PETROBRAS	**TECHNICAL SPECIFICATION**	No.: **I-ET-3010.00-1519-140-P56-002**	
	CLIENT: E&P		SHEET: 1 of 36
	JOB: TSUDL SYSTEM		
	AREA: ALL		
	TITLE: **UNIFIED DIVERLESS SUPPORT TUBE FACTORY ACCEPTANCE TEST PROCEDURE**		P
			SUB/ES/ECSS

INDEX OF REVISIONS

REV.	DESCRIPTION AND/OR REVISED SHEETS
0	ORIGINAL

	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	19/03/2021								
DESIGN	SUB/ES/ECSS								
EXECUTION	CJLZ								
CHECK	BERK								
APPROVAL	BERL								

INDEX

1. INTRODUCTION

This Technical Specification establishes the main parameters and acceptance criteria for the factory acceptance tests of Unified Diverless Support Tube components and their integration test.

2. OBJECTIVE

The objective of this document is to provide information and stablish parameters and acceptance criteria in order to conduct and register the Unified Diverless Support Tube components factory acceptance tests.

3. DEFINITIONS

3.1. General

For the purposes of this document, the following terms and definitions apply. Other terms and definitions can be found in reference documents and standards.

3.2. Definitions

3.2.1. Bend Stiffener

Bend Stiffener is a conically shaped polyurethane molding designed to add local stiffness to a riser, flowline, cable or umbilical.

3.2.2. Cap

Bend Stiffener´s metallic component that provides alignment of this equipment inside the TSUDL, containing an interface geometry for the locking system (Latch Bars).

3.2.3. Central Structure

Structural component that will be welded to the FPU riser balcony, it has flanges at the top and the bottom to allow the connection of the Upper Cone and the Centralizer

3.2.4. Contractor

Company that runs the services or manufacturing contract of an FPU and hires the services for manufacturing of the TSUDL.

3.2.5. Components

Components – Upper Cone, Central Structure, Latch Bar Set and MTL – to be manufactured and supplied to Contractor for integration on Shipyard.

3.2.6. Drive Ring

Mechanism used to unlock the HOA allowing its free descent during pull out operation.

3.2.7. Dummy Cap

Mechanical part which has a similar profile to the Cap used to simulate the introduction and the locking of Bend Stiffener's Cap into the TSUDL.

3.2.8. Dummy HOA

Mechanical part which has a similar profile to the Hang-Off Adaptor (HOA) used to test TSUDL components and its integration.

3.2.9. Floating Production Unit – FPU

It is a ship or a semi-submersible platform for oil and gas production.

3.2.10. HOA – Hang-Off Adaptor

Device that supports and provides alignment for the top termination of steel catenary risers.

3.2.11. Latch Bar Locking Tool (LBLT)

Device inserted in Round Block to lock Latch Bars in "retracted" position.

3.2.12. Latch Bar Set

Mechanism used for actuating the Latch Bars for locking and unlocking Bend Stiffener's Cap into the TSUDL and it is composed of axles, handlers, springs, among other components.

3.2.13. Lateral Support Module (MTL)

Sub-assembly responsible for providing lateral stabilization of the top riser termination, in which the riser shearing effort will be transmitted, which together with the reaction loads at the Upper Cone, will provide equilibrium forces to support the bending moments from the riser.

3.2.14. Locking Wedge Set

Mechanisms used for locking the riser top termination and supporting the riser traction load.

3.2.15. Pull-in

Riser transfer operation from launching ship to the FPU.

3.2.16. Pull-out

Riser removal operation from FPU.

3.2.17. Riser

A length of flexible or rigid pipeline used to connect the subsea collecting/exporting system to the FPU.

3.2.18. Supplier

Company responsible for manufacturing TSUDL or parts of it.

3.2.19. Test Record Sheet – TRS

Test Record Sheet is a document used to register each step of TSUDL factory acceptance tests.

3.2.20. TSUDL

The Unified Diverless Support Tube (TSUDL) is a riser support system for a rigid and flexible pipe designed to allow pull-in operations with minimal diver assistance.

3.2.21. Upper Cone

Component with mechanisms for locking the rigid riser top termination and supporting the riser traction load.

4. REFERENCE DOCUMENTS AND STANDARDS

TSUDL tests shall be in accordance with the following documents and standards in their latest revisions, unless otherwise indicated.

4.1. Petrobras Standards and Technical Specifications

[1] **I-ET-3010.00-1519-140-P56-001** – TSUDL Technical Specification.
[2] **I-ET-3010.00-1300-850-PEK-001** – Control and Monitoring System for Riser Supports.

4.2. International Standards

[3] **DNVGL-RP-B401** – Cathodic protection design.

[4] **ISO15589** – Petroleum, petrochemical and natural gas industries – Cathodic protection of pipeline systems.

[5] **ISO 2859** – Sampling Procedures for Inspection by attributes.

[6] **ISO 9001** – Quality management systems – Requirements.

4.3. References and Standards for services in Brazil

In addition to the standards in 4.2, in order to perform services in Brazil, supplier shall meet the requirements in the following documents and standards in their latest revisions, unless otherwise indicated.

[7] **ABTN NBR ISSO 5426** – “Planos de amostragem e procedimentos na inspeção por atributos” (Sampling Procedures for Inspection by Attributes).

5. FACTORY ACCEPTANCE TESTS – FAT

5.1. General

5.1.1. All TSUDLs components shall be tested individually to verify their mechanical functioning.

5.1.2. Integration tests of TSUDL with its CONTROL AND MONITORING SYSTEM shall comply with [2].

5.1.3. Rigid risers’ pull-in and pull-out simulation tests shall be performed with a Dummy HOA manufactured in accordance with drawings supplied by Petrobras as in I-ET-3010.00-1519-140-P56-001.

5.1.4. Flexible risers’ pull-in and pull-out simulation tests shall be performed with a Dummy CAP manufactured in accordance with drawings supplied by Petrobras as in I-ET-3010.00-1519-140-P56-001.

5.1.5. The inner parts of the TSUDL as well as the Locking Wedge Sets shall be fully painted, including the anti-fouling layer, for rigid and flexible risers pull in assessment tests.

5.1.6. All tests are Supplier’s responsibility.

5.1.7. A member of Quality Control department of the Supplier shall witness all tests and is responsible for registering the tests results and filling out the TRS. This member is also responsible for report any deviation occurred during the tests.

5.1.8. A Contractor representative shall witness all tests. This representative will be responsible for approving or rejecting the TSUDL FAT.

5.1.8.1. In the event that Petrobras is not the contractor, it reserves the right to send a representative to monitor the tests. This representative will not have the responsibility of approving or rejecting the tests.

5.1.9. For TSUDL components manufactured in Brazil, the Contractor shall notify Petrobras, at least 10 (ten) calendar days in advance or as defined in the terms of the contract, the date when the TSUDL will be available for FAT.

5.1.10. For TSUDL components manufactured abroad, the Contractor shall inform Petrobras at least 30 (thirty) calendar days in advance or as defined in the terms of the contract the date when the equipment will be available to be tested.

5.1.11. During all testing, the TSUDL components and its parts shall be transported on pallets and is not acceptable transport them in direct contact with the fork of the forklift.

5.1.12. Tests performed with the TSUDL components inverted (upside down) are unacceptable.

5.1.13. A load cell shall be installed between the lifting cable and the Dummy HOA / Dummy Cap in order to measure the load required to overcome the force exerted by the springs. This measurement shall be reported in the TRS and sent to Petrobras for information.

5.1.14. All images in this document are for information only and their purpose is to help one understand tests steps and acceptance criteria.

5.1.15. Photographic records of all tests shall be included in FAT reports.

5.2. FAT Infrastructure

5.2.1. Supplier shall provide the entire infrastructure necessary to perform the tests.

5.2.2. The infrastructure necessary to perform the test shall contain, at least, the following items:

5.2.2.1. One Dummy HOA and one Dummy Cap.

5.2.2.2. One wire rope, with suitable mechanical resistance to lift up Dummy HOA, Dummy Cap and TSUDL components.

5.2.2.3. Shackles, with suitable mechanical resistance to lift up Dummy HOA, Dummy Cap and TSUDL components.

5.2.2.4. Synthetic cables (ropes) for guiding Dummy HOA and Dummy Cap during pull in tests.

5.2.2.5. A lifting device, that can be a crane, an overhead crane, etc., capable of suspending the Dummy HOA and the Dummy Cap with a speed of 4 m/min.

5.2.2.6. A test stand containing a device specifically designed to secure the TSUDL components, so the cylindrical body is plumb.

5.2.2.7. Load cell to measure the force needed to overcome the springs.

5.2.2.8. A walkway and a guardrail shall be available for secure access to the components moving parts.

5.2.2.9. One Hydraulic Power Unit capable to provide hydraulic power that meets the specifications in [3] for hydraulic actuation tests.

5.2.2.10. Hoses and connectors to bring hydraulic power from HPU to Lateral Support Modules hydraulic circuit.

5.2.2.11. A device to measure the force necessary to actuate the ROV Override mechanisms.

5.3. FAT Results

5.3.1. FAT results shall be reported in the Test Report Sheet – TRS. A TRS model is provided in ANNEX A and instructions on how to fill it out is provided on section 8 of this technical specification.

5.3.2. The Supplier's Quality Control member and the Contractor representative shall issue one report by TSUDL components tested stating one of two results: Accepted or Rejected.

5.3.3. The TSUDL components with status "Send to Repair" shall be repaired and retested. It will only be considered "Accepted" after correction of all non-conformities and after passing through all tests.

5.3.4. Any repair made in the TSUDL components invalidates all tests performed until that moment.

5.3.5. The TSUDL Rejected components shall be discarded and a new TSUDL component with the same characteristics shall be manufactured.

5.3.5.1. In this case, the new TSUDL component shall receive a new serial number.

5.3.6. The TRSs of rejected and discarded TSUDL components shall be included in the set of data book of approved ones.

5.4. FAT Procedure

5.4.1. Supplier shall submit a FAT Procedure for Contractor analysis and approval.

5.4.2. This procedure shall include at least the requirements listed in sections 6 and 7.

5.5. Sampling Plan for Tests with Load Cell Installed

5.5.1. A sampling plan can be used for tests with load cell installed, as required in item 5.1.13, according to [5] or [7].

5.5.2. The sampling plan in Table 1 shall be used for tests with load cell installed.

Note: For tests with load cell installed, there is no need of using AQL (or NQA) for definition of acceptance criteria. The measures registered using the load cell are for information only.

Table 1– Sampling plan for tests with load cell installed.

NBR 5426 [5]		ISO 2859 [7]	
Nível de Inspeção	II	**Inspection Level**	II
Regime de Inspeção	Normal	**Inspection Type**	Normal
Plano de Amostragem	Simples	**Sampling Plan**	Simple

6. FLEXIBLE RISER PULL-IN AND PULL-OUT SIMULATION FAT PROCEDURE MINIMUM REQUIREMENTS, SEQUENCE AND ACCEPTANCE CRITERIA.

6.1. Preparation

6.1.1. Supplier shall verify prior to the test if the infrastructure listed in 5.2 needed to perform the tests is available and ready to be utilized.

6.1.2. Preparation sequence:

a. Place TSDUL with its Central Structure plumb to the lifting device.
b. Place Dummy Cap below TSUDL and axially aligned with it and with the lifting device cable, with the two-legged sling passing inside the Central Structure.
c. Attach the four-legged sling in the four upper eyebolts of Dummy Cap symmetrically spaced and using the specified shackles (figure 1).
d. Check if MTL mechanisms are assembled in the TSUDL and are in “retracted” position (figure 14a).
e. Check if all Handlers are in “upper” position, locked by TSDUL Bracer, and Latch Bars are in “extended” position (figure 2b and figure 3b).

6.2. TSUDL Drifting Test

6.2.1. The objective of this test is evaluating TSUDL internal diameter through a pipe drifting test.

6.2.2. The Dummy Cap Upper and Lower Rings diameters are slightly bigger than Bend Stiffener’s Cap ones (figure 1) and are used as templates to verify TSUDL internal diameter.

6.2.3. The Upper Ring verifies the TSUDL internal main interface surface compatibility with Bend Stiffener’s Cap that will be furnished by the riser supplier.

6.2.4. The Lower Ring verifies the concentricity of the TSUDL larger internal diameter with its main internal surface. This verification guarantees the correct position of Round Blocks and Latch Bars on TSUDL Central Structure.

6.2.5. Test sequence:

a. Pull up Dummy Cap through TSUDL.
b. Observe the entrance of Dummy Cap into TSUDL and its passage through Central Structure (**Acceptance Criteria Ra1**, item 6.5.1).
c. Lower Dummy Cap until it rests on the floor (**Acceptance Criteria Ra2**, item 6.5.2).

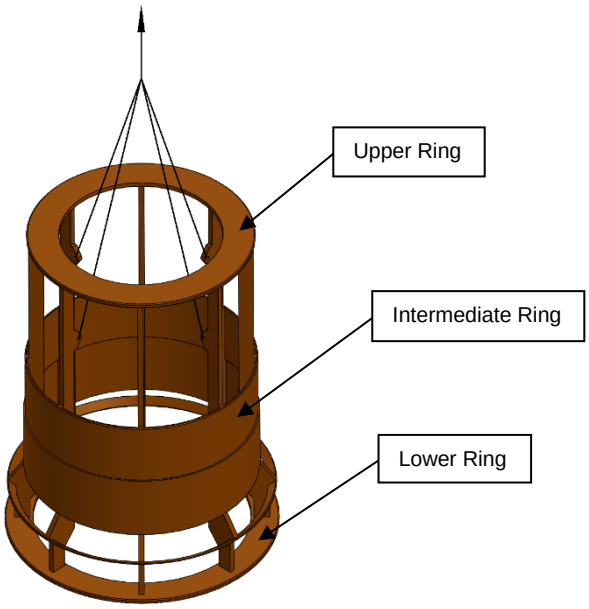


Figure 1 – Dummy Cap – Template for the TSUD Flexible Riser pull-in simulation tests.

6.3. Latch Bars Set Test

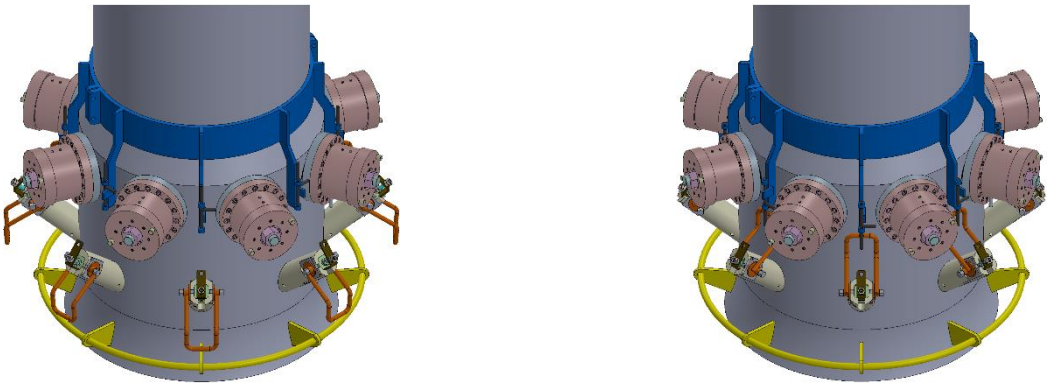
6.3.1. The objective of this test is verifying if Latch Bars Sets are fully functional and if each Latch Bar is properly aligned to the TSUDL inner surface.

6.3.2. Handler Performance Test sequence:

a. Actuate each Latch Bar Set handler to “lower” position (figure 2a), so Latch Bars move to “retracted” position (figure 3a).
b. Insert Latch Bar Locking Tools in Round Blocks (figure 4) to lock Latch Bars in “retracted” position.
c. Actuate 3 (three) times each handler, from “lower” to “upper” position and back (figure 2). (**Acceptance Criteria Ra3**, item 6.5.3).
d. Return handler to “lower” position and remove LBLTs from Round Blocks in order to release Latch Bars.
e. Actuate 3 (three) times each Latch Bar from “retracted” to “extended” position (figure 3) using its respective handler. (**Acceptance Criteria Ra4**, item 6.5.4).

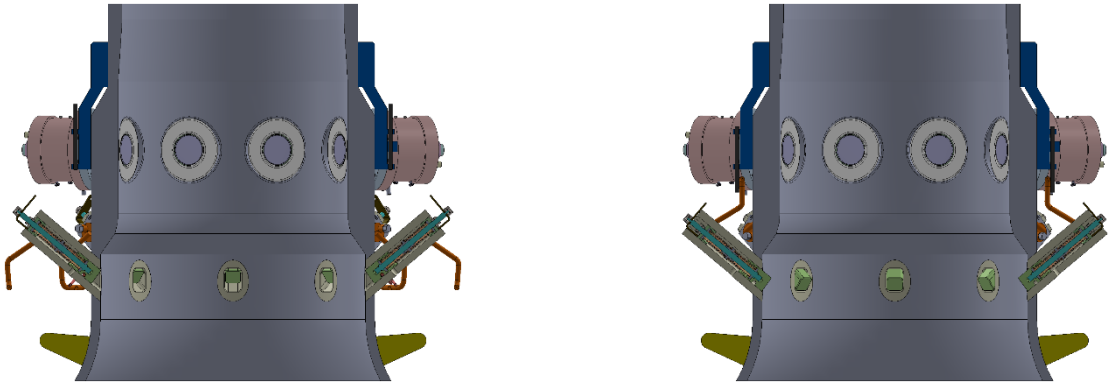
6.3.3. Latch Bars Alignment Test sequence:

f. Actuate each Latch Bar Set handler to “lower” position (figure 2a), so Latch Bars move to “retracted” position (figure 3a). (**Acceptance Criteria Ra5**, item 6.5.5).
g. Actuate each Latch Bar Set handler to “upper” position (figure 2b), so Latch Bars move to “extended” position (figure 3b). (**Acceptance Criteria Ra6**, item 6.5.6).



(a) (b)

Figure 2 – Handlers: (a) "Lower" position and (b) "Upper" position.



(a) (b)

Figure 3 – Latch bars: (a) "Retracted" and (b) "Extended".

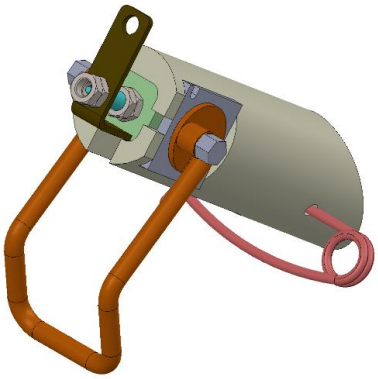


Figure 4 – Latch Bar Locking Tool inserted in the Round Block to lock the Latch Bar.

6.4. Test with the Dummy Cap

6.4.1. The objective of this test is verifying the Latch Bars Sets performance and alignment. This is done by observing the automatic and simultaneous expansion of the Latch Bars, after the passage of the Dummy Cap through the TSUDL.

6.4.2. Pull-in test sequence:

a. Pull up Dummy Cap into TSUDL at a speed of 4 m/min (four meters per minute).

b. Observe the insertion of Dummy Cap into TSUDL and Latch Bars simultaneous and automatic locking (**Acceptance Criteria Ra7**, item 6.5.7).
c. Record load cell measured value in TRS if applicable.
d. Spool out lifting device cable so Dummy Cap is freely seated on Latch Bars. Check how Dummy Cap is seated on Latch Bars, the expansion of Latch Bars and the clearance between them and Dummy Cap (**Acceptance Criteria Ra8**, item 6.5.8).

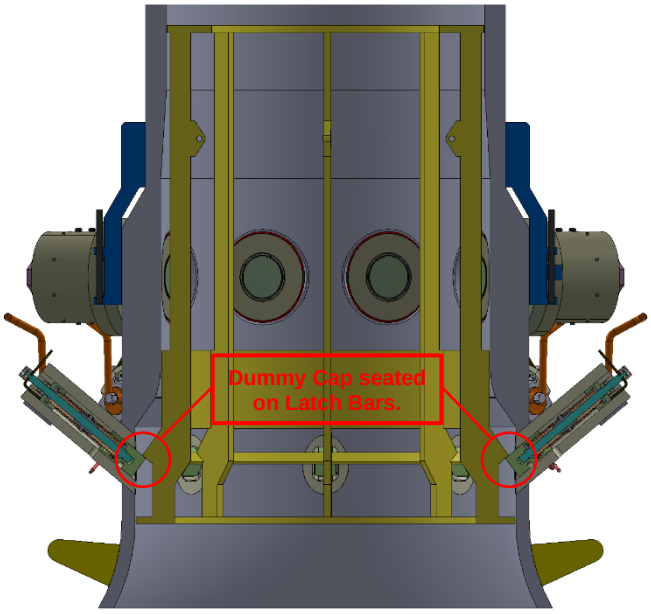


Figure 5 – Dummy cap seated on the Latch Bars.

6.4.3. Pull-out test sequence:

e. Spool in the lifting device cable until Dummy Cap is no longer seated on Latch Bars.
f. Individually actuate each handler to move Latch Bars to “retracted” position (figure 3a), allowing Dummy Cap to be lowered to the floor. (**Acceptance Criteria Ra9**, item 6.5.9).
g. Lower the Dummy Cap until it rests on the floor. (**Acceptance Criteria Ra10**, item 6.5.10).
h. Individually actuate each handler to move the Latch Bars to the “extended” position (figure 3b). (**Acceptance Criteria Ra11**, item 6.5.11).

6.5. Acceptance Criteria

6.5.1. Ra1

i. Dummy Cap shall pass through Central Structure smoothly, without bumps on the lifting device cable. If it does so, the step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.2. Ra2

i. Dummy Cap shall descend freely through the Central Structure and then rest on the floor. If it does so, the step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.3. Ra3

i. Handler performance: the only expected effort to be done by operator in order to perform this test is the one necessary to overcome the spring elastic strength. The reference strength necessary to actuate each handler is 3kgf (three kilograms force). If the operator is able to move each handler smoothly and softly, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.4. Ra4

i. Visual inspection: Observe if Latch Bars freely move from “retracted” position to “extended” one and back. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Handler and Latch Bar set performance: the only expected effort to be done by operator in order to perform this test is the one necessary to overcome the handler and Latch Bar Set inertia. If operator is able to move each Latch Bar smoothly and softly from “retracted” position to “extended” one and back, using only the respective handler, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.5. Ra5

i. All Latch Bars shall be in “retracted” position (figure 3a) and upper aligned to the TSUDL inner surface (figure 6). If the gaps between each Latch Bar and the TSUDL inner surface are less than or equal to 3mm (three millimeters), then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

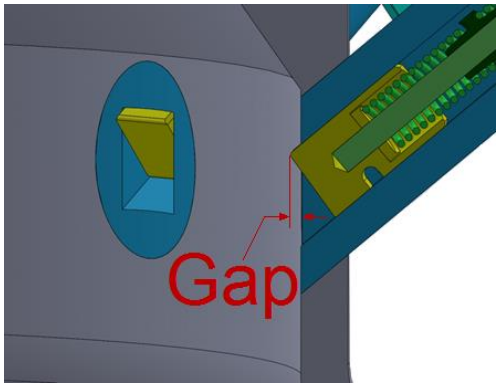


Figure 6 – Upper alignment between Latch Bar and TSUDL inner surface.

6.5.6. Ra6

i. All Latch Bars shall be in “extended” position (figure 3b) and lower aligned with the TSUDL inner surface (figure 7). If the gaps, presented between each Latch Bar and the TSUDL inner surface, are less than or equal to 5mm (five millimeters), then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15.

ii. In case of any Latch Bar is on a cantilever position (figure 8), the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

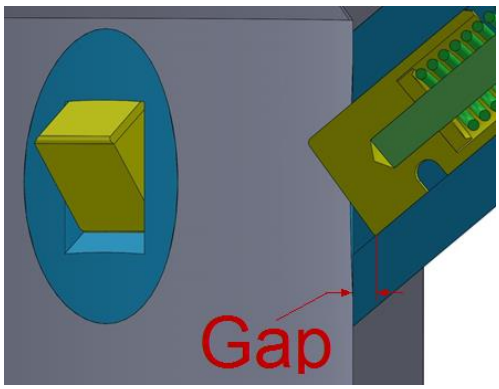


Figure 7 – Lower alignment, between Latch Bar and TSUDL inner surface.

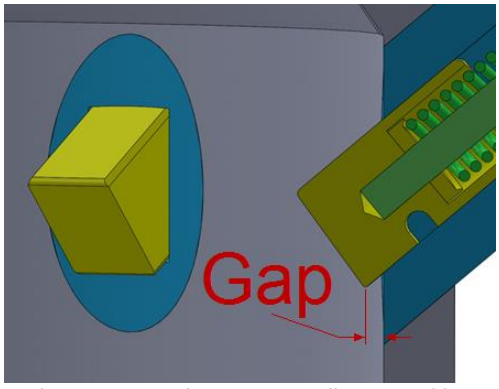


Figure 8 – Latch Bar on cantilever position.

6.5.7. Ra7

i. Latch Bars shall automatically and simultaneously expand after the passage of the Dummy Cap. The verification shall be made through the thud of the Latch Bars expanding. The thud of the Latch Bars locking shall be a single and “dry” sound, in unison. If this condition is met, then this step is approved and one shall proceed to the next step. Register in the TRS.

ii. Delays / advances sonorously perceived indicate that some Latch Bar is locking later / earlier than expected. If the sound is neither single and “dry” nor in unison, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

iii. If any Latch Bar does not expand at all, then the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.8. Ra8

i. Dummy Cap is seated on all Latch Bars and all of them are evenly expanded (figure 5) or gaps between Dummy Cap and Latch Bars (figure 9) are less than or equal to 2mm (two millimeters). This step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15.

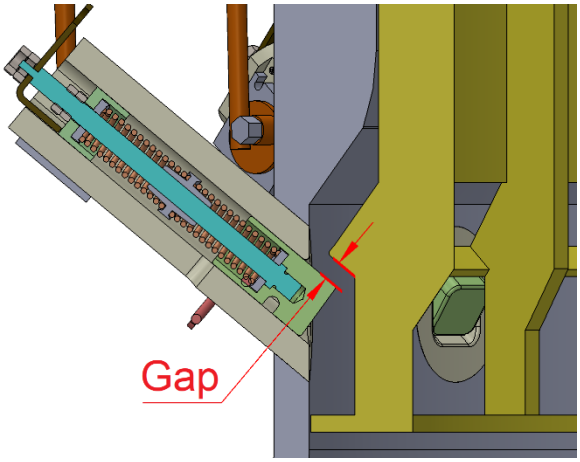


Figure 9 – Gap between Locking Wedge and Dummy Cap.

ii. Dummy Cap is seated on Latch Bars in the following sequence: "One yes one no”. Check if the gap between Dummy Cap and 2 (two) or more Latch Bars (not properly seated) is greater than 2mm (two millimeters). If so, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests. If not, this step is approved. Register in the TRS.

iii. Dummy Cap is not seated on two adjacent Latch Bars. Check if the gap between Dummy Cap and 1 (one) of the Latch Bars is greater than 2mm. If so, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests. If not, this step is approved. Register in the TRS.

iv. In the event of a combination of ii and iii deviations above mentioned, the test shall be decommissioned and TSUDL shall be sent to repair, regardless the gap between Dummy Cap and Latch Bars. Register in the TRS. Then the tests must be restarted.

6.5.9. Ra9

i. Visual inspection: Observe if Latch Bars freely move from “extended” position to “retracted” one. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Handler and Latch Bar set performance: the only expected effort to be done by operator in order to perform this test is the one necessary to overcome the handler and Latch Bar set inertia. If operator is able to move each Latch Bar smoothly and softly from “extended” position to “retracted” one, using only the respective handler, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

6.5.10. Ra10

i. See Ra2.

6.5.11. Ra11

i. See Ra6.

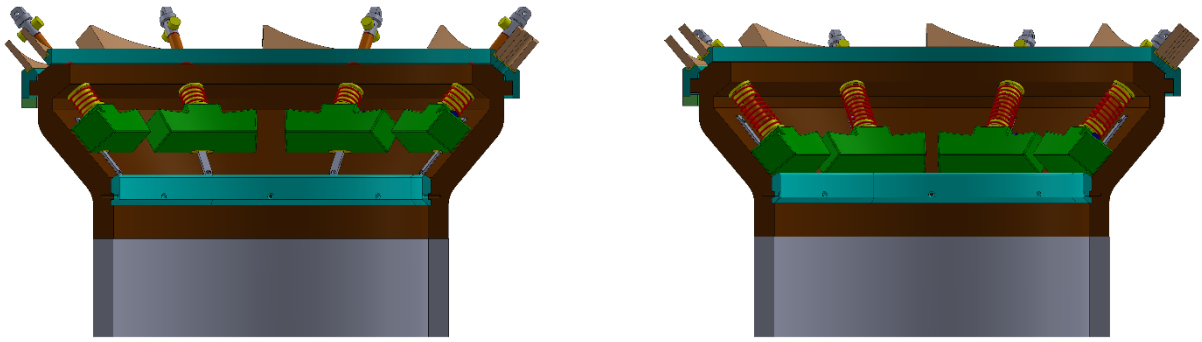
7. RIGID RISER PULL-IN AND PULL-OUT SIMULATION FAT PROCEDURE MINIMUM REQUIREMENTS, SEQUENCE AND ACCEPTANCE CRITERIA.

7.1. Preparation

7.1.1. Supplier shall verify prior to the tests if the infrastructure listed in 5.2 needed to perform the tests is available and ready to be utilized.

7.1.2. Preparation sequence:

a. Place TSDUL with its Central Structure plumb to the lifting device.
b. Place Dummy HOA below TSUDL and axially aligned with it and with the lifting device cable, with the two-legged sling passing inside the Central Structure.
c. Attach the two-legged sling in two upper eyebolts of Dummy HOA symmetrically spaced relative to the longitudinal axis using the specified shackles (figure 13).
d. Check if Lateral Support Modules and Latch Bars Sets are assembled in the TSUDL.
e. If Locking Wedge Sets are assembled in the Upper Cone, check if all of them are in the “extended” position (figure 10b).



(a) (b)

Figure 10 – Locking Wedges in the (a) "retracted" and (b) "extended" positions.

7.2. TSUDL Drifting Test

7.2.1. The objective of this test is evaluating TSUDL internal diameter through a drifting test. The Dummy HOA is used as a template (figure 11) to verify TSUDL internal diameter. Note that Upper Cone must have the Pull-in Wear Bushing installed on it in order to perform this test (figure 12).

7.2.2. This test shall be performed with MTL and Latch Bars Sets assembled in the TSUDL.

7.2.3. This test may be performed prior to Locking Wedges Sets assembly in Upper Cone at supplier's choice.

7.2.4. Test sequence:

a. Pull up Dummy HOA through TSUDL until the Upper Ring reaches the Upper Cone.
b. Observe the entrance of Dummy HOA into TSUDL and its passage through the Central Structure (**Acceptance Criteria Rb1**, item 7.9.1).
c. Lower Dummy HOA until it rests on the floor (**Acceptance Criteria Rb2**, item 7.9.2).

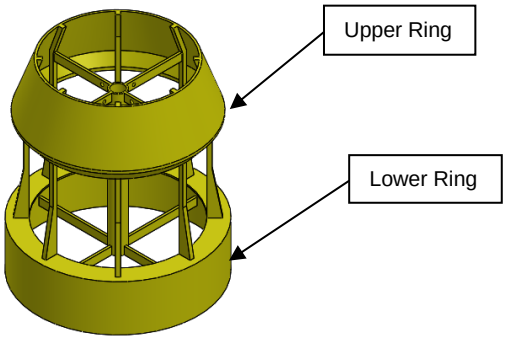


Figure 11 – Dummy HOA – Template for Upper Cone FAT.

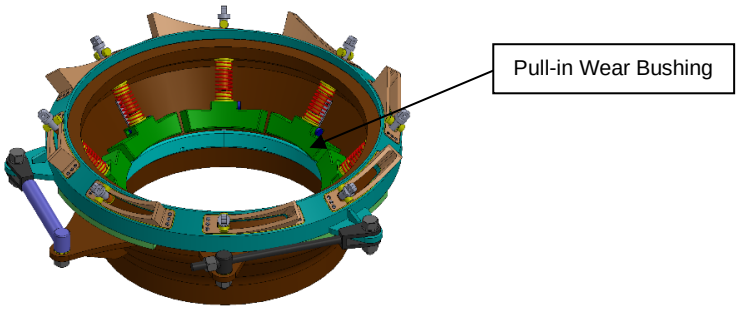


Figure 12 – Upper Cone with Pull-in Wear Bushing installed.

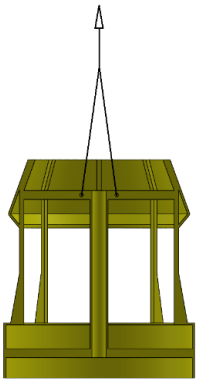


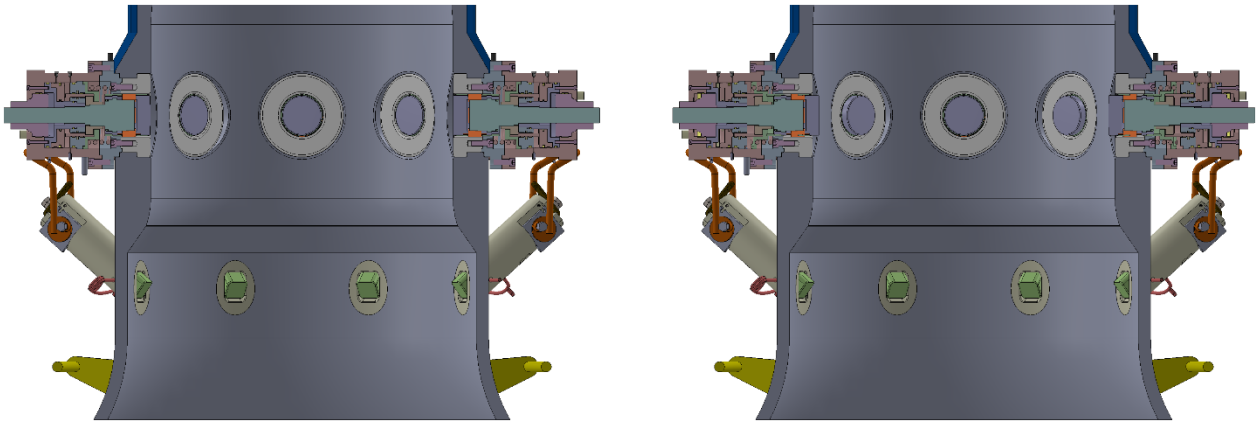
Figure 13 – Pull-in cable attached to a two-leg sling, keeping the dummy HOA plumb.

7.3. MTL Hydraulic Actuation Test

7.3.1. The objective of this test is verifying if Lateral Support Modules are fully functional when actuated by its hydraulic circuit after being assembled in TSUDL.

7.3.2. Test sequence:

a. Verify if all MTL are in “retracted” position (figure 14a).
b. Pressurize hydraulic fluid into cylinders inlet chamber so MTL Cages move to “extended” position (figure 14b). (**Acceptance Criteria Rb3**, item 7.9.3).
c. After MTL reaches its final extended position, keep pressurizing the system until it reaches maximum operation pressure. Then shut off pump and close valve between pump and MTLs and monitor pressure gauge during 5 min (five minutes). (**Acceptance Criteria Rb4**, item 7.9.4).
d. Pressurize hydraulic fluid into cylinders retract inlet chamber so MTL Cages move to “retracted” position (figure 14a). (**Acceptance** Criteria Rb5, item 7.9.5).
e. After MTL reaches its final retracted position, keep pressurizing the system until it reaches maximum operation pressure. Then shut off pump and close valve between pump and MTLs and monitor pressure gauge during 5 min (five minutes). (**Acceptance Criteria Rb6**, item 7.9.6).
f. Repeat steps a, b and d (three) times.



(a) (b)

Figure 14 – MTL Cages: (a) "Retracted" and (b) "Extended".

7.4. MTL ROV Override Test

7.4.1. The objective of this test is verifying if Lateral Support Modules are fully functional when actuated by its ROV Override interface after being assembled in TSUDL.

7.4.2. Test sequence:

a. Verify if Lateral Support Modules are in "retracted" position (figure 14a).
b. Actuate the ROV override interface so MTL Cages move to "extended" position (figure 14b). (**Acceptance Criteria Rb7**, item 7.9.7).
c. Record the force value measured in TRS.
d. Actuate the ROV override interface so MTL Cages move so MTL Cages move to "retracted" position (figure 14a). (**Acceptance Criteria Rb8**, item 7.9.8).
e. Record the force value measured in TRS.
f. Repeat steps a through e 3 (three) times.

7.5. Drive Ring Hydraulic Actuation FAT Procedure

7.5.1. The objective of this test is verifying if the Drive Ring mechanism is fully functional when actuated by its hydraulic cylinder.

7.5.2. Test sequence:

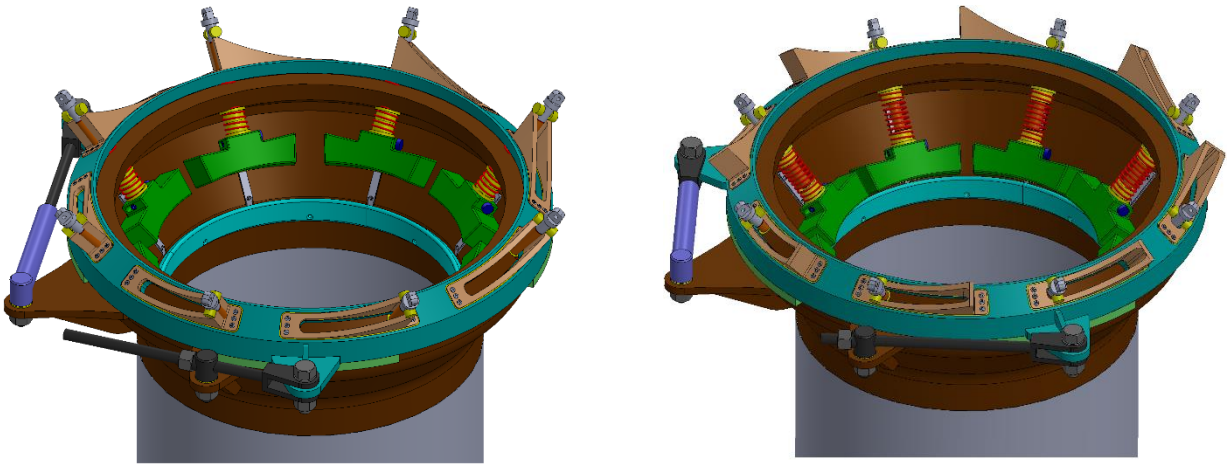
a. Verify if Locking Wedges Sets are aligned in "extended" position (figure 15b). (**Acceptance Criteria Rb9**, item 7.9.9).
b. Pressurize hydraulic fluid into cylinder extend inlet chamber (maximum operation pressure) so the Drive Ring rotates clockwise until all Locking Wedges reach the fully "retracted" position (figure 15a). (**Acceptance Criteria Rb10**, item 7.9.10).
c. Relief the pressure so the Drive Ring rotates counterclockwise only by Locking Wedges gravity and spring forces until all Locking Wedges reach "extended" position (figure 15b). (**Acceptance Criteria Rb11**, item 7.9.11).
d. Repeat steps a through c 3 (three) times.

7.6. Drive Ring ROV Override FAT Procedure

7.6.1. The objective of this test is verifying if the Drive Ring mechanism is fully functional when actuated by its ROV override interface.

7.6.2. Test sequence:

a. Verify if the Locking Wedges are in “extended” position (figure 15b).
b. Actuate the ROV override interface so the Drive Ring rotates clockwise until all Locking Wedges reach the fully “retracted” position (figure 15a). (**Acceptance Criteria Rb12**, item 7.9.12).
c. Record the force value measured in TRS.
d. Actuate the ROV override interface so the Drive Ring rotates counterclockwise until all Locking Wedge reaches the fully “extended” position (figure 15b). (**Acceptance Criteria Rb13**, item 7.9.13).
e. Record the force value measured in TRS.



(a) (b)

Figure 15 – Drive Ring and Locking Wedges in the (a) “retracted” and (b) “extended” positions.

7.7. Test with the Dummy Cap

7.7.1. The objective of this test is to check the interaction between MTLs and Dummy Cap during pull-in operation.

7.7.2. Pull-in test sequence:

a. Pull up the Dummy Cap through the TSUDL at a speed of 4 m/min (four meters per minute).
b. Stop when Dummy Cap Intermediate Ring reaches the position showed in figure 16.
c. Pressurize hydraulic fluid into cylinder inlet chamber (maximum operation pressure) so MTL Cages move to “extended” position until they reach Dummy Cap Intermediate Ring (figure 20). (**Acceptance Criteria Rb14**, item 7.9.14).
d. Keep pressure until MTL is locked.
e. Pressurize hydraulic fluid into cylinder retract inlet chamber (maximum 1.000 psi pressure) to check if all MTL are locked. (**Acceptance Criteria Rb15**, item 7.9.15).
f. Pressurize hydraulic fluid into cylinder retract inlet chamber (maximum operation pressure) so all MTLs unlock and their respective Cages move to “retracted” position releasing Dummy Cap. (**Acceptance Criteria Rb16**, item 7.9.16).

g. Actuate the ROV override interface so MTL Cages move to “extended” position until they reach Dummy Cap Intermediate Ring (figure 20). (**Acceptance Criteria Rb17**, item 7.9.17).
h. Actuate the ROV override interface to lock MTL. Record force value measured on TRS.
i. Pressurize hydraulic fluid into cylinder retract inlet chamber (maximum 1.000 psi pressure) to check if all MTL are locked. (**Acceptance Criteria Rb18**, item 7.9.18).
j. Actuate the ROV override interface so all MTLs unlock and their respective Cages move to “retracted” position releasing the Dummy Cap. (**Acceptance Criteria Rb19**, item 7.9.19).

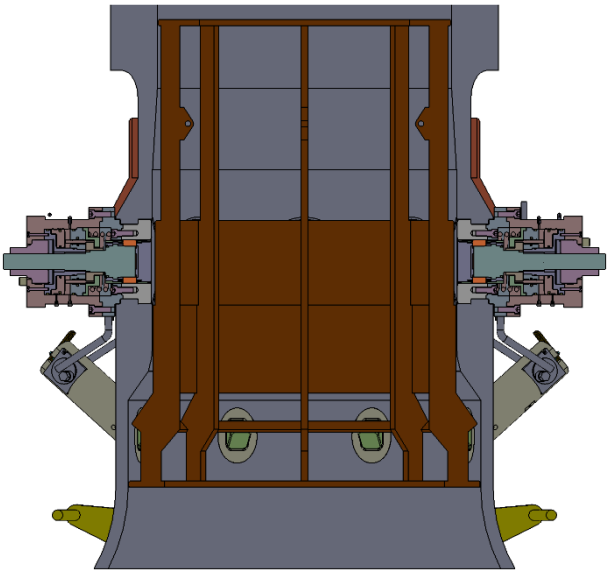


Figure 16 – Dummy Cap Intermediate Ring position.

7.8. Test with the Dummy HOA

7.8.1. The objective of this test is to check the interaction between Locking Wedges and Dummy HOA during pull-in and pull-out operations.

7.8.2. Pull-in test sequence:

a. Pull up the Dummy HOA through the TSUDL at a speed of 4 m/min (four meters per minute).
b. Observe the Dummy HOA passing through the Upper Cone. Check if the Locking Wedges simultaneously and automatically slide up to the “retracted” position when the Dummy HOA pushes them in its way up. (**Acceptance Criteria Rb20**, item 7.9.20).
c. Check if Locking Wedges automatically slide down to the “extended” position after the passage of the Dummy HOA´s upper ring. (**Acceptance Criteria Rb21**, item 7.9.21).
d. Spool out the lifting device cable so the Dummy HOA is freely seated on the Locking Wedges (figure 17). (**Acceptance Criteria Rb22**, item 7.9.22).

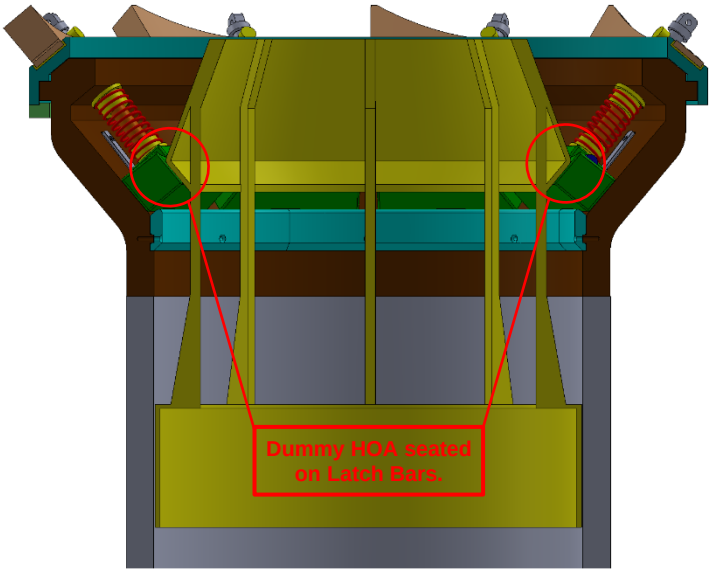


Figure 17 – Dummy HOA seated on the Locking Wedges.

7.8.3. Pull-out test sequence:

e. Spool in the lifting device cable until Dummy HOA is no longer seated on the Locking Wedges.
f. Actuate the Drive Ring so the Locking Wedges move to the “retracted” position (figure 15a) allowing the removal of Dummy HOA (**Acceptance Criteria Rb23**, item 7.9.23).
g. Lower the Dummy HOA until it rests on the floor (**Acceptance Criteria Rb24**, item 7.9.24).

7.9. Acceptance Criteria

7.9.1. Rb1

i. The Dummy HOA shall pass through Central Structure smoothly, without bumps on the lifting device cable. If it does so, the step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.2. Rb2

i. The Dummy HOA shall descend freely through Central Structure and then rest on the floor. If it does so, the step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the Upper Cone shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.3. Rb3

i. Observe if the MTL Cages freely move to “extended” position. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Check if MTL Cages reach their maximum unloaded stroke as defined in detailed design (figure 18). If they do, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

iii. Observe if maximum pressure during free stroke movement is less than unloaded extending pressure defined in detailed design. Record value of maximum pressure necessary to move unloaded MTL. Photographic record required according to item 5.1.15.

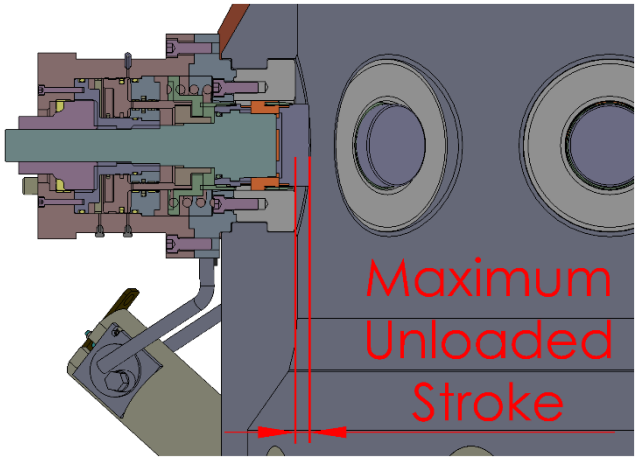


Figure 18 – MTL Cage Maximum Unloaded stroke.

7.9.4. Rb4

i. After MTL mobile parts reaches final extended position and maximum operational pressure is achieved, no pressure drop shall be observed or, in case of a pressures drop, it shall not be greater than 50psi and no visible leakage shall be. Photographic record required according to item 5.1.15.

7.9.5. Rb5

i. Observe if the MTL Cages freely move to “retracted” position. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Check if MTL Cages are aligned to MTL Load Ring external surface (figure 19). MTL Cages shall not be bulged towards the center of TSUDL Central Structure. If they do not, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

iii. Observe if maximum pressure during free stroke movement is less than unloaded retraction pressure defined in detailed design. Record value of maximum pressure necessary to move unloaded MTL. Photographic record required according to item 5.1.15.

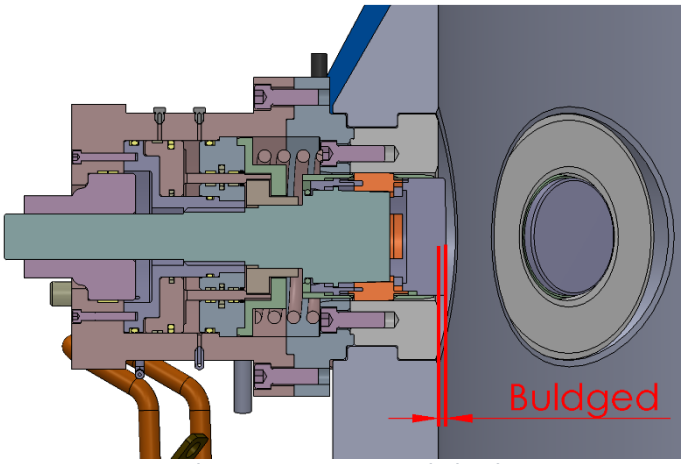


Figure 19 – MTL Cage bulged.

7.9.6. Rb6

ii. After MTL mobile parts reaches final retracted position and maximum operational pressure is achieved, no pressure drop shall be observed or, in case of a pressures drop, it shall not be greater than 50psi and no visible leakage shall be. Photographic record required according to item 5.1.15.

7.9.7. Rb7

i. Observe if the MTL Cages freely move to “extended” position. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Check if MTL Cages reach their maximum unloaded stroke as defined in detailed design (figure 18). If they do, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

iii. Observe if maximum torque during free stroke movement is less than specified value in detailed design. Record value of maximum torque during free stroke to move unloaded MTL. Photographic record required according to item 5.1.15.

7.9.8. Rb8

i. Observe if the MTL Cages freely move to “retracted” position. If they do, then this step is approved and one shall proceed to ii criteria. Register in the TRS.

Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Check if MTL Cages are aligned to MTL Load Ring external surface (figure 19). MTL Cages shall not be bulged towards the center of TSUDL Central Structure. If they do not, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

iii. Observe if maximum torque during free stroke movement is less than specified value in detailed design. Record value of maximum torque during free stroke to move unloaded MTL. Photographic record required according to item 5.1.15.

7.9.9. Rb9

i. Visual Inspection: Check if all Locking Wedge Sets are aligned, if so, one shall proceed to the next step. Register in the TRS. If not, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.10. Rb10

i. Visual inspection: Observe if the Drive Ring rotates clockwise freely and the Locking Wedges move from “extended” position to “retracted” one. If they do, then this step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Observe if maximum pressure during Drive Ring rotation is less than the pressure defined in detailed design. Record value of maximum pressure necessary to rotate Drive Ring. Photographic record required according to item 5.1.15.

7.9.11. Rb11

i. Visual inspection: Observe if the Drive Ring rotates counterclockwise freely and the Locking Wedges move from “retracted” position to “extended” one. If they do, then this step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Observe if maximum pressure during Drive Ring rotation is less than the pressure defined in detailed design. Record value of maximum pressure necessary to rotate Drive Ring. Photographic record required according to item 5.1.15.

7.9.12. Rb12

i. Visual inspection: Observe if the Drive Ring rotates clockwise freely and the Locking Wedges move from “extended” position to “retracted” one. If they do, then

this step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Observe if maximum torque during Drive Ring rotation is less than the specified value in detailed design. Record value of maximum torque necessary to rotate Drive Ring. Photographic record required according to item 5.1.15.

7.9.13. Rb13

i. Visual inspection: Observe if the Drive Ring rotates counterclockwise freely and the Locking Wedges move from “retracted” position to “extended” one. If they do, then this step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

ii. Observe if maximum torque during Drive Ring rotation is less than the specified value in detailed design. Record value of maximum torque necessary to rotate Drive Ring. Photographic record required according to item 5.1.15.

7.9.14. Rb14

i. Check if MTL Cages reach their working stroke as defined in detailed design (Figure 20). It can be checked measuring the displacement of MTL Mandrel and Nut. If they do, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

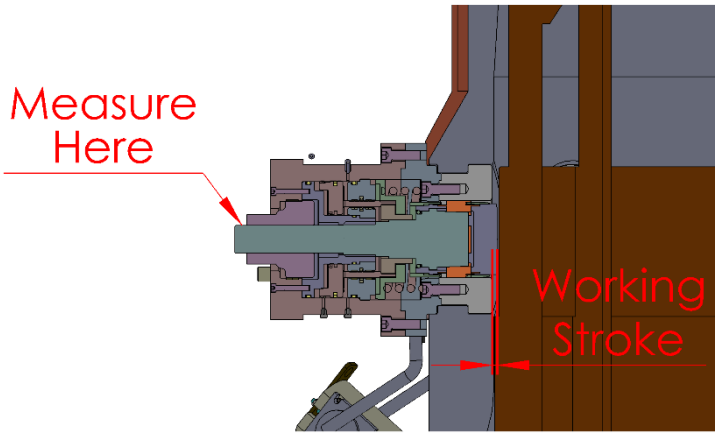


Figure 20 – MTL Cage Working Stroke.

7.9.15. Rb15

i. Check if all MTL remain locked. If they do, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.16. Rb16

i. All MTL shall unlock and their respective Cages shall freely move to “retracted” position. If they do, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.17. Rb17

i. See Rb14.

7.9.18. Rb18

i. See Rb15.

7.9.19. Rb19

i. See Rb16.

7.9.20. Rb20

i. All Locking Wedges shall automatically and simultaneously slide upwards after being pushed by the Dummy HOA, which shall pass through the Upper Cone with no interrupted movement caused by any Locking Wedge gripping. If this condition is met, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.21. Rb21

i. All Locking Wedges shall automatic slide downwards, after the Dummy HOA Upper Ring has passed through them. The verification shall be made by visualization of Locking Wedges final position. The Locking Wedges shall slide all the way down. If this condition is met, then this step is approved and one shall proceed to the next step. Register in the TRS.

ii. If any Locking Wedge does not slide downward, then the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.22. Rb22

i. If Dummy HOA is fully seated on all Locking Wedges or the gaps between Dummy HOA and Locking Wedges are less than or equal to 0.5mm (zero point five millimeters) as shown in figure 21, then this step is approved and one shall proceed to the next step. Register in the TRS. Photographic record required according to item 5.1.15. Otherwise, the deviation shall be evaluated, the test shall be

decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

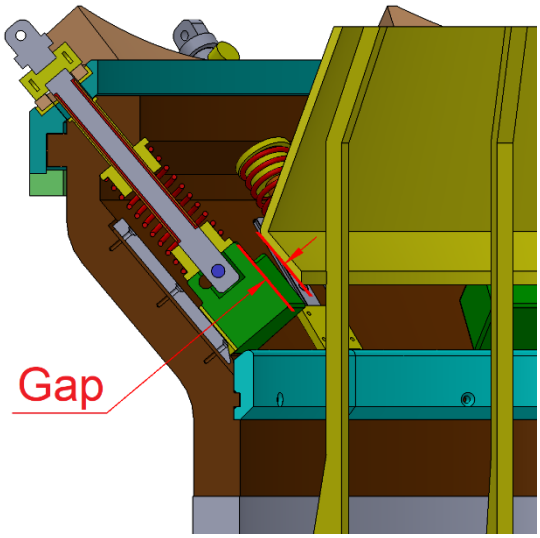


Figure 21 – Gap between Locking Wedge and Dummy HOA

7.9.23. Rb23

i. Visual Inspection: Observe if all Locking Wedges have moved freely and are in the “retracted” position. If this condition is met, then this step is approved and one shall proceed to the next step. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

7.9.24. Rb24

i. Dummy HOA shall descend freely through the TSUDL and then rest on the floor. If Dummy HOA descends freely, then this step is approved. Register in the TRS. Otherwise, the deviation shall be evaluated, the test shall be decommissioned and the TSUDL shall be sent to repair. Register in the TRS. Then restart the tests.

8. ELECTRICAL CONTINUITY TEST

8.1. Objective

8.1.1. The objective of electrical continuity test is to ensure that all TSUDL moving parts are electrically connected to the TSUDL main structure, with exception of MTL parts that shall be isolated from TSDUL cathodic protection according to [1].

8.1.2. Supplier shall submit an Electrical Continuity Test procedure and acceptance criteria to Contractor approval in accordance with [3] and TSDUL detail design.

8.1.2.1. In the event that Petrobras is not the Contractor, Contractor shall submit the Electrical Continuity Test procedure and acceptance criteria to Petrobras for information purpose only.

8.1.3. Results of Electrical Continuity Test shall be recorded in TRS.

8.1.4. Electrical insulation tests on MTLs shall be performed before and after functional tests.

9. TEST RECORD SHEET – TRS

9.1. General

9.1.1. The FAT procedure shall include a document to record the results of each step of the tests, named Test Record Sheet – TRS.

9.1.2. The TRS shall have a format according to the template in ANNEX A of this annex and present at least the contents listed in the section 9.2 below.

9.1.3. All sheets of all tests shall be filled out using pen.

9.1.4. As defined in section 5.3.6 of this technical specification, the TRS of TSUDL rejected and sent for scrapping shall be stored along with the data book sets of approved ones.

9.2. Minimum Content

9.2.1. The Supplier can add any information considered necessary in the TRS, by inserting a new page at the end of the table.

9.2.2. The following fields shall be part of TRS:

9.2.2.1. Date – Date of the test.

9.2.2.2. Supplier – Manufacturer of the TSUDL.

9.2.2.3. Sheet – Indication of page number and total number of pages (ex.: 1/3, sheet 1 of 3, etc.).

9.2.2.4. Rep. Num. – Report number defined according to supplier's methodology.

9.2.2.5. ND – TSUDL nominal diameter.

9.2.2.6. SN – TSUDL serial number.

9.2.2.7. FPU – Production unit where the TSUDL will be installed.

9.2.2.8. Report – Field to be filled in with any information regarding the current test step.

9.2.2.9. AP/SR/RE – Indication of Approved, Send to Repair and Reproved (see 9.3).

9.2.2.10. Ra1 through **Erro! Fonte de referência não encontrada.** – Flexible Riser Tests.

9.2.2.11. Rb1 through **Erro! Fonte de referência não encontrada.** – Rigid Riser Tests.

9.2.2.12. Responsible – Name and signature of the responsible for releasing the TSUDL.

9.2.2.13. Result – Result of the tests, Approved or Rejected.

9.3. Fields AP, SR and RE

9.3.1. The AP, SR and RE fields shall be marked with an "X" or checked "√", in accordance with one of the three situations shown below.

9.3.2. AP – Approved

9.3.2.1. The TSUDL is released to the next test. This option will be marked alone if the test passes with no indication of repairs.

9.3.3. SR – Send to Repair

9.3.3.1. There was a deviation during the test and the TSUDL must be repaired and retested.

9.3.3.2. The deviation occurred shall be reported, as well as the description of what shall be done to repair the TSUDL. After repairing, the TSUDL shall be submitted to test again from the beginning (Ra1 test).

9.3.3.3. In case of repairing the TSUDL, besides the SR field, the AP or RE field may be marked after the second test, depending on the result of this test. That is, if both AP and SR fields are marked, it means that the TSUDL was tested and failed; it was sent to repair, tested again and later approved. Similarly, if SR and RE are marked, it means that the TSUDL was tested and failed, it was sent to repair, tested again, and failed once more, indicating that it shall be discarded.

9.3.4. RE – Reproved

9.3.4.1. The TSUDL shall be discarded. This option will be marked alone if the rejection indicates discard without repairs.

9.3.4.2. As defined in section 5.3.5.1 of this technical specification, the new TSUDL manufactured to replace the rejected one shall receive a new serial number.

ANNEX A

1. Test Record Sheet – TRS Template

LOGO	TSUDL TEST RECORD SHEET

Sheet:	Supplier:	Rep. Num.:

TSUDL information:

ND	SN	FPU

Subtitle:
AP - Approved.
SR – Send to Repair
RE - Reproved.

1. FLEXIBLE RISER TESTS.

1.1. Drifting Tests.

crit.	step	report	AP	SR	RE
Ra1	Drift test – upwards.				
Ra2	Drift test – downwards.				

1.2. Latch Bars Mechanism Alignment Test.

crit.	step	report	AP	SR	RE
Ra3	Handler performance.				
Ra4	Handler performance.				
Ra5	Latch Bars alignment.				

1.3. Tests with Dummy Cap.

crit.	step	report	AP	SR	RE
Ra6	Latch Bars alignment.				
Ra7	Latch Bar motion.				
Ra8	Dummy Cap seating.				

LOGO	**TSUDL TEST RECORD SHEET**

Sheet:	Supplier:	Rep. Num.:

TSUDL information:

ND	SN	FPU

Subtitle:
AP - Approved.
SR – Send to Repair
RE - Reproved.

Ra9	**Latch Bar motion and Handler performance.**				
Ra10	**Dummy Cap lowering.**				
Ra11	**Latch Bars alignment.**				

2. RIGID RISER TESTS.

2.1. Drifting Tests.

crit.	step	report	AP	SR	RE
Rb1	**Drift test – upwards.**				
Rb2	**Drift test – downwards.**				

2.2. MTL Tests.

crit.	step	report	AP	SR	RE
Rb3	**MTL motion and alignment – Hydraulic Actuation.**				
Rb4	**MTL Sealing.**				
Rb5	**MTL motion and alignment – Hydraulic Actuation.**				
Rb6	**MTL Sealing.**				
Rb7	**MTL motion and alignment – ROV Override.**				

LOGO	**TSUDL TEST RECORD SHEET**

Sheet:	Supplier:	Rep. Num.:

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Rb8	**MTL motion and alignment – ROV Override.**				

2.2. Locking Wedge Set Tests.

crit.	step	report	AP	SR	RE
Rb9	**Locking Wedges alignment.**				
Rb10	**Drive Ring Hydraulic Actuation and Locking Wedges sliding up.**				
Rb11	**Drive Ring Hydraulic Actuation and Locking Wedges sliding down.**				
Rb12	**Drive Ring ROV Override and Locking Wedges sliding up.**				
Rb13	**Drive Ring ROV Override and Locking Wedges sliding down.**				

2.3. Tests with Dummy HOA.

crit.	step	report	AP	SR	RE
Rb14	**MTL Hydraulic Actuation motion and alignment.**				
Rb15	**MTL Hydraulic Actuation locking.**				
Rb16	**MTL Hydraulic Actuation unlocking and motion.**				
Rb17	**MTL ROV Override motion and alignment.**				

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Rb18	**MTL ROV Override locking.**				
Rb19	**MTL ROV Override unlocking and motion.**				
Rb20	**Locking Wedges sliding up.**				
Rb21	**Locking Wedges sliding down.**				
Rb22	**Dummy HOA seating.**				
Rb23	**Locking Wedges sliding up.**				
Rb24	**Lowering the dummy HOA.**				

3. Electrical Continuity Test

3.1 Moving Parts Electrical Continuity Tests

crit.	step	report	AP	SR	RE
TBD.	**Electrical Continuity.**				

3.1 MTLs Electrical Insulation Tests

crit.	step	report	AP	SR	RE
TBD.	**Electrical Insulation.**				

4. Observations

LOGO	**TSUDL TEST RECORD SHEET**

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5. Result

	ACCEPTED ☐	REJECTED ☐
Date:	**Responsible (Signature and stamp):**	