

Engineering Procedure

SAEP-314

31 January, 2005

Use of PLIDCO Smith Pipeline Repair Clamps

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Saudi Aramco DeskTop Standards

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1 Scope

This SAEP provides direction for use of PLIDCO Repair Clamps for the repair of leaking pipelines. Any deviation to this instruction requires the approval of the Manager of Consulting Services Department, Dhahran.

2 Applicable Documents

Saudi Aramco Engineering Procedure

[SAEP-310](#)

Pipelines Repair and Maintenance

Saudi Aramco Engineering Standard

[SAES-A-004](#)

Pressure Testing

Saudi Aramco General Instruction

GI-0002.102

Pressure Testing Safety

3 Instructions

3.1 General

- 3.1.1 PLIDCO Repair Clamps may be used for temporary repairs of any pipeline operating at a temperature between -30°C and 107°C if authorized by the Operations Superintendent. PLIDCO Repair Clamps are rated for up to 13790 kpa (2000 psig) working pressure. PLIDCO Repair Clamps can be found under SAMS #02-821-XXX.
- 3.1.2 PLIDCO Repair Clamps may be considered a permanent repair for water lines.
- 3.1.3 For oil and product lines, the repair clamp may be considered a permanent repair if a PLIDCO weld cap is used in accordance with paragraph 3 of this procedure. A permanent repair shall be made within 3 months of the installation of the repair clamps for these type lines.
- 3.1.4 If the leak is caused by general corrosion, a split sleeve should be considered first as a repair means in order to prevent additional leaks or blow-outs. Refer to [SAEP-310](#).
- 3.1.5 Safety requirements of [SAEP-310](#) are applicable to this SAEP as required for the type of repair being undertaken.

3.2 Installation of Clamps

- 3.2.1 Spring the repair clamp apart and push it over the pipe.
- 3.2.2 Pull ends back together, reposition drawing bolt and pull up on it until the clamp fits loosely on the pipe.

Commentary Note:

Drawbolt nuts are tapered at the ends, this locks them into the drawband ears so they cannot come loose after being tightened.

- 3.2.3 Align the repair clamp until the plug is positioned over the leak. Use the pilot pin to "find" the leak hole and push the pin into the hole as far as it will go.
- 3.2.4 Turn the force screw until the tip of cone touches the pipe. At this point completely remove the pilot pin from the force screw.
- 3.2.5 Tighten the drawbolt securely, avoiding not to stretch or bend any parts of the clamp.
- 3.2.6 Screw in the force screw until it is well down on the collar. The tapered plug should be crushed such that it fills the bottom of the collar.
- 3.2.7 Installation is now complete and leak should be repaired.

3.3 Weld Cap Requirements

- 3.3.1 When performing welding on any pipeline, the requirements of [SAEP-310](#) shall be followed.
- 3.3.2 Standard weld caps come in two size ranges; 152-305 mm pipe size and 356 mm and larger pipe size.
- 3.3.3 Weld caps on X60 and stronger pipe require sleeving to be considered a permanent repair. Refer to paragraph 3.4.
- 3.3.4 The following procedure shall be followed when attaching weld caps to the pipe:
 - 3.3.4.1 Determine the pipe wall thickness and check for any subsurface defects in weld area by ultrasonic examinations. Use a continuous UT scan covering a minimum of 100 mm from the weld center line and record results. If wall thickness in the welding area is below 5 mm, written approval shall be obtained from the Manager, Consulting Services Department, prior to any welding being performed.

- 3.3.4.2 Remove 3.2 mm threaded plug from the weld cap.
- 3.3.4.3 Place weld cap over the repair Smith+clamp and check the fitup gap. Fit-up gap to be 3.2 mm $\pm$.8 mm hand grind, if necessary, to get a close fit and feather edge for best welding.
- 3.3.4.4 Ensure line pressure and flow meet the requirements as prescribed in [SAEP-310](#).
- 3.3.4.5 Tack weld cap to the draw band and weld to draw band using 2.4 mm or 3.2 mm low-hydrogen electrodes. An approved Welding Procedure Specification (WPS) shall be obtained from CSD prior to commencing the welding job.
- 3.3.4.6 Weld the cap completely around its circumference to the pipe and the draw-band using 2.4 mm or 3.2 mm low-hydrogen electrodes.
- 3.3.4.7 Notch the draw band at the weld edge with a cold chisel. Remove the draw bolt and bend the draw band several times until it breaks along the chisel mark.
- 3.3.4.8 Complete the weld in the area where the draw band was removed.
- 3.3.4.9 After welding is completed, the weld shall be pressure tested and leak tested as per [SAES-A-004](#). Pressure test with air pressure at 172-207 kpa (25-30 psig), reduce to 21-34 kpa (3-5 psig) for leak testing, using soap solution, after pressure testing. Thread the plug into the weld cap and seal weld the vent plug.

3.4 Sleeving Requirements

- 3.4.1 All sleeve welding shall meet the requirements of [SAEP-310](#).
 - 3.4.2 X60 and stroger pipe requires sleeving in addition to the weld cap application. Refer to [SAEP-310](#) for material selection, sizing, and welding of the sleeves.
 - 3.4.3 Drill or torch cut a hole in one half of the sleeve, enough to clear the cap when applied. Bevel the hole for the cap-to-sleeve weld, which shall be full penetration weld.
 - 3.4.4 The fit-up and welding sequence of the sleeve shall be per [SAEP-310](#).
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3.4.5 After the sleeve has been welded, complete the full penetration sleeve to cap weld using 3.2 mm low-hydrogen electrodes.

3.4.6 A final MT or PT inspection shall be performed.

Revision Summary

31 January 2005	Revised the "Next Planned Update". Reaffirmed the contents of the document, and reissued with updated list of Committee members.
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