Set & Retrieval Thru Tubing Sand Screen (TTSS) with XN Lock Mandrel

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1. Objective

- To introduce Thru Tubing Sand Screen (TTSS) as a basic sand control equipment on Well
- To enlighten offshore crews regarding set TTSS procedures and tools involved
- To illustrate actual TTSS that was set at offshore wells.

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2. Introduction

Thru Tubing Sand Screen (TTSS) is a sand control equipment that can be coupled with Lock Mandrel and set at Landing Nipple. Generally, TTSS are modular, and can be installed tandemly. Commercially, TTSS are available in the market depending on its mesh size, 200 microns, 250 microns, etc. Besides, there are also variable sized and length available on the market.

2.75" Sand Screen (TTSS) 200 micron

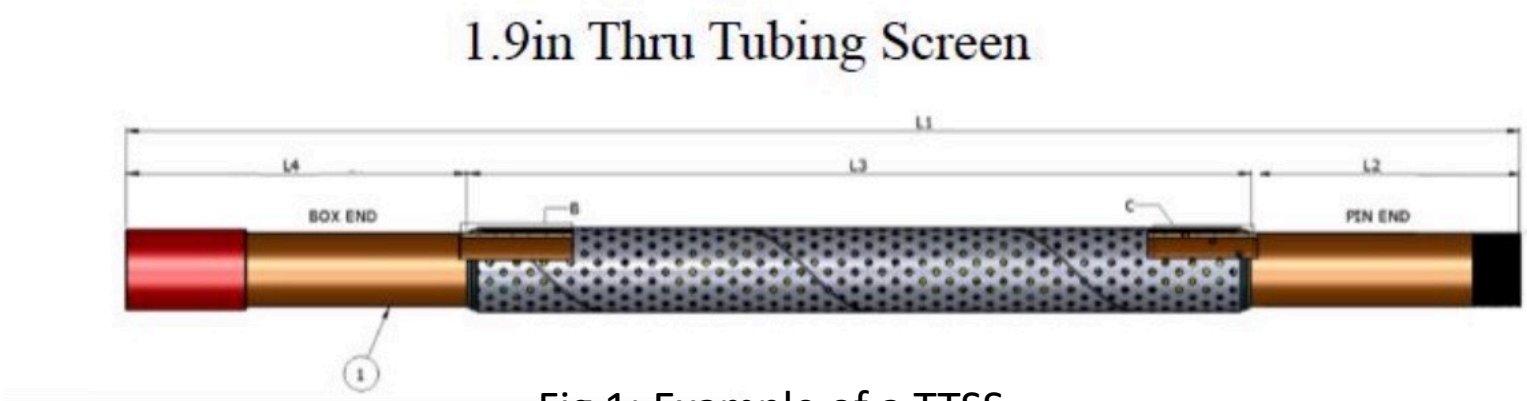

Fig 1: Example of a TTSS

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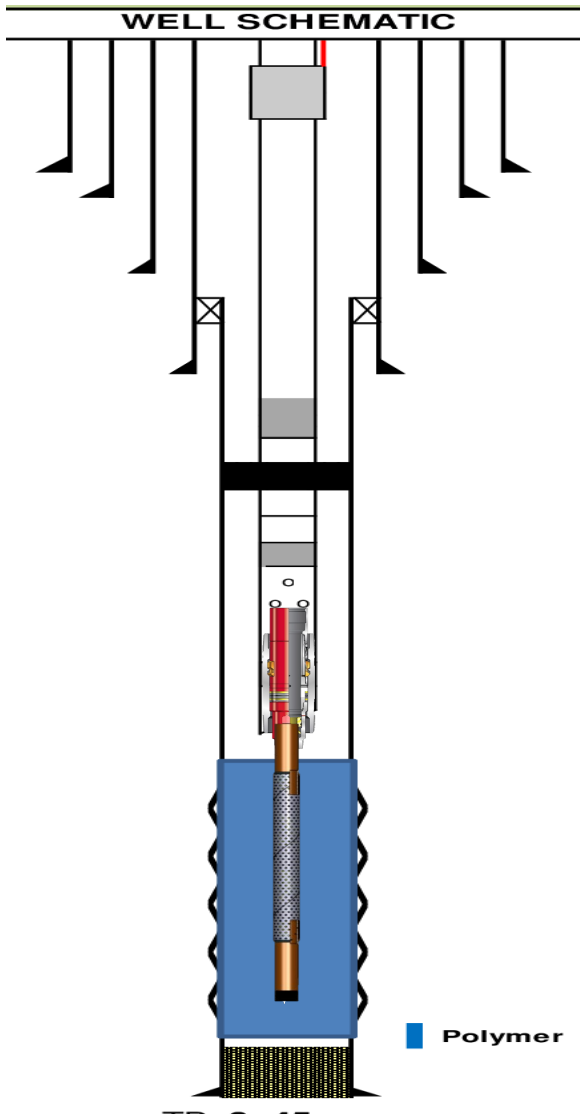

- TTSS is set at XN profile
- TCC is used to check the distance of below XN to ensure TTSS can be fit outside tubing
- TTSS is modular, and can be installed tandemly depending on the operation objective
- PCE Rig Up length must be sufficient, especially to retrieve the long TTSS to surface

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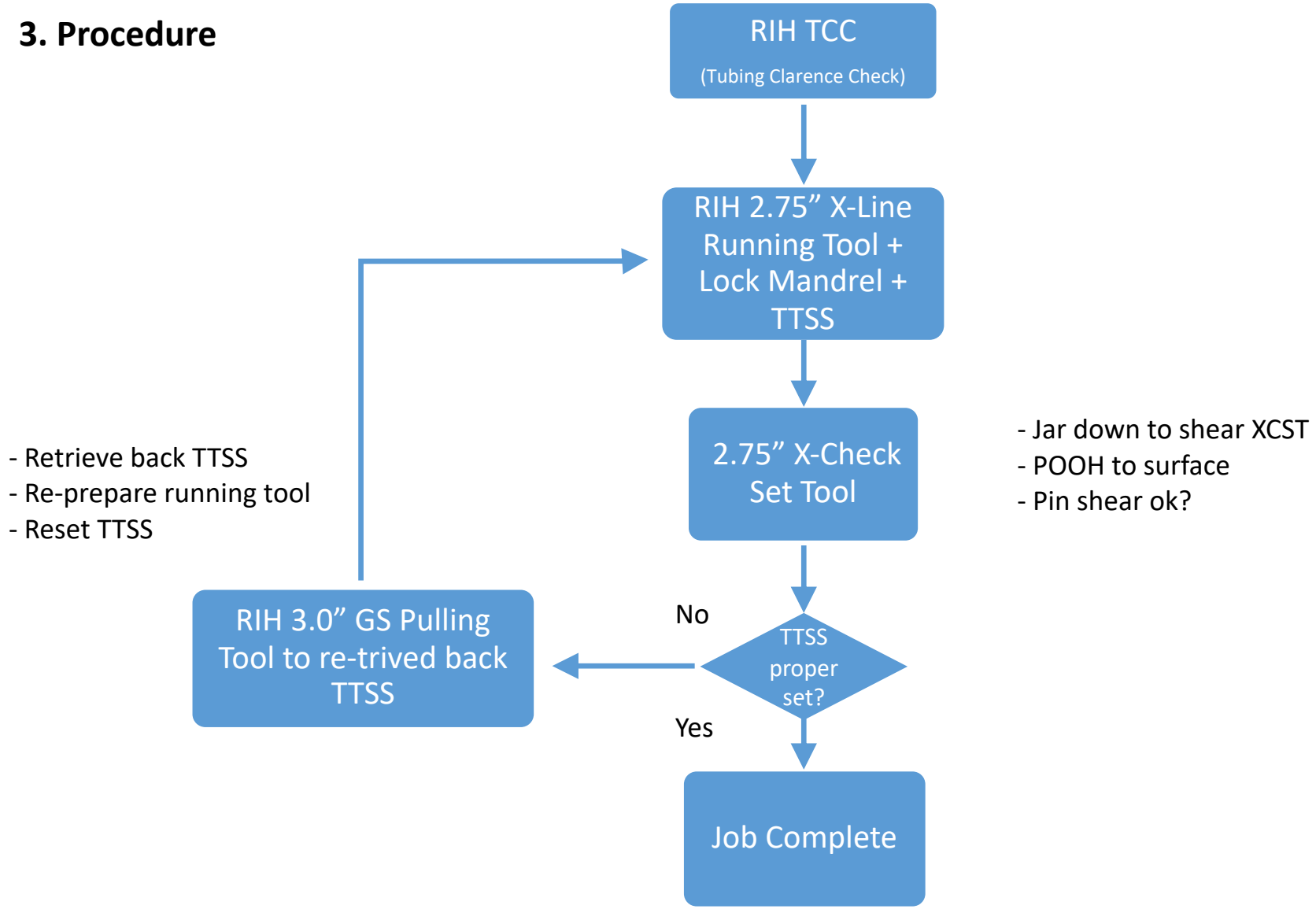
3. Procedure



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Install TTSS

1. Make up the X-Line running tool + lock mandrel + TTSS with toolstring.
2. Pressure test the QTS.
3. Equalize well pressure and open well. Record SITHP. Count the number of turns to fully open.
4. Run-in-hole (RIH) X-Line running tool and TTSS and set at XN No-Go nipple.
5. Check pulling weight above at XN No-Go nipple before set depth.
6. Tag down and continue jarring down several time to shear off top shear pin X-Line. Perform pull test 300lbs + PW.
7. Jarring up to shear off bottom shear pin X-Line. Check pulling weight to confirm TTSS is set at XN No-Go Profile. (compare weight before set and after set)
8. POOH until toolstring is inside lubricator & above Swab Valve.
9. Close Swab Valve and HMV. Count the Swab Valve number of turns to fully close.
10. Bleed down the lubricator pressure to 0 psi and monitor for 10 mins.
11. Break lubricator at the Quick Test Sub (QTS) and recover X-Line running tool c/w toolstring assembly.

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RIH **X-Check Set Tool**

1. Make up the **X-Check Set Tool** (brass pin) with configuration.
2. Pressure test the QTS.
3. Equalize well pressure and open well. Record SITHP. Count the number of turns to fully open.
4. Run-in-hole (RIH) **X-Check Set Tool** to top of Lock Mandrel at XN No-Go nipple.
5. Jarring down several time to sheared off XCST shear pin.
6. POOH until toolstring is inside lubricator & above Swab Valve.
7. Close Swab Valve and HMV. Count the number of turns to fully close SW.
8. Bleed down the lubricator pressure to 0 psi and monitor for 10 mins.
9. Break lubricator at the Quick Test Sub (QTS) and recover X-Check Set Tool.
10. Check any abnormality at X-Check Set Tool. If Lock mandrel is proper set at XN No-Go nipple the shear pin must be sheared.

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Retrieve TTSS

1. Make up the **GS pulling tool** (Brass pin) with toolstring.
2. Pressure test the QTS.
3. Equalize well pressure and open well. Record SITHP. Count the number of turns to fully open.
4. Run-in-hole (RIH) **GS pulling tool** and check pulling weight above the TTSS at XN No-Go nipple.

Note : Before retrieve check the bottom hole pressure to prevent blow out or blow down.

5. Having confirmed the lock mandrel has been latched on, jar up to free it from the nipple.
6. Once the lock mandrel is free from the nipple, check for increase in pulling weight of the toolstring to confirm the lock mandrel + TTSS has been successfully retrieved.

NOTE: Sometimes, extensive jarring is required to free the TTSS. Should the pulling tool pin be sheared and released without recovering the TTSS, then the pulling tool will have to be pulled out, repined and rerun.

7. Pull out the TTSS to surface into the lubricator.

Precaution: During POOH, slow down the speed at the well accessories.

8. Close Swab Valve and HMV. Count the Swab Valve number of turns to fully close.
9. Bleed down the lubricator pressure to 0 psi and monitor for 10 mins.

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4. Preparation

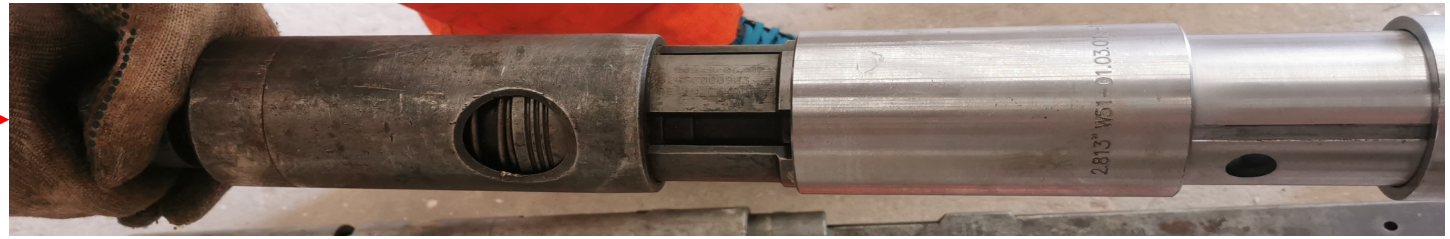

Fig 2 : GS Pulling Tool with Lock Mandrel

Fig 3 : X-Line Running Tool with Lock Mandrel

Fig 4 : Lock Mandrel with 250 microns TTSS

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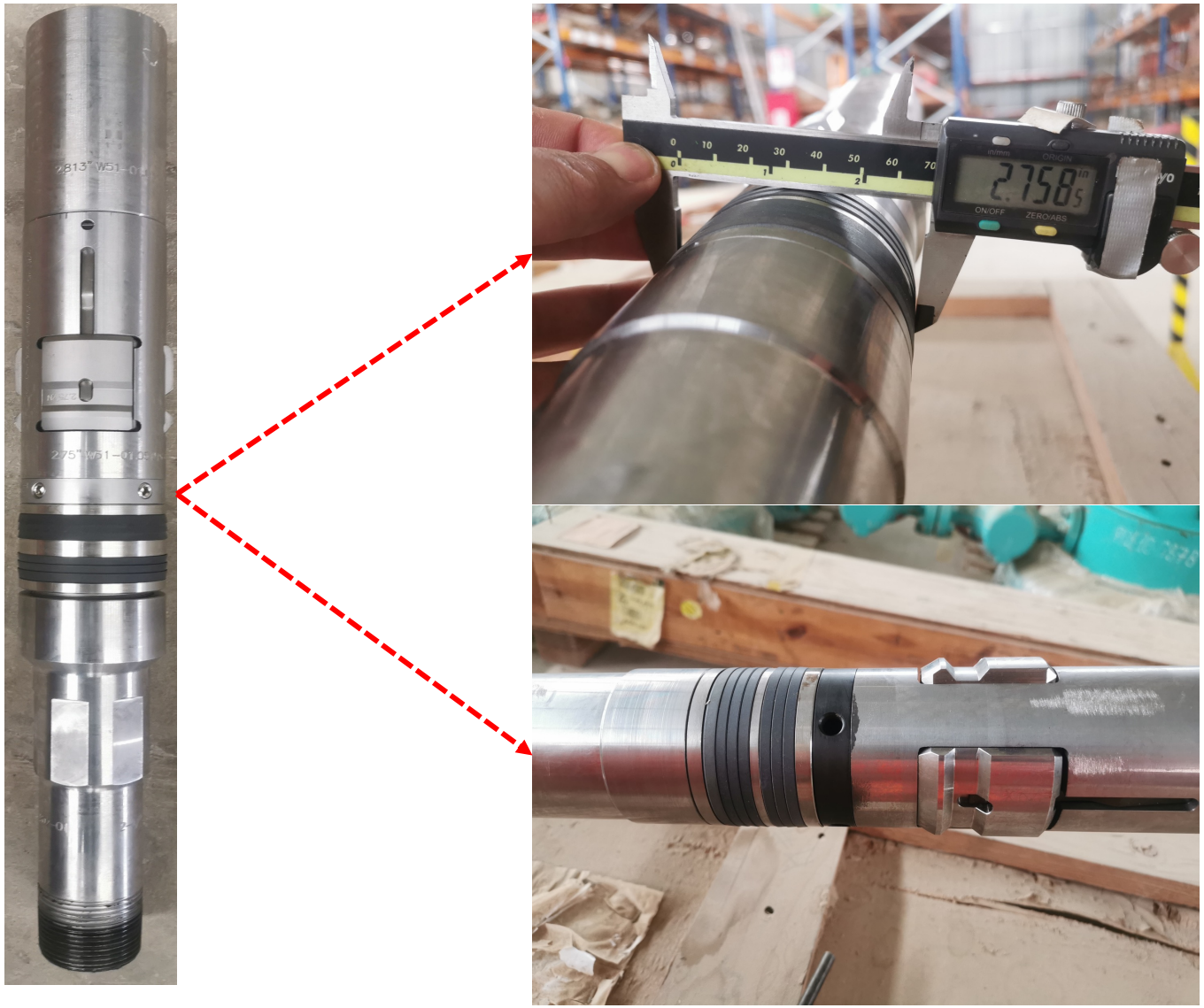

Fig 4 : Measure V-packing

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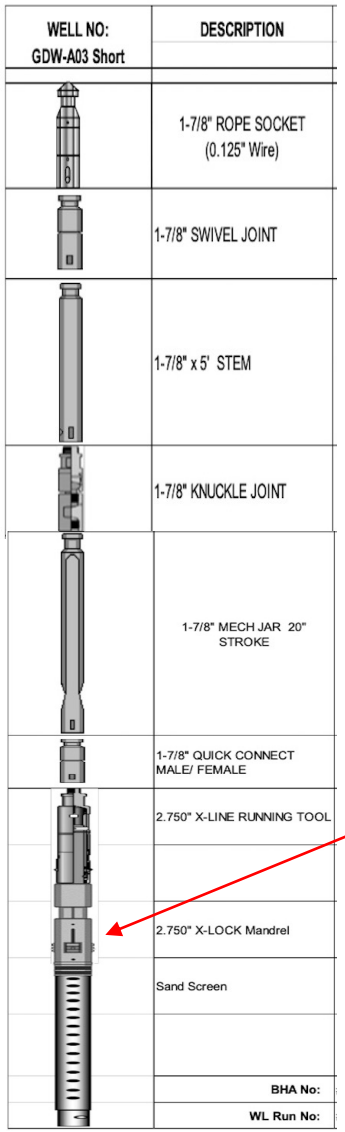
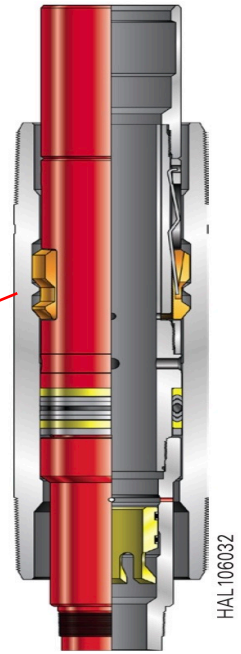
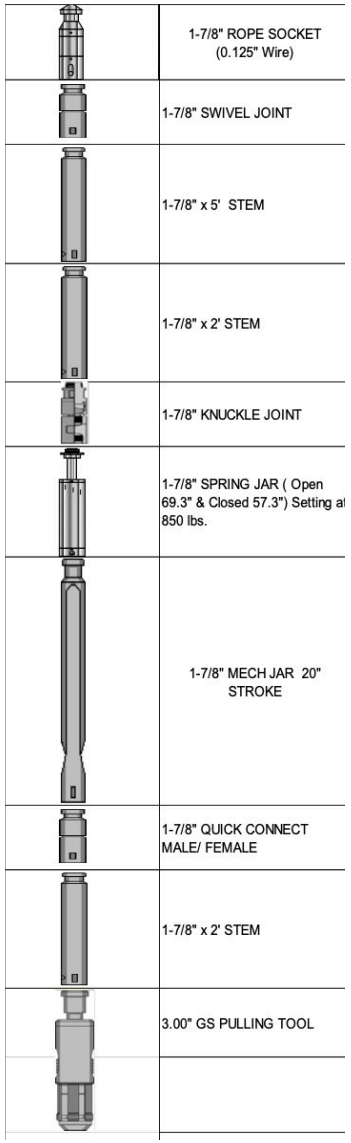


- **Set TTSS**

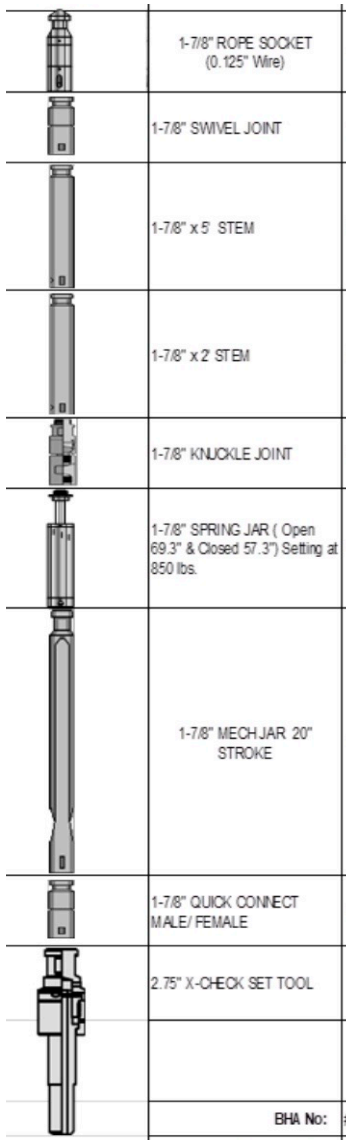
RS + SWJ + 5' STEM + KJ + 20" STR MECH JAR + 2.75" X-LINE + LOCK MANDREL WITH TTSS





- **Retrieve TTSS**

RS + SWJ + 5' STEM + KJ + 2' STEM + HYD JAR + 20" STR MECH JAR + 3.00" GS PULLING TOOL



- **RIH X-CST**

RS + SWJ + 5' STEM + KJ + 2' STEM + HYD JAR + 20" STR MECH JAR + 2.75" X-CHECK SET TOOL

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Fig 5 : Full sand screen configuration (x-line + lock mandrel + TTSS)

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Fig 6 : Measure the TTSS with XN-lock mandrel

Q&A SESSION

1. what is the sand screen?

   Sand screen is a equipment to filter the sand.

2. Why need to set sand screen?

   Prevent from sand to migrate from reservoir to surface and can damage/clogged the production system.

3. What is running tool we use to set sand screen?

   X-line Running Tool

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Thank You