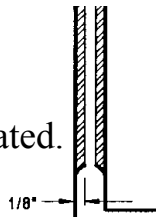
Repair Procedure

Boilermakers repair boilers, vessels, tanks, heat exchangers and other heavy-metal structures. Look at the Repair Procedure.

Task 1 Name 2 tools that could be used to make the cut in the tube.
Reading Text

Task 2 Highlight, underline or circle the procedure that is illustrated.
Document Use

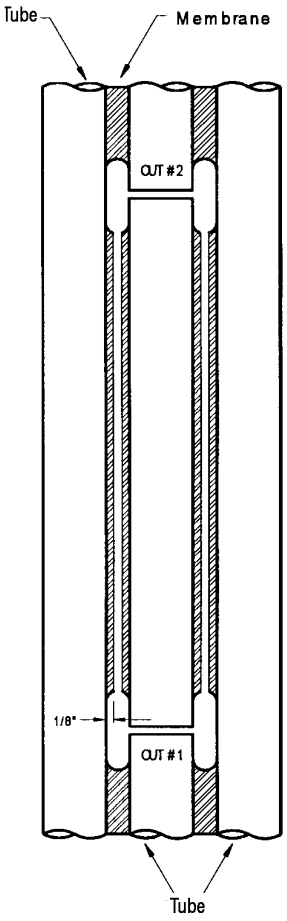


Task 3 What does the boilermaker need to do before removing the temporary dam?
Reading Text

Task 4 How does the boilermaker make sure of the correct heat number for the new tubing?
Reading Text

CIMS LTD Canadian Industrial Mill Services Ltd.	Customer:		Job No.:		Sheet 1 of 1
	Plant / Location:				Repair Proc
	Prepared by:	R. Sundstrom	Date:		CIMS-RP11
	Approved by:		Date:		Rev.:

WATER WALL TUBE SECTION REPAIR PROCEDURE
(CARBON STEEL MATERIAL)



1. Verify tube section location, length (owner requirement), tube material specification and welding procedure specification (WPS) with supervisor.
2. Mark cut lines #1 and #2 and slot tube membrane material on either side of cut lines by air-arcing to facilitate tube cutting operation.
3. Cut membrane from cut #1 to cut #2 with air-arcing equipment or cutting torch, leaving a minimum 1/8" of the existing membrane on the adjacent tube.
4. Make lower tube cut (cut #1) with disk grinder or reciprocating saw.
5. Insert sheet metal blocking plate into cut #1 to prevent debris from entering system below.
6. Make upper tube cut (cut #2) with disk grinder, reciprocating saw or cutting torch.
7. Remove damaged tube section and insert **TEMPORARY DAM** (sponge) into lower tube opening or cover, to prevent entry of foreign material.
   Note: (a) Sponge(s) must be obtained from supervision / quality control and returned to same by the end of the shift.
   (b) Sponge(s) must be signed out and signed back in on posted Sponge List by person performing the work.
8. Prepare existing tube ends with milling machine or grinding equipment for bevel edge and, grind / buff adjacent area to clean metal for welding.
9. Prepare new tube material for welding. Confirm material specification and heat number markings with supervisor / quality control.
   Note: (a) Heat numbers must be visible on all tube material.
10. **REMOVE TEMPORARY DAM** (sponge) **IN LOWER TUBE OPENING. Vacuum filings and debris from dam(s) prior to removal to prevent entry into the tube when the dam is pulled out.**
11. Purge new tube section and existing lower tube to header run in the presence of QC Inspector / Supervisor to verify that the system is clear prior to tube section fit-up and welding.
    Note: (a) Purge verification must be signed off by witnessing QC Inspector or Supervisor.
    (b) Alternatives to purging prior to fit-up must be approved by mill owner and documented.
12. Install water soluble dams in existing tube openings (as required) prior to fit-up in order to prevent drafts while welding.
13. Fit new tube section and tack weld in place. Obtain visual inspection by QCI / supervisor.
14. Weld out both joints and obtain visual inspection by QCI / Supervisor.
15. Perform non-destructive testing of welds (RT, UT, MPT, LPT) as required.
16. Fit and weld (both sides) new membrane material to seal repaired tube section and obtain visual inspection by QC Inspector / Supervisor.
17. Perform non-destructive testing of welds (MPT, LPT) as required.