RECOMMENDED PRACTICE SEMI-PREMIUM THREADED & COUPLED CONNECTIONS

Approved	Initial	Date
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Revision	002	

SUBJECT: FIELD RUNNING AND HANDLING PROCEDURES

1.0 SCOPE

1.1 This document sets forth Hunting Connection Technology's (HCT) recommended practice for the field running and handling procedures for carbon, low alloy, and corrosion resistant alloy (CRA) tubing and casing product.

1.1.1. Semi-Premium connections with integral torque shoulder: **SEAL-LOCK BOSS ACCESSORY, SEAL-LOCK HT-S, TEC-LOCK BTC-S, TKC 4040 HOI.**

1.1.2. Semi-Premium positional assembled connections: **HYPER-LOCK HELIX2, SEAL-LOCK BOSS, SEAL-LOCK HT, TEC-LOCK BTC and TKC 4040 RTC.**

2.0 REFERENCES

2.1 The following documents are required to supplement this running procedure:

2.1.1 API RP 5C1, latest revision.

2.1.2 Appropriate Connection Data sheet (CDS).

2.1.3 Ancillary Specification **AS-024 VISUAL INSPECTION**, latest revision.

2.1.4 Ancillary Specification **AS-018 STEEL IMPERFECTIONS**, latest revision.

3.0 EQUIPMENT

3.1 The following list of equipment should be on location when semi-premium threaded and coupled casing is run:

3.1.1 Ample supply of fresh, unopened **approved** thread compound.

NOTE 1: For thread compounds, please refer to Hunting's website to verify the current Recommended Thread Compounds approved by HCT – Per Connection List.

To access the list, visit www.hunting-intl.com, click on "Connection Technology & OCTG" then click on "View Division", scroll down to "Resource Guide" and look for the link: "Hunting Approved Thread Compounds".

NOTE 2: The use of SealLubeTM LTF 4444 for the mill end coupling make up, is required by HCT on HYPER-LOCK HELIX2.

NOTE 3: Hunting has standardized the use of SealLube™ on the mill end coupling make up as follows:
SealLube™ LTF 4444 for any size larger than 3-1/2"
SealLube™ HTM 1001 for 3-1/2" and smaller.

NOTE 4: For CRA materials, the connections shall be sprayed with molybdenum disulfide dry film lubricant prior to make-up.

3.1.2 Thread lubricant applicators #58235 moustache brush.

3.1.3 Hunting's field service kit which contains a pit gage and calipers (four (4) month calibration frequency).

3.1.4 Molybdenum disulfide spray. Hunting recommends Banner Moly-G-Spray, Jet Lube Moly Mist or DuPont Molykote D-321 R.

3.1.5 Torque turn monitoring equipment.

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4.0 FIELD RUNNING AND HANDLING PROCEDURES

4.1 Precaution

4.1.1 Field Running and Handling Procedures shall be in accordance with API RP 5C1.

4.1.2 Layers should be separated by wooden dunnage, one at each end and one in the center of the tube, per layer, 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 welding torch to remove thread protectors.

4.1.6 Avoid rough handling. Do not unload 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 hooks on the ends of pipe, handle with slings.

4.2 Preparation

4.2.1 By visual inspection, ensure that all necessary running equipment and accessories (subs, crossovers, nipples, gas lift mandrels, lifting/handling plugs, hangers, pup joints, etc.) are available and in good condition.

4.2.2 Following a thorough review of running/accessory equipment, discuss running procedures with drilling supervisor.

4.2.3 It is the responsibility of the operator and/or the user of the connections to define safe and sustainable lifting and pulling operations. Hunting recommends slip type elevators as they suit all connection types. However, for regular OD coupled connections a collar, shoulder, or side door type elevator is permissible. The maximum bearing load of the coupling face shall be requested from Hunting Connection Technology for the specific product. The maximum coupling face bearing load provided is a calculated engineering value based on connection dimensions and design combined with minimum material properties. It shall be the responsibility of the operator and the user of the connection to define the appropriate safety factors considering the elevator design, dimensions, and condition for safe operations that do not jeopardize or damage the integrity of the connection.

NOTE 5: Hunting does not recommend the use of bottleneck or drill pipe elevators.

4.2.4 Use power tongs with capacity 30% above make up or anticipated operating torque.

4.2.5 Ensure that the slips are the correct size to accommodate the size, weight, and length of the tube.

4.2.6 Ensure that the safety clamp is the correct size and in a serviceable condition. The safety clamp should be used above the table slips up to a string weight per the clamp manufacturer's rated load limit.

4.2.7 Check for traveling block alignment.

4.2.8 Ensure that all accessories are available and in good condition, including crossovers, float equipment, etc. and if appropriate, that the proper service personnel are present and aware of the procedures.

4.2.9 Ensure that an ample supply of the approved thread compound is available. Only fresh, previously unopened containers of compound shall be used. (See **NOTE 1**)

4.2.10 A stabbing board or a yoke may be required to offer stability for ease of make-up.

4.2.11 Ensure that the power tong snub line is at 90° and level with the tong.

4.2.12 Ensure that an accurate torque monitoring device (torque gauge) is available, the load cell is for use in the required torque range, and the load cell has been calibrated within the past six (6) months.

4.2.13 Hunting recommends the use of a torque gauge to assist in establishing the proper torque when a torque turn unit is not utilized.

4.3 Cleaning and Thread Inspection

4.3.1 All tubular connections shall be thoroughly cleaned and dried at the rig prior to running or inspection.

4.3.2 Immediately before running, remove protectors from both the field end and the coupling. Clean each connection and protector thoroughly.

4.3.3 All compounds that have been applied to the connections and protectors are to be wiped off or washed off using solvent and a non-metallic bristle brush. Wipe out or blow out the solvent from the connection or protector after washing.

NOTE 6: Ensure that the cleaning process does not cause environmental pollution.

4.3.4 Check and clean the inside of the tubulars to eliminate any foreign material that may fall into the box while stabbing. If compressed air is available, air blast from box to pin. Ensure that there are no bristles left on the threads from cleaning.

4.3.5 Drift the pipe and accessory equipment with a clean, properly sized drift. Drifting shall be performed box to pin, being careful not to damage the box torque shoulder, seal, or threads when placing the drift in the joint.

4.3.6 Inspect the threaded connections using HCT Ancillary Specification titled **VISUAL INSPECTION and STEEL IMPERFECTIONS**.

4.3.7 Repair as required by **VISUAL INSPECTION** and/or **STEEL IMPERFECTION ANCILLARY SPECIFICATIONS.**

4.3.8 If any joint or coupling shows obvious ovality, it should not be run.

4.4 Running

4.4.1 Handling plugs and/or thread protectors must always be in place during movement.

4.4.2 Joints should be moved to the V-door via a pick-up machine. If a pick-up 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 Elevators or pick-up line with or without single joint elevators may be used to lift the joint up in the derrick.

4.4.4 If CRT (casing running tool) is to be used, remove the thread protector, and replace it with a Hunting internal tool guide / handling plug.

4.4.5 When running with a CRT, no dump valve shall be used, and a 5-8 second torque hold shall be applied.

4.4.6 When running with a CRT, HCT recommends the use of a compensator.

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WARNING: Hunting connections are not interchangeable with any other connections in the industry. The use of an internal tool guide / handling plug different than the ones designed by Hunting Energy Services for specific connections or applications may result in property damage, injury, or death. Hunting will not be held accountable nor accept any liability if the proper equipment is not utilized for its intended purpose.

4.4.7 After removing the protector, clean and reinspect each connection by removing any storage compound.

4.4.8 Visually inspect to ensure no damage to either connector has occurred.

NOTE 7: For CRA material, apply an approved molybdenum disulfide dry film lubricant to the pin and box / coupling connections.

4.4.9 Apply a light, even coating of the thread compound to the pin and coupling connectors after the connection is clean and dry.

4.4.10 A light even coating of thread compound is defined as a thin coating of thread compound covering all thread surfaces including root and crest, seal surfaces and pin face/torque shoulder. The thread form should remain clearly visible.

4.4.11 Assure that the coupling relief groove is not filled with thread compound.



Do not use bottle brush



Preferred Moustache Brush #58235

4.4.12 Use an alignment yoke to assist make-up.

4.4.13 Stab the pin connector into the box connector. Stabbing guide is recommended to limit damage during the stabbing process.

4.4.14 Position the first pin to be made-up over the box connector (stump) and check the pin to box alignment. The pin should be allowed to hang free in the elevators while the alignment is being determined. The pin should be able to be stabbed directly into the box without assistance.

4.4.15 If the connection is mis-stabbed, pick up the joint, wipe away the thread compound on the pin and the box connectors and inspect for damage. Repair if necessary.

4.5 Dump Test

4.5.1 Dump test shall be conducted prior to casing run. Failure to verify dump test could result in premature dump of torque prior to acceptable optimal torque and or over torque of connection.

4.5.2 When conducting a dump test, the torque applied at test will depend on the wall thickness of the casing body. Consideration should be given to thin wall casing. Torque will have to be evaluated by the qualified Hunting representative on location at that time. It is recommended, in questionable thin wall casing dump tests that 65% of the connection optimal torque be utilized. If the dump test results are questionable, contact Hunting Field Service for guidance.

NOTE 8: Once dump test is concluded, torque shall be set to optimal torque to run the casing string.

4.5.3 When conducting multiple dump tests on casing, it is crucial that the Hunting representative have the tong operator release the jaws and remove the tongs from casing. Tongs are to be applied at a different area on the casing for sequential dump tests. Failure to do so may result in excessive die penetration or point loading which can jeopardize the integrity of the casing.

4.6 Make-up

4.6.1 Torque-Turn Equipment.

4.6.2 A torque-turn/time or torque/turn monitoring system should be utilized. Monitoring equipment should be capable of resolving torque to 1/100th of a turn increment as a minimum. The monitoring equipment should be capable of dumping during the make up by either the computer technician or when maximum parameters are reached. The load cells used with the torque monitoring equipment should be calibrated every six (6) months, traceable to the appropriate national standard. It is recommended to use a proper jaw / insert size with enough contact area with the pipe to minimize the insert marks.

4.6.3 Power and backup tong dies SHALL be clean and not worn down. The maximum acceptable insert mark depth on carbon or low alloy steel pipe is 12.5% of the pipe wall thickness and 5% or 0.012” on sour service and CRA material in accordance with API 5CT, latest revision.

4.6.4 The maximum acceptable insert mark depth on all standard couplings shall not exceed 0.025” for carbon and low alloy steel and 0.015” for sour service and CRA material.

4.6.5 Position the power tongs approximately 3" above the end of the pin connection.

4.6.6 The normal published torque window is based on dimensional tolerances and friction factors. Other factors affecting torque are texture of phosphate coating, type of thread lubricant, make-up speeds, temperature, etc.

NOTE 9: For CRA material the connection shall be started by hand and/or with a strap wrench.

4.6.7 Make up in high gear is allowed from stabbing to hand tight but should be continuous and not exceed 20 RPM. Make up speed should not vary excessively and should be continuous with no gear changing after the snub line becomes tight. In no case should the make up speed exceed 20 RPM in high gear and 5 RPM in low gear. For CRA materials, do not exceed 5 RPM.

4.6.8 For high shoulder torque, apply a light to moderate, even coating of molybdenum disulfide spray to the pin and coupling connections prior to the application of the thread compound.

4.6.9 The mill make-up should not move excessively during field make-up, however; a small amount of rotation is acceptable.

4.6.10 A make-up graph shall be generated for every connection.

4.6.11 Lower the elevators over the pipe after make-up is complete, not during make-up.

4.6.12 The following procedure should be used to set acceptance criteria for torque/turn equipment:

a) Prior to the job, the operating company representative should review the Hunting CDS for this connection. Shoulder torque acceptance limits should be in the range shown on CDS.

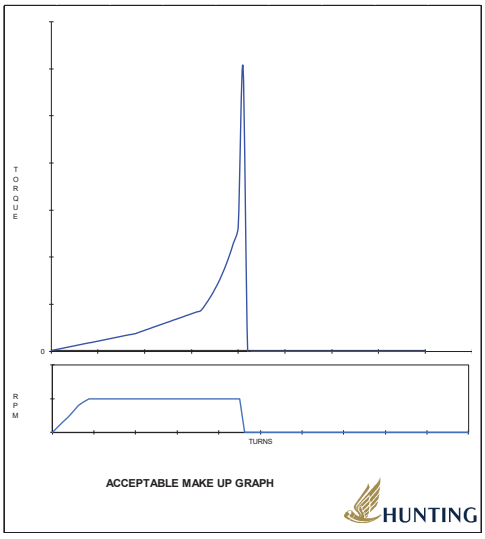
b) A torque curve showing a small wave shall be acceptable, however; the connection with a wave in the torque curve exceeding the shouldering torque shall be broken out and visually inspected. If no damage is found, the connection may be made-up again.

c) For semi-premium threaded and coupled products, the connection for sizes 3-1/2" and smaller should have a clear and distinct shoulder during make up. If necessary to achieve this criterion, 80% of the published minimum yield torque values stated on the CDS may be utilized.

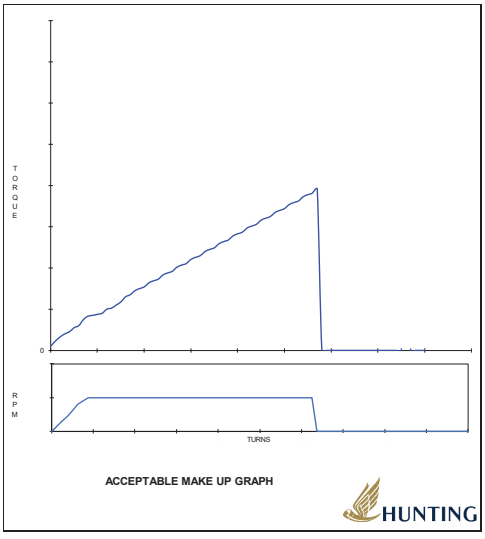
d) For semi-premium threaded and coupled products, the connection should achieve a shoulder with approximately 500 ft-lb of shoulder delta torque prior to reaching 80% of the published minimum yield toque value stated on the CDS. This criterion is applicable for OD sizes greater than 3-1/2".

ACCEPTABLE GRAPHS:

1. Shouldered connections:



2. Position make up:



4.7 Casing String Rotational Parameters

4.7.1 When rotation of casing string to achieve total depth is warranted, careful considerations and monitoring by the operator are required to avoid unintended damage to the casing or connection. Unintended damage could include fatigue, casing or connection wear, over-torque, torsional yield or even triaxial failure.

4.7.2 Hunting recommends that maximum rotational RPM's do not exceed 30 RPM. If an end user requests a higher rotational RPM than recommended, contact HUNTING FIELD SERVICE for guidance.

4.7.3 Hunting recommends that maximum rotational torque applied to casing string not exceed posted maximum torque or operational torque on Hunting's connection data sheet.

4.7.4 It is pertinent to capture all circumstances (change in torques, RPM's, well conditions, pulling weight of string, etc.) once rotating of casing string has started.

4.7.5 During rotation of the casing string, it is important to pay close attention to the performance of all equipment.

a) Verify that handling plugs are properly engaged.
b) Verify that pins are not backing out of boxes.
c) Verify that loosening or excessive damage from not retracting grapples on CRT tool prior to lifting once disengagement by the driller has not occurred.
d) Any damage to tools shall be assessed by the Hunting representative.
e) After inspection, if the assessed damage is concerning to the operational ratings of the handling plug, the equipment shall be taken out of service immediately and documentation of the damage is required.

4.7.6 When pulling or working of casing string, Hunting recommends not exceeding 65% of longitudinal yield strength, which is posted on connection size, weight, and grade specific technical data sheet. If 65% of longitudinal yield strength is requested to be exceeded, contact HUNTING FIELD SERVICE for guidance. It is crucial to capture all readings when pulling and rotating the casing string.

4.8 Pulling

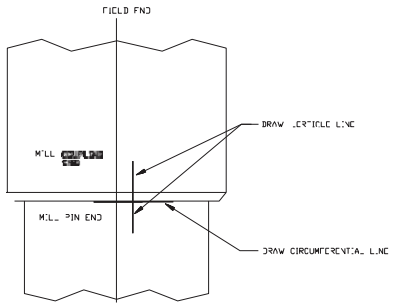
4.8.1 Preparation

a) Slip type elevators are required.
b) Use an alignment yoke and weight compensator when pulling casing.
c) Use power tongs with acceptable torque read-out and back-up tongs.
d) A wooden platform must be used for standing back tubulars. (Refer to API 5C1)
e) Clean thread protectors should be available prior to laying down or standing back. As each connection is broken out, protectors shall be installed on each pin.

4.8.2 Breaking Out.

a) Prior to break-out, using an ink paint marker, draw a vertical line from the mill make-up side of the coupling onto the mill end tube body. Also draw a line circumferential on the tube body, either side of the vertical line even with the coupling face. If the mill make-up moves more than 1/4" circumferentially during break-out, use these marks to reestablish the mill make-up position.

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b) Use power tongs with torque adjustment adequate for break out without damaging pipe. The back-up tong should be placed on the coupling (below centerline) to assure that the pipe joint breaks out at the top of the coupling. Pipe wrenches or chain tongs shall not be used as back-ups.
c) Break out the connection at a speed less than 5 RPM.
d) After breaking loose, rotate by hand with the aid of a strap wrench until the connection becomes disengaged and ready for separation.
e) Assure the pin and the box are fully aligned prior to attempting to separate the pin and box connectors.
f) If excessive torque is noted, rotation should be stopped until the cause is determined.

NOTE 10: For CRA material, break out to hand tight position with power tongs. The remaining turns shall be performed by hand or with the aid of a strap wrench.

4.8.3 Standing Back
a) Tubulars should be set on a firm wooden platform when standing back in the derrick.
b) Protect threads from dirt or damage when the tubulars are out of the hole. Thread protectors should be installed on the pin members when standing back and may be required in the coupling when conditions warrant.

4.8.4 Re-Running
a) Clean connection members fully and inspect for damage.
b) Field repair any small protrusion on threads in accordance with Hunting's Ancillary Specification for **VISUAL INSPECTION**.
c) Re-run as per 4.4 and 4.5.

4.8.5 Laying Down
a) Clean protectors shall be placed on the tubulars before they are laid down.
b) If tubulars are to be stored, remove the protectors after laying down, clean and inspect connections. Coat all exposed threads with approved storage compound and install clean thread protectors.
c) If tubulars are to be re-used, remove the protectors after laying down, clean and inspect connections. Coat all exposed threads with approved thread compound and install clean thread protectors.

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5.0 ROTATIONAL PARAMETERS DISCLAIMER

5.1 There are several variables that need to be taken into consideration when increasing Rotational Torques (Above posted operational torque on the CDS), Pulling Weight of the Casing String (Above 65% of the longitudinal yield strength on the CDS), and Rotational RPM's (30 RPMs posted in running and handling procedures for the Hunting Connections).

5.2 Some of the variables to consider are hole conditions, rate of penetration, duration of time in one spot (Joint or footage), pulling weight of string, curves or "dog legs" in well.

5.3 If there are any die marks on the upset of the box connections (area where box transitions to plain end pipe body), this is part of the connections and will be rejected per Hunting's procedures.

5.4 The pipe body of the casing/tubing will be a concern in increasing rotational parameters above the recommended in running and handling procedures. If casing string must be pulled for any reason after increasing the rotational parameters, the breakout torques will be higher and may result in damage from the casing equipment utilized to break out the connections.

5.5 The dispositioning of the pipe body as acceptable or rejectable will be at the discretion of the end user. API governs the acceptance of pipe wall by 12.5%.

5.6 The accessories utilized in the well need to be taken into consideration as well in these increased rotational torque situations. Any damage to accessories needs to be addressed with the manufacturer of the accessory as well as the final dispositioning of the accessory will be by the end user. Hunting Energy Services LLC are only responsible for the performance of the Hunting connections threaded on the accessories.

5.7 Hunting Energy Services LLC. will only make the dispositions on the pin and box connections and provide that information to the end user upon completion of inspection.

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6.0 RUNNING PROCEDURE FOR ACCESSORIES MADE UP USING THREAD LOCK COMPOUND / SealLube™

6.1 Using steam, soap and hot water, or safety solvent, remove all thread storage or running compound from both pin and box connectors.

6.2 Ensure that the thread and sealing surfaces are clean, dry, and free of oil, grease, or residues.

6.3 Just prior to make up, the thread lock / SealLube™ shall be applied on the entire pin connectors only (not on the box).

6.4 When making up accessories like float equipment, hangers, thick wall accessories, and others, shoulder torques might be higher than normal due to relationship of the friction factors of the thread locking lubricant in comparison with the API Modified thread compounds and the wall thickness.

6.5 The make up torque of the accessories should be aimed to the maximum recommended torque. Therefore, if necessary, the published torque may be exceeded but in any case shall not exceed 80% of the published minimum yield torque.

6.6 Hunting does not recommend gripping over a box connection; however, if it is necessary to place back-up tongs over an accessory box connection, Hunting recommends the use of low stress tong dies. Maximum die penetrations shall not exceed 0.010". If the die penetration maximum is exceeded, Hunting Field Service shall be contacted at (281) 442-7382 or at Fieldserviceoperations@Hunting-intl.com.