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Recommended Practice

Polycore Thermoplastic Lined Tubing with Extended Length API 8 Round Connections

Field Running and Handling Procedures

1.0 Scope

- 1.1 This document sets forth the recommended practice for the field running and handling procedures that should be utilized in conjunction with Polycore's Thermoplastic Lined Tubing.

2.0 References

- 2.1 The following documents were used for reference in the preparation of this document:
 - 2.1.1 API RP 5C1
 - 2.1.2 API BUL. 5A2

3.0 Equipment

- 3.1 The following list of equipment should be on location when Polycore's Thermoplastic Lined Tubing is run:
 - 3.1.1 Ample supply of fresh, unopened thread compound
 - 3.1.2 Thread lubricant applicators #58235 moustache brush is recommended. As an alternative, a 3" or 4" paint brush with the bristles cut to approximately 1" in length.

NOTE: Polycore does not recommend use of a bottlebrush for thread lubricant application. If a bottlebrush must be utilized, care must be taken to evenly spread thread lubricant around the entire surface of the pin and box thread.

- 3.1.3 Appropriate product data sheet
- 3.1.4 Drift assembly
- 3.1.5 Stabbing guide
- 3.1.6 Rig Tong
- 3.1.7 OPTIONAL – Power tong

4.0 Field Running and Handling Procedures

4.1 Precaution

- 4.1.1 Tubulars should not be stacked higher than five tiers at the rig. (API RP 5C1)
- 4.1.2 Layers should be separated by wooden dunnage so that no weight rests on the connections. (API RP 5C1)
- 4.1.3 Thread protectors should always remain in place when moving or handling tubulars.
- 4.1.4 If a mixed string is to be run, ensure proper identification to accommodate sequence of running.
- 4.1.5 Do not use a high temperature heating device or welding torch to remove thread protectors.
- 4.1.6 Avoid rough handling. Do not unload the pipe by dropping.
- 4.1.7 Do not handle more than three joints unless the pipe is packaged or bundled.
- 4.1.8 **Never** use end hooks inside the end of pipe. Handle with slings only.

4.2 Preparation

- 4.2.1 By visual inspection, ensure that all necessary running equipment and accessories (subs, crossovers, nipples, hangers, pup joints, etc) are available and in good condition.

NOTE: Following visual inspection of the running and accessory equipment, discuss field running procedures with the Rig Supervisor.

- 4.2.2 Elevators of proper size, in good repair and with the setting plate adjusted properly, should be used. **Slip type elevators must be utilized for special clearance / slim hole coupling applications.**
- 4.2.3 Ensure that slips are of the correct size to accommodate the size, weight and length of the tube.
- 4.2.4 Ensure that the safety clamp is the correct size and in serviceable condition.

NOTE: The safety clamp should be used above the table slips for at least the first 20 lengths.

- 4.2.5 Check for traveling block alignment and rotary hole alignment.

- 4.2.6 Ensure that an ample supply of thread compound is available. Only fresh, previously unopened containers of compound should be used.
- 4.2.7 A stabbing board or a yoke may be required to offer vertical stability for ease of make-up.
- 4.2.8 Ensure that an accurate torque monitoring device (pressure or torque gage) is available, and has been calibrated within the past three months
- 4.2.9 Use of a line pull gage to verify accuracy of the rig tong pressure / torque gage is strongly recommended.

4.3 Cleaning and Thread Inspection

When running the tubing from a set of racks at the rig, thread protectors should be removed so that the liner inside the tube and on the pin ends can be visually inspected for handling damage. Additionally, all tubular connections should be cleaned, visually inspected and have thread lubricant re-applied prior to connection make up on the rig.

- 4.3.1 Remove protectors from both the pin end and the coupling end.
- 4.3.2 All compounds that have been applied to the connections should be washed off using a non-petroleum cleaning product and a non-metallic bristle brush. Wipe out or blow out any remaining cleaning product from the connection after washing.

NOTE: Care must be taken to ensure that the cleaning process does not cause environmental pollution.

- 4.3.3 Check and clean the inside of the tubulars to eliminate any foreign material. If compressed air is available, air blast from the coupling end toward the pin.

NOTE: Ensure that there are no bristles left on the threads from cleaning.

- 4.3.4 At this time, visually inspect the condition of the thermoplastic liner both inside the tube and on the end of the pin. The liner on the pin end can be slightly deformed, but should not be cracked, broken or missing.

- 4.3.5 Identify the type of thermoplastic liner by its color and check the product data sheet to ensure that the liner material is correct for the application

NOTE: Polycore Polyethylene is black, Enercore Polyolefin is opaque & Ultracore PPS is tan.

- 4.3.6 Drift the lined tubing and accessory equipment with a clean, properly sized non-metallic drift.
- 4.3.7 If any joint shows restrictions or obvious ovality, it should not be run.
- 4.3.8 Never leave the threads exposed for longer than two hours without corrosion protection.
- 4.3.9 Re-dope the pin and box threads and replace protectors on both ends of the tube.

Lined Tubing Drift Specifications			
Tubing		Liner Drift	
in.	mm	in.	mm
2 3/8	60.3	1.60	40.64
2 7/8	73.0	2.00	50.80
3 1/2	88.9	2.50	63.50
4 1/2	114.3	3.50	88.90

4.4 Running

- 4.4.1 While moving tubing, do not lift with an end hook that may / will contact the box / coupling thread or the thermoplastic liner inside the tubing or the pin face.
- 4.4.2 Joints should be moved to the V-door via a pick up machine. If a pickup machine is unavailable, joints should be moved to the V-door by slings or a pick up line attached to the box end.
- 4.4.3 Once in the V-door, if not already done so on the racks, remove the box end protector and clean and inspect the box end thread to be made-up.
- 4.4.4 Visually inspect the liner on the mill end pin and inside the tube for obvious visual defects.
- 4.4.5 Re-dope the coupling thread.
- 4.4.6 Place the drift from the drift assembly into the end of the box, allowing the drift attached to the cable to slide through the tube as it is picked up.

- 4.4.7 Elevators, single joint elevator or pick-up line may be used to life the joint up in the derrick.
- 4.4.8 As each length is picked up and suspended vertically, remove the pin thread protector. The drift on the end of the drift assembly coated cable will be sitting in the pin protector.
- 4.4.9 If not already done so on the racks, clean and inspect the pin to be made-up.
- 4.4.10 Visually inspect the liner on the pin end to ensure no handling damage has occurred.
- 4.4.11 After the connection is clean and dry, re-apply a light even coat of the thread compound to the pin.
- 4.4.12 Place the drift down thru the box end of the tube sitting in the slips, such that the drift hangs about one foot below the connection. Tie the cable off to the rig.
- 4.4.13 **A stabbing guide must be utilized to eliminate damage to the pin end during the stabbing process.**
- 4.4.14 Stab the pin thread thru the stabbing guide into the box thread carefully to avoid damage to the liner on the pin end and the threads. If necessary, utilize assistance from the man on the stabbing / monkey board.
- 4.4.15 If the connection is mis-stabbed, pick up the joint and check for damage to the liner on the pin end. Additionally clean both the pin and box threads and re-inspect for damage. If no damage is observed, re-apply thread lubricant and stab again.

4.5 Make – up

- 4.5.1 Back up tongs should be placed on the coupling and the tong on the tube. This will prevent movement of the mill end pin in the collar.
- 4.5.2 Both rig / power tongs and back-ups shall be the full wrap around type.

NOTE: Rig / Power tongs and back up tong dies shall be clean and not worn out but should not leave marks exceeding 0.015” in depth. Excessive marks or sharp bottomed marks must be removed. Removal may be by filing only; grinding is prohibited.

- 4.5.3 Position the rig / power tongs approximately 7” above the coupling.

NOTE: Do not allow the stabber to rock the tube during connection make up.

- 4.5.4 Make up the connection to between API **minimum and optimum torque** for the given connection at a maximum of 20 RPM. Make up speed should not vary excessively and should be continuous with no gear changing.

Target Make-Up RPM for API EUE 8 RD

2 3/8”	-	20 RPM	3 1/2”	-	15 RPM
2 7/8”	-	18 RPM	4 1/2”	-	12 RPM

- 4.5.5 Recommended connection Make up Torques

API Torques (ft/lbs)				
Tubing		Min	Opt	Max
2 3/8" 60.3mm	J-55	970	1290	1610
	L-80	1320	1760	2200
2 7/8" 73.0mm	J-55	1240	1650	2060
	L-80	1690	2250	2810
3 1/2" 88.9mm	J-55	1710	2280	2850
	L-80	2350	3130	3910
4 1/2" 114.3mm	J-55	2150	2866	3580
	L-80	2960	3940	4930

4.6 Pulling

4.6.1 Preparation

- a) Slip type elevators are required for slim hole / special clearance coupling applications
- b) Use tongs with acceptable torque read-out and back-up tongs.
- c) A wooden platform must be used for standing back tubulars. (Refer to API 5C1)
- d) A rubber pad on top of the platform is highly recommended**
- e) Clean thread protectors shall be available prior to laying down or standing back. As each connection is broken out, protectors shall be installed on each pin. It is also recommended to install box protectors.

4.6.2 Breaking Out

- a) Use tongs with torque adjustment adequate for break out without damaging pipe. When coming out of hole, the back-up tong should be placed on the coupling (below centerline) to assure that the pipe joint breaks out at the top (field end) of the coupling. Pipe wrenches or chain tongs shall not be used as back ups.
- b) Breakout the connection at a speed less than 10 RPM in a vertically aligned position.
- c) After breaking loose, rotate by hand with the aid of a strap wrench if necessary. The connection will be disengaged and ready for separation in approximately 6 turns from the power tight position.

NOTE: Do not spin after the connection has “popped.” This can and will cause thread damage and / or galling. The proper method of thread disengagement is to rotate the field pin $\frac{1}{4}$ to $\frac{1}{2}$ a turn after the connection has popped.

- d) If excessive torque is noted, rotation should be stopped until cause is determined.
- e) Great care should be exercised to disengage all of the threads with a stabbing guide in place before lifting the field end connection out of the coupling. Lifting should be accomplished with the pipe as straight as possible. Do not jump out of the coupling. If this occurs, inspect the threads for damage.

4.6.3 Standing Back

- a) Tubulars should be set on a firm wooden, rubber covered platform when stood back in the derrick.
- b) Protect threads from dirt or damage when the tubulars are out of the hole. Apply thread compound to the exposed threads and install thread protectors on the pin members when standing back and may be required in the coupling when conditions warrant.

4.6.4 Re-running

- a) Clean connection members fully and inspect for damage.
- b) Field repair any small protrusion on threads
- c) Re-inspect thermoplastic lined pin ends
- d) Re-run as per 4.4 and 4.5.

4.6.5 Laying Down

- a) Clean protectors shall be installed on the tubulars before they are laid down.
- b) If tubulars are stored or re-used, remove the protectors after laying down, clean and inspect connections.