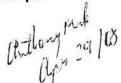
# Procedure 2: Weld Build-Up of Wasted Areas

A#	2542014	Facility	St Albert, Hobbema		
CRN#	H 5754.2	LSD	12-09-044-24W4		
S/N	L-8-297				
MAWP	75 PSIG	Vessel Description		Treater	
Material	SA-516-70				
Shell	.375"	Scope of Work: Weld build up of pitted areas on firetube.			
Thickness					
Head	.688" FT end				
Thickness	.520" cold end				

# Scope



- 1. The weld build up of wasted areas in a firetube constructed of P-I Group 1 or 2 materials.
- 2. Weld build up shall not exceed the lesser of one-half the vessel wall thickness or a maximum of 12.7 mm (1/2"). Pitting into the firetube parent metal deeper than above requires the replacement of that section of the firetube.

## **Procedure**

### **Weld Preparation**

1. Area to be welded to shall be cleaned to white metal for a distance of 10 mm beyond the expected weld area.

# Hydrogen Bake out and Sulfur removal: (remove this section if this firetube is not in sour service)

- 2. Vessels that have been exposed to sour or sulfur bearing process streams shall required the weld attachment area to undergo a "Bake Out" procedure. This procedure shall consist of heating the weld attachment area and 10 cm on each side to 260 C (500 F) and holding that temperature for a minimum of 30 minutes. Bake out should be done prior to cutting out, if cutout is done thermally. Stipulate controls methods.
- 3. Bake Out is performed by either induction coil (use thermocouples as control instrumentation) or propane torch (use temperature-sensitive crayons upper and lower temperature to be controlled). Oxyacetylene torches are **not** acceptable.
- 4. If induction coils are used, a 250 C (482 F) four-hours heat

treatment may be substituted for the normal 450 C (842 F) one-hour heat treatment.

#### **Procedure**

#### continued...

#### Preheat and Welding:

Non-Post Weld Heat Treated Equipment

5. Minimum pre-heat shall be 80 C (176 F) for a 100 mm band on both sides of the weld build-up area.



# Note

The 80 C (176 F) pre-heat temperature has been selected for alignment with NB-23, Appendix B assuming the specific carbon content of the material is not known.

- 6. Welds shall be completed using new 2.4 mm (3/32") E 7018-1 electrodes.
- 7. Maximum interpass temperature shall not exceed 230 C (450 F).
- The Owner's Inspector, shall witness seal on the box being broken and ensure that once the box has been opened the electrodes are stored in an oven.
- 9. Use only stringer beads where the width of the weld weave is a maximum of 7 mm.
- 10. No down hand welding shall be used.
- 11. Once the welds are completed the weld area shall be wrapped with an insulating blanket and allowed to slow cool to 100 C (212 F). The cooling rate shall not exceed 260 C (500 F) / hour.
- 12. Once the finished weld has cooled below 100 C (212 F) grind off the cap of the weld smooth and contour to the original shape of the firetube.

#### Post Welding NDE:

13. Perform MT 12 hours after completion of the work

# Procedure

continued...

14. No hydrotest is required.

# **Documentation:**

- 15. Ensure Company Approved Contractor has completed QC documentation.
- 16. Sign off ABSA AB-40 and ensure one copy is submitted to ABSA and one is retained on file in the equipment inspection file.

Section	Comments	p of Wasted Areas Sign Off Date		
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Hydrogen Bake Out and Sulphur Removal				
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Step 3	£90.00			
Step 4				
Preheat and Welding				
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