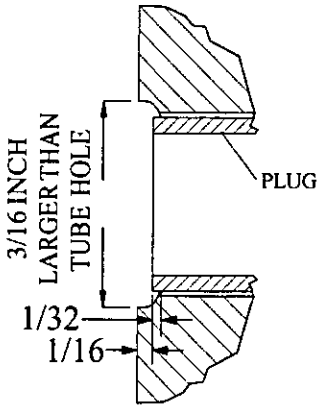

Figure 1

8.4.7 CLEAN AND DEGREASE hole.

8.4.8 MEASURE diameter of hole and have a plug prepared from 304 or 316SS in accordance with Figure 2.

8.4.9 EXPAND I.D. of plug using a tapered pin or swaging tool to ensure a tight fit.

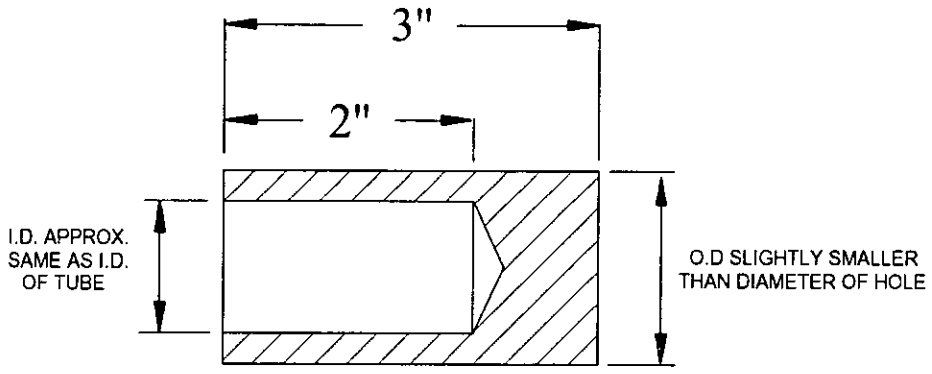

Figure 2

8.4.10 INSTALL plug into hole flush to 1/32 inch above bottom of counterbore. REFER to Figure 1.

8.4.11 WELD plug to tube sheet in accordance with site welding procedures and work order instructions. REFER to Figure 3. 2

Welder _____ I.D. _____ Date _____

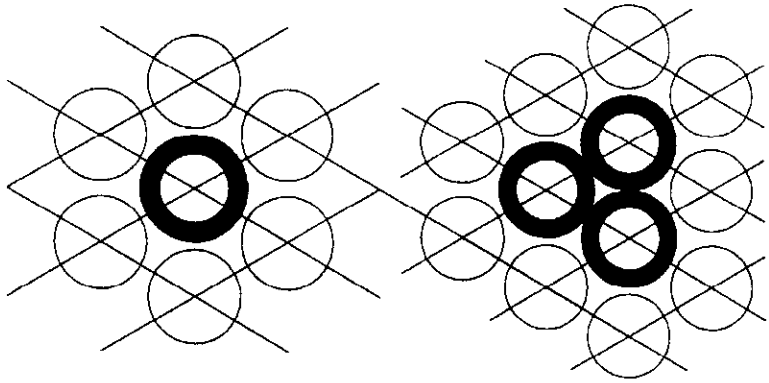

Figure 3

8.4.12 _____/_____ ENSURE all tubes identified to be plugged have been plugged.

8.4.13 _____/_____ ROLL all tubes around plugged tubes for a minimum of three rows.

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8.5 Pop-A-Plug

NOTE: Correct size of Pop-A-Plug must be 0.001" to 0.020" smaller than actual tube I.D. in position where plug is to be installed.

8.5.1 *Sizing*

8.5.1.1 TAKE measurements both horizontally and vertically of each tube I.D. to a depth of 1-3/4 inches AND RECORD. Larger of measurements will denote tube I.D.

Horizontal _____ Inches

Vertical _____ Inches

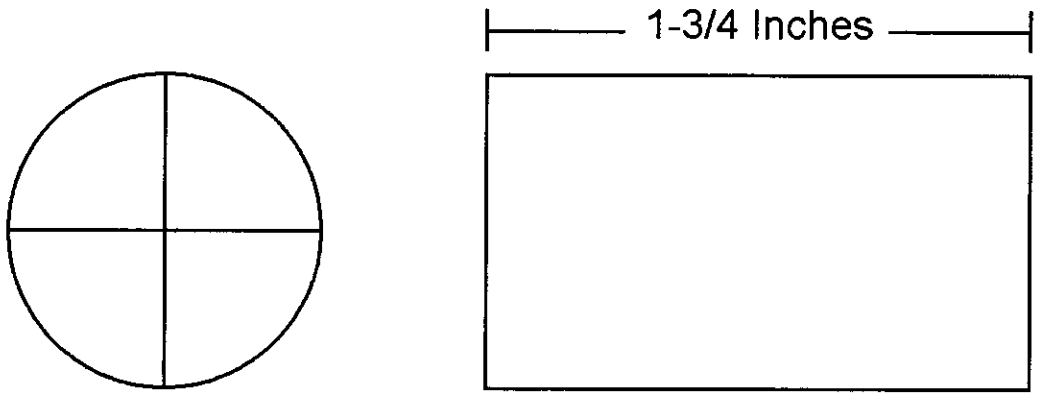

Figure 4

8.5.1.2 IF tube measurement cannot can be performed, THEN consult Manufacturer's tube data sheet. From data sheet DETERMINE if tubes have been rolled or expanded.

8.5.2 *Preparation and Size Verification (Must be done for each tube being plugged.)*

8.5.2.1 IF applicable, USE a tapered reamer AND REMOVE any weld droop or eyebrow from I.D. of tube.

NOTE: Go/No-Go Gage and tube brush are supplied with Pop-A-Plug II kit.

8.5.2.2 INSERT Go end of Go/No-Go Gage into tube end. If gage does not fit, kit selected is too large and a smaller kit should be selected and this step repeated.

8.5.2.3 IF Go end of gage fits, THEN ATTEMPT to fit No-Go end into tube.

8.5.2.4 IF No-Go end fits then kit chosen is too small. SELECT a larger kit and repeat step 8.5.2.2.

8.5.2.5 If GO end gage fits into tube to 1-3/4" minimum and No-Go end does not fit, THEN kit selected is proper size.

8.5.2.6 ENSURE tube brush and Pop-A-Plug II going to be used are marked with same size as on correct Go/No-Go Gage.

CAUTION: Excessive brushing can remove to much material and require using next larger size plug. Brushing for 30 seconds can remove approximately 0.005" of material.

NOTE: Do not use brush more than 50 times before replacement on Perma-Plugs and not more than 10 times for other Pop-a-Plug P-2s.

8.5.2.7 SELECT the smallest tube brush that interferes with the tube AND BRUSH tube as follows:

8.5.2.7.1 Do not use an oversized brush, force the brush into the tube, bend the stem or reverse rotation.

8.5.2.7.2 BRUSH using a back and forth motion from the tube opening to the plug installation depth to prevent tapered condition.

8.5.2.7.3 BRUSH a minimum of 30 seconds.

8.5.2.7.4 Do not use brush more than 50 times for Perma-Plugs and not more than 10 times for Pop-a-Plugs P-2.

8.5.2.8 INSPECT tube AND ENSURE tube is free from scale, pitting or other defects.

8.5.2.9 RE-GAUGE tube, IF No-Go end now fits into tube, THEN next larger Pop-A-Plug II must be used and steps 8.5.2.2 through 8.5.2.8 must be repeated.

8.5.3 *Hydraulic Installation*

8.5.3.1 CHECK pump oil level.

8.5.3.2 CONNECT hose from pump to ram.

8.5.3.3 CONNECT air supply.

8.5.3.4 TEST ram/pump assembly.

8.5.3.5 OBTAIN proper pull rod assembly based on size of plug being installed.

8.5.3.6 VERIFY pull rod is assembled correctly. Directional arrows on pull rod assembly should always point towards Pull Rod end where plug will be attached.

8.5.3.7 ***Channel Head Pull Rod only:*** ADJUST Stand-off ring to allow each plug to be installed to desired depth.

8.5.3.8 THREAD selected Pop-A-Plug onto Pull Rod, ENSURE Breakaway thread is fully engaged into Pull Rod Assembly or stripping may occur.

8.5.3.9 INSERT Pull Rod into Ram with arrow pointing towards Pop-A-Plug.

NOTE: Knurled Nut for Pop-A-Plug II sizes 0.400-0.860 is stepped. Smaller diameter step should be installed towards ram.

8.5.3.10 INSTALL Knurled Nut onto Pull Rod until tight against large black nut on back of Ram.

8.5.3.11 ENSURE there is no "play" between parts of assembled Pull Rod and Plug Position and Plug Positioner is should be tight against ring of Pop-A-Plug II.

8.5.3.12 HOLD Ram AND INSERT Pop-A-Plug II into tube to a depth of 1-3/4" (See Figure 5).

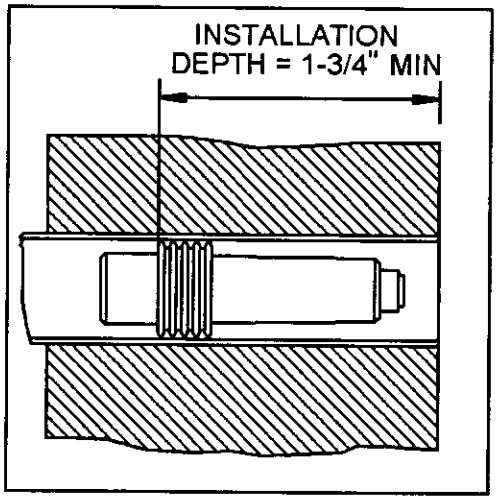

Figure 5

CAUTION: When using hydraulic ram, keep all personal and extremities clear from rear of ram. Always install safety cable then lock nut onto pull rod prior to plug.

NOTE: The hydraulic ram on PAP-6600 Ram Package has a maximum stroke of 1". When ram bottoms out, pressure shown on gauge will dramatically increase.

8.5.3.13 GUIDE ram with hands to avoid cocking AND ACTIVATE Hydraulic Pump by stepping on pedal marked "Pump".

8.5.3.14 CONTINUE to operate pump until plug "Pops" or stroke of ram bottoms out and pressure gauge on pump reaches 7000 psi.

8.5.3.15 IF after one full stroke of ram, Pop-A-Plug II has not contacted tube I.D., Pop-A-Plug II is too small. REMOVE plug AND REPEAT sizing steps of this procedure.

8.5.3.16 IF a second stroke is needed THEN :

8.5.3.16.1 CONTINUE to support weight of ram.

8.5.3.16.2 STEP on "Release" pedal on hydraulic pump.

8.5.3.16.3 REMOVE slack in Pull Rod by tightening knurled nut until there is no play between parts of assembled Pull Rod.

8.5.3.16.4 IF Pop-A-Plug II does not "POP"on second stroke or if pressure gauge reaches 7000 psi before plug "POPS", plug is too small. REMOVE, RESIZE and REPLUG.

8.5.3.17 RELEASE pump pressure, THEN REMOVE knurled nut and broken breakaway section from Pull Rod. DISCARD breakaway section.

CAUTION: Care should be taken to ensure the plug remains seated in-place (undisturbed) when removing the breakaway stub.

8.5.3.18 _____/_____ Carefully, REMOVE breakaway stub from plug. ENSURE plug does not get hit and breakaway stub is not forced when removing breakaway stub from plug. DISCARD breakaway stub.

8.5.3.19 RETURN to applicable component procedure.

8.5.4 _____ / _____ ENSURE all tubes identified to be plugged have been plugged.

IV

_____/_____ VERIFY that all breakaway stubs have been removed from all plugs installed on this Work Order. ②

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Remarks:_____

_____

_____

_____

_____

8.6 Post Maintenance Activities

8.6.1 ATTACH MSM-G0-5870 documentation and any other applicable documentation, forms, etc. to the Work Order AND PROCESS in accordance with STA-606.

9.0 RESTORATION/POST WORK ACTIVITIES

None

10.0 ATTACHMENTS/FORMS

10.1 Tube Plugging Data

10.2 Installing Welded Plug in Inaccessible Tube Location (High Pressure Feedwater Heaters (CP1/2-FWHTFH- 01, 02, 03, 04 ONLY)

(6)

ATTACHMENT 10.1

Page 1 of 1

TUBE PLUGGING DATA

Plugging Methodology									
	Low Pressure Feedwater Heaters and External Drain Coolers***	High Pressure Feedwater Heaters**	CCW Heat Exchangers	DG JW/LO Heat Exchangers	TPCW Heat Exchangers	Aux Cndsr	Main Cndsr	Aux Gland Steam Cndsr	Main Gland Steam Cndsr
Driven	X		X	X				X	X
Welded	X	X							
Pop-a-Plug*	X	X	X	X	X	X	X	X	X
Explosive	X	X							
Driven Plug Specifications									
Material	Stainless	N/A	Brass	Brass	N/A	N/A	N/A	Stainless	Stainless
Length	1.5 Inch	N/A	1.5 Inch	1.5 Inch	N/A	N/A	N/A	1.5 Inch	1.5 Inch
Taper	See note below	N/A	0.010 in./in.	0.010 in./in.	N/A	N/A	N/A	See note below	See note below

* - Preferred method
** - High Pressure Feedwater Heaters are location numbers: CP1/2-FWHTFH- 01, 02, 03, 04
*** - External drain Coolers are location numbers: CP1/2-COHTDC- 01, 02

Note: One end of plug to be 0.015 to 0.020 inch larger than tube I.D. and the other end 0.015 to 0.020 inch smaller than tube I.D.

ATTACHMENT 10.2
Page 1 of 2

INSTALLING WELDED PLUG IN INACCESSIBLE TUBE LOCATION

(HIGH PRESSURE FEEDWATER HEATERS (CP1/2-FWHTFH- 01, 02, 03, 04 ONLY)

(6)

1. _____/_____ System Engineering or designee VERIFY that tube location is inaccessible for the purposes of drilling and/or tube rolling. Otherwise RETURN to Section 8.4. IF additional instruction are required, THEN REVISE Work Order.

   Location _____ Inaccessible: Yes / No*

   Location _____ Inaccessible: Yes / No*

   Location _____ Inaccessible: Yes / No* * - return to Section 8.4

2. CLEAN AND DEGREASE hole.

[IV] VERIFY hole to be plugged is clean and degreased.

Location _____ IV _____/_____ Sat ___ Unsat ___

Location _____ IV _____/_____ Sat ___ Unsat ___

Location _____ IV _____/_____ Sat ___ Unsat ___

3. MEASURE I.D. of hole for tube to be plugged, AND FABRICATE plug(s) in accordance with Page 2 of this attachment..

(6)

4 INSTALL plug into hole leaving 1/8 inch minimum protruding from surface of tube sheet.

5. WELD in accordance with approved site welding procedures and Work Order instructions. Typical weld information is provided on next page.

   Location Welded _____

   Welder: _____ I.D. No. _____ Date _____

   Location Welded _____

   Welder: _____ I.D. No. _____ Date _____

   Location Welded _____

   Welder: _____ I.D. No. _____ Date _____

ATTACHMENT 10.2
Page 2 of 2

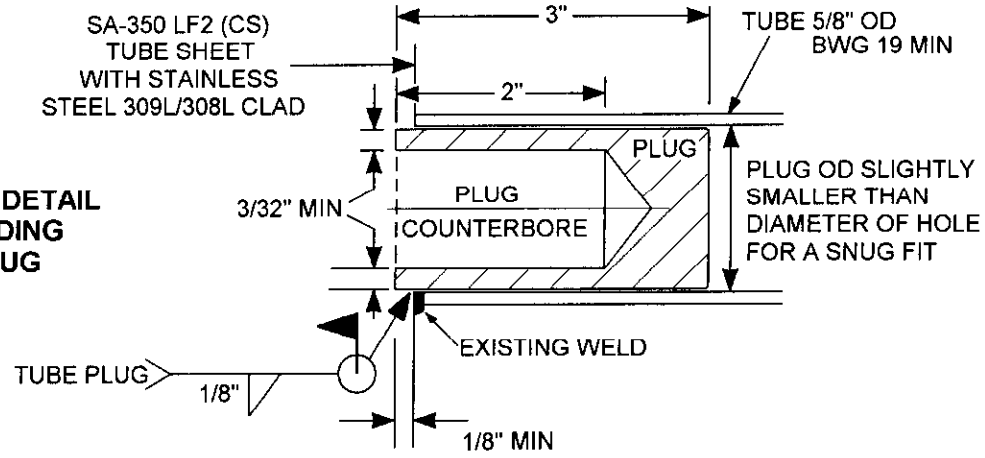
INSTALLING WELDED PLUG IN INACCESSIBLE TUBE LOCATION

(HIGH PRESSURE FEEDWATER HEATERS (CP1/2-FWHTFH- 01, 02, 03, 04 ONLY)

This is **typical weld and fabrication information**
Refer to Weld Data Record for welding instruction.
See below for tube plug fabrication dimensions

Tubesheet: Stainless Steel Cladded SA-350 LF2
Tubes: Stainless Steel TP304 SA-249
Filler Material: ER-309
Final PT of tube plug weld required
SS-304 / SS-316 plugs may be made from Bar Stock A-182, A-276 or A479
Vendor Drawings: CP1-FWHTFH-01/02 Drawing 1-74-06-32419D1; CP1-FWHTFH-03/04 Drawing 1-74-06-32420D1; CP2-FWHTFH-01/02 Drawing 1-74-06-32426D1); CP2-FWHTFH-03/04 Drawing 1-74-06-32427D1

ALTERNATE DETAIL FOR WELDING TUBE PLUG



NOTE:
DIMENSION TOLERANCE (+/- 1/16")

(6)