

SLICKLINE OPERATOR WORKBOOK

IMPORTANT NOTE:

1. Your point of reference to complete this workbook may be obtained from the following
 - Training Manual and any other training materials provided together with this workbook
 - Your Trainer, Assessor (Slickline Operator), Verifier (FSM) or senior colleagues
 - SOP / Quality Procedures & Processors
2. The completion of this Workbook is a joint effort and responsibility between you and your assessor therefore you have the obligation to request from your assessor to be assessed upon your completion of each topic
3. The completion of this Workbook is part of the MANDATORY requirements which you must fulfill to qualify for a promotion
4. Your training program is mostly self-driven, including this Workbook. It requires individual initiatives, dedication and commitment to complete the process.

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RECEIVED DATE	
DATE COMPLETED	



C. MAINTENANCE

Exposure

Legend: C-Competent, NME-Need More

Docu- ment No.	KNOWLEDGE ON EQUIPMENT AND SKILLS IN MAINTENANCE AND TROUBLESHOOTING	Assessment / Verification	Competency		Assess- ment Date
			C	NME	
Form C.1	EQUIPMENT DETAILED SPECIFICATION				
	1 Explain what is equipment specification of wireline tool example 3.0” GS pulling tool <ul style="list-style-type: none">Equipment specification is a full description of the tool describing the size, dimension, part number and material composition.BDMI - Basic Design and Maintenance Instruction of tool is a full description of disassembling step by step procedure of disassembling and assembling every component of the tool and replaced for any faulty parts. Upon completion the tool have to be function tested, preserved with anti rust and stored up ready for use				
	2 How do you place an order for wireline tools? What are the requirements to look for? <ul style="list-style-type: none">The Things required when ordering w/line tool are description mentioning size, thread connection and type, reference number and part number.Send email or fax a copy of your request to w/shop supervisor Hj Ghazali and file in your office for future reference and follow u				
	3 If given a basic drawing of wireline tools are you able to service the tool? yes				

	<p>4 When you received a new equipment or wireline tool what are things you should do and what to look for.</p> <ul style="list-style-type: none"> Note down the serial number Check the dimension as per the request Check for certification from manufacture Check the due date of equipment and wire sling. Check the condition of tool if not good or damage make report and highlight to relevant parties (w/shop, supervisor on site) 				
	<p>5 Where do you look for specification of pressurized vessel or container? What is written there?</p> <ul style="list-style-type: none"> The specification of pressurized is normally attached to the body of the vessel or container label in a stainless steel plate or proof sticker with clear written letters. The vessel specification indicating volume, size and working test pressure, last test date. 				
Form C.2	EQUIPMENT OPERATION PROCEDURES				
	<p>1. What is an equipment operating procedure?</p> <ul style="list-style-type: none"> An equipment operating procedure is a document method of how it is operated recommended by the manufacturer In the manual using their specification, general features and maintenance schedule of 3 month, 6 month, 1 year and 3 years are highlighted and to be adhered to and practiced. 				

	<p>2. Does all the equipment have an operating procedure and what is it for?</p> <ul style="list-style-type: none"> Yes. It gives the guideline of how the equipment will be operated and maintained in order to prolong its life span. Not only but also provide info and trouble shooting in case of problem. 				
	<p>3. Explain what will be the consequences if you are not following the operating procedures.</p> <ul style="list-style-type: none"> The consequences will be loss of property, income and reputation, as a result the company will loss it's trust and income from the client as well as down time. This is considered a serious matter which be reported as non compliance. 				
	<p>4. Does Dimension Bid have operating procedures and where are they kept?</p> <ul style="list-style-type: none"> Yes. It gives the guideline of how the equipment will be operated and maintained in order to prolong its life span. Not only but also provide info and trouble shooting in case of problem. 				
	<p>5. Explain how the Reel Skid Unit Operating</p> <ul style="list-style-type: none"> REEL SKIT UNIT-Brake must be applied , gear on neutral, back off 4 way directional valve screw and hydraulic hoses must be secured and PTW be approved by relevant parties and equipment passport still valid. All lifting color coding and sling is valid. 				

	<p>6. Explain how the following Power Pack operating:</p> <ul style="list-style-type: none"> i. Diesel Power Pack <ul style="list-style-type: none"> ➤ WIRELINE POWER PACK-Check for diesel,engine oil, radiator water coolant and level, hydraulic oil refill if necessary, Equipment passport and tag a valid. All hydraulic hose properly secured and whip check still intact. Spark arrestor and shutdown system is functioning and lifting pad eye is valid and good condition. ii. Electrical Power Pack <ul style="list-style-type: none"> ➤ Electrical power packs are very simple to operate. However, care must be taken to ensure that the power pack is connected to the correct power source. When the power pack has been connected, the direction in which the motor is running must be checked. 				
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	<p>7. Explain how to start the Diesel Power Pack and show how to hook-up 1" and 1 - ¼" Hydraulic Hose</p> <ul style="list-style-type: none"> • Before starting, the hydraulic system must be looped or connected to the wireline unit. • Check hydraulic tank suction line ball valve is fully open. • Check hydraulic oil level in hydraulic tank is up to minimum level if less top-up. • Check diesel level in diesel tank if less top-up. • Check engine oil level. • Check Air inlet /outlet and exhaust are not blocked. • Check engine fan belt and guards. • Check exhaust Flame trap is fitted in exhaust heat ex changer after cleaning. • Engine cranking is done with the help of hydraulic starter. • Check accumulator pressure should be greater than 2500 Psi. • Check all hydraulic quick connectors for winch and BOP is connected properly. • Check radiator coolant level 				
	<p>8. Explain how to start the Air Compressor</p> <ul style="list-style-type: none"> • Keep engine cable fully In which is mounted on the control panel. • Keep the diesel cut off valve in start position. • Recoil spring starter by tuning on clockwise direction. • Start engine by pulling and holding inlet over speed shut down valve and releasing the spring starter start lever. • Keep and continue holding the inlet over shut down valve (Approx. 10 min) until oil pressure is built. 				

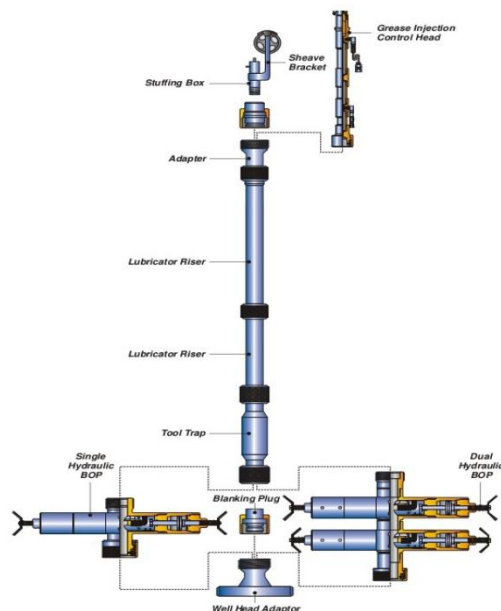
	<p>9. Identify the Portable Control Panel and explain its function</p> <div> <div>1. Air supply gauge</div> <div>2. Bleed /relief valve</div> <div>3. Regulator</div> <div>4. MV Valve</div> <div>5. Crossover Valve</div> <div>6. SCSSV Gauge</div> <div>7. Tank Filter</div> <div>8. SCSSV valve</div> </div>				
	<p>10. Explain how to operate Control Panel – TRSCSSV, SDV, BOP, Accumulator Tank and Stuffing Box</p> <ul style="list-style-type: none"> Hook up the SCSSV output line from the single well control unit to the bleed-off valve on the control line manifold at the wellhead using 1 / 4 " control line. Pressure test this line to 5000 psig to check integrity of all connections. If no leaks observed, bleed down the pressure to 4000 psig. Hook up the SSV output line from the single well control unit to the bleed-off valve on the supply line to the upper master valve actuator using 1 / 4 " control line. Pressure test this line to 3000 psig to check integrity of all connections. If no leaks observed, bleed down the pressure to 2500 psig. Close the needle valve at the wellhead control line manifold on the supply line from the platform's central well control panel and open the bleed-off valve on the control line manifold at the wellhead. This will enable the well services single well control unit to take over control of the SCSSV. Close the needle valve at the upper master valve hydraulic actuator supply line from the platform's central well control panel and open the bleed-off valve on the supply line. This will enable the well services single well control unit to take over control of the SSV. 				

	11. Show how to hook – up ¼” Hydraulic Hose to the following system <ul style="list-style-type: none"> i. Pressure Manifold /TRSCSSV ii. Stuffing Box iii. BOP 				
	12. Explain how to operate Test Pump <ul style="list-style-type: none"> • check condition of pressure test pump • Visually check all hoses , tubing fittings etc. for any signs of damage. • Check water tank and ensure fill with fresh water. • Air regulator are off (regulators fully anti clockwise). • Needle valve to decoder chart and lubricator are open position. • With air regulators to set 300psi for low pressure. • increase air regulator 10100 for 10% close in pressure. • Adjust the air regulator to maintain this pressure if required. • Close needle valve at lubricator. • after pressure test OK , release the pressure, open the control line dump valve. 				
	13. Identify the Air Receiver Tank and explain its function <ul style="list-style-type: none"> • The tank is a reservoir of compress air that can be used during peak demand. 				

	14. Explain how to operate Air Receiver Tank <ul style="list-style-type: none"> • Start the engine. • Pull the knob to charging the receiver tank. • Charging until the tank full. • Open the outlet valve to use the pressure tank. 				
	15. What is the Working Pressure for Air Receiver Tank <ul style="list-style-type: none"> • 1000psi 				
	16. Identify the Spooling Unit and explain its function <ul style="list-style-type: none"> • To spool new wire and change the wire size 				
	17. Show where the following components allocated at Spooling Unit and explain the function <ul style="list-style-type: none"> i. Pressure Control Valve <ul style="list-style-type: none"> ➤ To reduce and increase drum speed during spooling wire. ii. Braking System <ul style="list-style-type: none"> ➤ To stop the drum during spooling wire. 				
	18. Participate in spooling wire activity at least 3 times. Explain what are the other equipment required besides Spool <ul style="list-style-type: none"> • Power Pack • RSU • Hay Pulley 				

	19. What do “SPOOL-IN” and “SPOOL-OUT” wire mean? When do these activities take place? <ul style="list-style-type: none"> During wireline operation spool in means pull out of hole (POOH). Spool out means RUN in hole (RIH) the activities take place if we doing the wireline operation etc. GLVC, SET PLUG, SGS, FGS.WAX CUT. 				
	20. Why is it compulsory to secure Spooling Unit with Tie Down Chain During spool-in / our wire activity? <ul style="list-style-type: none"> To prevent spooling unit falling into position. 				
	21. Explain how the Stuffing Box operating 22. <ul style="list-style-type: none"> The essential function of the Wireline Stuffing Box is to ensure containment or sealing off around solid wireline, weather stationary or in motion, at the upper end of the Lubricator during wireline operations. In addition, most Stuffing Boxes contain a BOP plunger, which is forced out of the packing section to seal off flow in the event of wireline breakage 				
	23. Show how to connect the Stuffing Box with lubricator and where to hook-up the Stuffing Box hydraulic hose				

24. Identify the BOP and explain its function

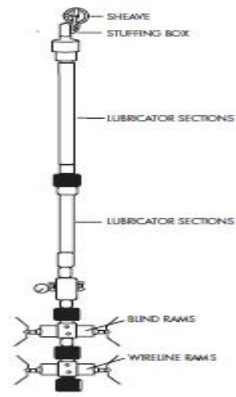


- To prevent a blow out during wireline operation in the event of an emergency breakdown in lubricator configuration
- To act as a secondary valve in case a safety valve is stuck across the swab valve and master valve
- To seal off pressure around a wire that is across the BOP and also allowing the wire is not cut off
- To enable the well pressure to be isolated without cutting the wire by closing the master valve.
- To permit the assembly of the wireline cutter above the BOP rams.
- To permit the dropping of a wireline cutter if the toolstring becomes stuck in the well.

25. **Identify** the BOP hydraulic hose required and hook-up to the Control Panel.
Explain how to Close and Open BOP Upper & Lower Ram

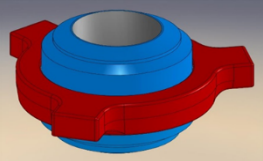
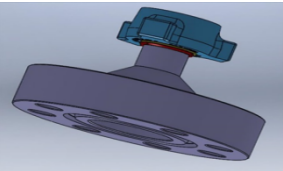




26. **Show how** to connect the BOP with lubricator and where the position of BOP during wireline job





1. The grease seal pressure is adjustable for varying well pressures.
2. The lubricator is an intrinsic part of the primary well control system along with the grease seal.
3. If the grease seal fails, both the wireline BOP wire rams can be closed on the wire. The lower ram is inverted so that grease can be injected to create a seal.
4. If the wire is broken and expelled from the lubricator, two Xmas tree valves must be closed to provide double isolation.
5. If the rams leak, the wire can only be cut with a wire cutting actuator.

	27. What is the different between Lubricator, Riser and Pump Joint? <ul style="list-style-type: none"> Different length 				
	28. Make-up 3 sections of lubricator and perform pressure test max 2000 psi Unit to perform spooling activity				
	29. What is the common length for Dimension Bid Lubricator? Besides the common length, what is the other length appear in Dimension Bid? <ul style="list-style-type: none"> 4 section lubricator x 8ft Pup joint 2 ft , 4ft Cross over 				

	<p>30. Identify the following threaded size</p> <p>i. 5 – 5/8” WKM Hammer Union to suit 3-1/8” WKM Single X-mass Tree</p>  <p>ii. 5 – 5/8” WKM Hammer Union to suit 2-9/16” WKM Single X-mass Tree</p>  <p>iii. 5 – 1/5” WKM Quick Union to suit 3-1/8” WKM Single X-mass Tree</p>  <p>iv. 3 – 1/2 “ EUE Pin</p> <p>v. 8.25” – 4 ACME Type ‘O’</p> 				
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	31. What is the common length of Wellhead X-over in Dimension Bid? Why? <ul style="list-style-type: none"> 2ft to accommodate the length of short string in dual completion. 				
	32. Show how to rig-up Wellhead X-over and explain step by step <ul style="list-style-type: none"> Close Actuator Close swab valve. Bleed of pressure trap Open tree cap (ensure pressure zero before open tree cap) Check o ring install the well head x-over onto well head. 				
	33. What is the ID for: 3- ½” , 4- ½“ and 5- ½“ nominal lubricator <ul style="list-style-type: none"> 3- ½ – 2.992” - 4- ½ – 3.826” -5- ½ -- 4.893” 				
	34. Identify the Pump-in Tee and TIW Valve and explain its function <ul style="list-style-type: none"> Pump in tee may be required as part of a wireline rig up. By connection a kill line to the chickson / weco connection , the well can be killed in an emergency situation .this is can be used to pressure test or release pressure from the surface equipment. TIW valve designed for hold the pressure from the above or below , second barrier during wireline operation. 				



	<p>35. Identify the following threaded size and ball valve</p> <p>i. 1502 Thread Half Union Side Outlet (For Chicksan Line)</p>  <p>ii. 3" Ball Valve</p> 				
	<p>36. Where is the pump-in Tee and TIW Valve should be rigged-up during wireline job?</p> <p>i. Pump-in Tee ➤ Pump in tee installed below the BOP</p> <p>ii. TIW Valve ➤ Installed at top x'mas tree</p>				



	<p>37. Explain step by step how to rig-up Pump-in Tee and TIW Valve</p> <ul style="list-style-type: none">• X'mas tree , TIW valve , Riser , Pump in Tee , BOP , Quick test sub , Lubricator , Stuffing Box.				
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	<p>38. Identify the following wireline tools and explain the function</p> <ul style="list-style-type: none"> i. Tie knot Rope Socket - The Rope Socket is required to make the connection between the wireline and tool string. ii. Tear Drop Rope Socket - The 'No-Knot Type Rope Socket (also called a 'teardrop 'or' wedge 'typ is designed for 0.108" and 0.125" slickline. While it can be also used for 0.092", The knot type is more common for the thinner wire iii. Swivel Joint - To permit the easy rotation of the toolstring, even under load tools move in/out of the well iv. Wireline Stem - The stem is used primarily for running pressure and temperature survey tools to obtain maximum weight with minimum cross-sectional area to prevent the tools "floating" or being blown up the hole by pressure surges. v. Tungsten / Malory Stem - To Provide greater weight for the same diameter and length. vi. Roller Stem - Addition to toolstring for deviated wells to reduce the frictional losses against the tubing wall. vii. Tungsten Roller Stem - To provide greater weight for the same diameter and length. viii. Multiwheel Roller Stem - Is used for work on deviated wells, or in wells with the paraffin, asphaltine etc. on the tubing internal walls. It allows the stem to roll down the 				
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	<p>39. What do PULLING and RUNNING tools mean?</p> <ul style="list-style-type: none">• Pulling tools are designed to remove various subsurface equipment from the well and sometimes use for running subsurface equipment. This pulling tool can only retrieved the subsurface equipment with the matching fishing neck.				
	<p>40. How to connect the following tool string in HORIZONTAL & VERTICLE position: From top – 1 – ½” Rope Socket, 1 – ½ x 5’ Wireline Stem, 1- ½ “ Knuckle Joint, 1 – ½ “ x 20” Mechanical Spang Jar</p>				
	<p>41. Why is Fishing Neck appear at wireline tools</p> <p>- The pulling tools ability to latch that fishing neck if the tool string or components are lost in the hole.</p>				



	<p>42. List down 20 Hand Tools in Dimension Bid and explain when and how to use them</p> <ol style="list-style-type: none"> 1. 24' pipe wrench 2. Adjustable 8" and 12" 3. Screw driver plate and Philip 4. Hammer 5. Ellen key inches and mm 6. Packing fuller 7. Hand pump for martin Decker 8. Vice grip 10" 9. Wire cutter 10. Pile 11. Pliers long nose or normal 12. Pipe wrench 8" 13. Combination ring spanner 17mm and 19mm 14. Pin punch 15. center punch 16. Junior hack saw 17. Ratchet and socket 17mm 18. Triangle pile 19. Chain tong 24" 20. Vice grip wrench 				
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	43. Why it is Compulsory to screw -in by hand before tightening wireline tool with pipe wrench <ul style="list-style-type: none"> To prevent the thread damage 				
FORM C.3	EQUIPMENT MAINTENANCE AND SERVICNG				
	1. What is equipment maintenance about and what is the frequency of surface equipment, single well control panel and wireline unit. <ul style="list-style-type: none"> Equipment maintenance is about maintaining the equipment so as to prolong the life span, while ensuring the integrity good, save cost an upholding the company image to run th contract smoothly. 				
	2. Why is it important to maintain your equipment at all time? <ul style="list-style-type: none"> 1.To save cost 2.To prevent from downtime 3.To avoid equipment failure during the operation because can cause down time. 4. So work can proceed with successfully 				

	<p>3. If you found expired equipment offshore what should you do?</p> <ul style="list-style-type: none"> • Arrange to send back to shore • Inform worksite supervisor and Labuan workshop supervisor sending by e-mail . Find out boat schedule from D35 (ask MATCO) make hard copy 3 pcs. Attached COG inside the box wire line equipment. 				
	<p><u>Wireline unit maintenance</u></p> <p>4. Prior to sending out of wireline unit to offshore what are the check list to look for Zone 2 compliance.</p> <ul style="list-style-type: none"> • Inlet flame trap • Fuel shut off valve (automatic) • High coolant water temperature shut down at least than 100`c • Low oil pressure shut down • Antistatic fan belts • Nonmetallic blow fan • Resilient engine shock mounts • Emergency stop facility which functions shut down system • Max surface and exhaust gas temp. is maintained at less than 200`c . • Engine throttle and engine stop control pneumatically from the operator rated as per BP200 & EEMUA 107 STD 				

	<p>5. What do you check and why for the following items:-</p> <p>i. exhaust flame trap</p> <ul style="list-style-type: none"> ➤ Check the carbon build up took place inside the exhaust system ➤ The cleaning process of the exhaust man cooler flame trap will improve the exhaust gas flow efficiency and reinstate the engine optimum performance. ➤ Exhaust spark arrestor Inspect the condition of the spark arrestor (such as sign of broken, leaking and clogged) ➤ Remove the spark arrestor to clean sooty deposits from the interior by tapping and inverting. <p>ii. exhaust spark arrestor</p> <ul style="list-style-type: none"> • Inspect the condition of the spark arrestor (such as sign of broken, leaking and clogged). • Remove the spark arrestor to clean sooty deposits from the interior by tapping and inverting. <p>iii. static fan belt</p> <ul style="list-style-type: none"> ➤ Check the belt condition for any excessive wear and tear. Replace as necessary ➤ Check the correct tension setting on the belt ➤ Adjust if required to allow ½ free play ➤ Ensure the rotating parts/pulleys are free from contact with the stationary parts. <p>iv. flame trap of engine breather</p> <ul style="list-style-type: none"> ➤ Check for dirty oil stain and blow with compressed air ➤ When replacing an engine breather flame trap make sure all joints are well sealed. <p>v. Joints, connections of induction, exhaust and fuel system of the</p>				
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	6. Why do you keep minimum stock level of critical spares offshore? <ul style="list-style-type: none"> To avoid non productive time (NPT) To avoid long lead to order spare parts Offshore location is isolated and thus a need to be self sufficient and contained to further enhance performance. 				
	7. What do you do with aging, tear and worn out wireline tools offshore? <ul style="list-style-type: none"> Tag and mark the DO NOT USE and keep is aside in the isolated area. Arrange to send back Inform worksite supervisor and Labuan workshop supervisor sending by E-mail.Attached COG Request for tool replacement. 				

	<p>8. For the wireline diesel power pack to operate in Zone 2 Hazardous Areas, and as per EEMUA 107, what are the safety features that are required to be incorporated into the power pack? <i>(Answer in bullets points)</i></p> <ul style="list-style-type: none"> - Exhaust gas cooler - Exhaust spark arrestor (Stainless steel) - Sealed crankcase dip stick - Crankcase Breather flame trap - Secured oil filler cap - Automatic engine over speed shut down inlet valve - Inlet flame trap - Fuel shut off valve automatic operates with all shut down - High coolant water temperature shut down at less than 100`c-Low oil pressure shut down - Anti static fan belt - Non metallic blow fan - Resilient engine shock mounts - Emergency stop facility which functions shut down system - Max surface and exhaust gas temp is maintained at less than 200”c engine - Engine throttle and engine stop control pneumatically from the operator console. - Engine starting system (hydraulic / pneumatic / spring rewind) 				
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	<p>9. How do you hook up and operate the hydraulic mast to the power pack?</p> <ul style="list-style-type: none"> • The hydraulic hose connection in the power pack are hook up in reciprocal to hydraulic mast connection in sequence of mast /RSU pressure, mast/RSU return and mas/RSU case drain • Ensure all connection are made up properly and correctly • Positioned the lever switch to hydraulic mast and pull out knob to mast and BOP mode • Ensure external power pack is running • Engage lever to mast erect function to erect mast. • Select winch function to lower hook • Ready for rig up wire line lubricator 				
	EQUIPMENT MAINTENANCE AND SERVIC				

	<p>10. What must you do before hooking up the hydraulic hoses to the unit or mast?</p> <ul style="list-style-type: none"> • Connect lines correctly. A wrong hook up of lines causes the reverse of the intended action. This may result in an unexpected action and could lead to serious injuries. • Check hoses, fittings etc.on a regular basis and replace if worn or damaged. Carelessly servicing , adjusting or replacing parts can be result in serious injury. • Never service or adjust system under pressure. Always ensure that the hydraulics system is shut down and bleed before performing maintenance of any kind. • Never try to detect a pinhole leak by running your hand over the area where you suspect the leak to be .Always use a piece of cardboard and always wear safety glasses or a face shield. • Always relieve the pressure before disconnecting hydraulic lines. Tighten all connection before applying pressure. Escaping fluid under pressure can penetrate the skin causing serious injury. • Flammable spray can be produced by generating heat near pressurized fluid lines which can be result in burns. Do not weld , solder , or use a torch near the pressurized lines. -Heat from the sun can cause thermal expansion of hydraulic oil in a closed system, which increases the pressure in the system .The increases pressure can blow seals and move unexpectedly. 				
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	<p><u>Wireline surface equipment</u></p> <p>11. How does the BOP operate and how do you change the ram? Name how many type of BOP and rams.</p> <ul style="list-style-type: none"> • 2 type of BOP ; • Single ram BOP and double ram BOP. • BOP operated when new hyd. Supplied fitted with gas vented hydraulic cylinder, close to the BOP body, prevent gas from passing the o-ring seal on the stem. Any gas reaching the hydraulic cylinder can cause the following: • 1-Gas mixers hydraulic fluid which can pressurized the hose and pump above their rated pressure. • 2-Gas can cause the hydraulic fluid to expend and cause the rams to open . • RAMS TYPE: • a) slick line (0.092", 0.108", 0.125") use blind rams with rubber inserts on the sealing to seal with or without wire across the rams. • b)Braided line (3/16, ¼ or conductor cable) use rams with a semicircular groove in the seals to match the line diameter. • Testing BOP • All BOP's must be function- and pressure tested after assembly • WITH THE RAM OPEN-Pressure to 150% of working pressure • WITH RAMS OPEN- Pressure 100% of working pressure to test rams seal against wire diameter. • NOTE: A welded and certified test rod, of the same size and wire to be used should be inserted between the rams. • IMPORTANT; The force created by the pressure acting on the cross sectional area of the test rod will act to push the rod out of the rams. For this reason it must be subjected to recognized welding certification. • The correct pressure testing procedure will highlight any assembly errors such as the pin and box connection being inverted during reassembly. • Testing Hydraulic BOPs • Hydraulic cylinders in place of the end caps permit the rams to be 				
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	<p>12. How do you change the stuffing box packing?</p> <ul style="list-style-type: none"> ➤ Removed the packing nut and upper gland. ➤ Removed the packing with the packing extractor. ➤ New packing should be reamed on piece of wire of the diameter to be used, and roughened up with cutter plies of from a file. ➤ Insert this wire through the lower packing gland and push each new piece of packing into position with a piece of 3/16" brass pin. ➤ Replace the upper packing gland and packing nut. ➤ The wire can be removed or remain in place during transportation. 				
	<p>13. What must you do if there is a leak in the hydraulic system in SWCP and how do you know when there is a leak.</p> <ul style="list-style-type: none"> • Isolated and stop the pump • Clean and removed the panel both inside and out so as to be able to observed any leaks • Test the panel to 4000 psi and check all the joints carefully and that all the internal valves are holding the pressure • Repair any minor leaks and replace any minor component as necessary. • Note: any major component overhauls are done by the Labuan workshop • Change the oil (Tellus-46) • Re-pressured test after replacement of any parts or after breaking any connection 				



	<p>14. What is SWL? Where do you find this?</p> <ul style="list-style-type: none">• SWL is safe working load of equipment indicating the tested load done by third party.• These are found in RSU, PP, Lubricator Skid, Lubricator, Stuffing Box, Hyd. mast and w/line toolbox, Gantry crane and permanent gin pole.				
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	<p>15. Explain in steps how you service the following wireline tools</p> <p>i. Pulling tool</p> <ol style="list-style-type: none"> 1 - Place the cylinder in a vice. 2 - Unscrew the top sub for enough to expose the sheared pieces Of the shear pin 3 - Remove the set screw and unscrew the fish neck from the core 4 - Pull the core out through the lower end of the cylinder 5 - Remove the top sub this allows the cylinder spring spring retainer 90* dog spring dog retainer AND DOGS to be removed from the cylinder . 6 - Clean and inspect all parts thoroughly. <p>ii. Running tool</p> <ol style="list-style-type: none"> 1 - Remove the locking pin and retainer pin and withdraw the core. 2 - Remove the fishing neck retainer dog 3 - Hold the tool in the vice by the fishing neck. Vertically and back off the dog retainer from the main spring housing NOTE; Use strap wrenches to prevent deformation of thin welled main spring . 5 - Remove the dog retainer and split rings <p>Unscrew the main mandrel slot.</p> <p>NOTE: These are matched pair- NOT INTERCHANGABLE if the tool is not going to be reassembled immediately store these two components Screw together.</p> <ol style="list-style-type: none"> 7- Remove the spring housing and main spring. 8 - Remove the dog spring by squeezing flat between the two hacksaw blade, twisting vertically and drawing through the slot into the retainer housing. 9 - Wash all parts with diesel, degreaser and then rinse with water. Check all parts for wear grease lightly. <p>iii. Positioning tool X Shifting Positioning tool</p> <ol style="list-style-type: none"> 1 - Place the mandrel in a vice. 2 - Loosen the set screw 				
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	<p>16. Show how to carry out the following basic maintenance:</p> <ul style="list-style-type: none"> i. Greasing bearing <ul style="list-style-type: none"> ➤ Grease the nipple using grease gun ii. Re-tighten bolt and nut <ul style="list-style-type: none"> ➤ Retighten the bolt with ring spanner. iii. Lubricate wire while RIH <ul style="list-style-type: none"> ➤ Fill up the oil tank for lubricate the wire and open the valve tank. iv. Re-Tension Dual Drive Chain v. Lubricate Odometer and Odometer Cable vi. Protect bolt, nut, fitting etc with Denso Tape (Grease Tape) 				
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	<p>17. What should you check BEFORE operating the Reel Skid Unit (Show the start-up Maintenance Checklist and understand the requirements)</p> <p>Operating a reel skid unit, commonly used in the oil and gas industry or other applications involving the handling of hoses, cables, or similar materials, requires a thorough start-up maintenance checklist to ensure safety and optimal performance. Here is a general checklist that can be adapted based on the specific design and requirements of the reel skid unit:</p> <div> <div>1) Visual inspection</div> <div>2) Documentation Review</div> <div>3) Safety Precautions</div> <div>4) Hydraulic</div> <div>5) Reel and Drum inspection</div> <div>6) Drive System</div> <div>7)Control Panel</div> <div>8) Brakes</div> <div>9) Hose and cables</div> <div>10) Lubrication</div> <div>11)Emergency Procedures</div> <div>12) Testing</div> </div>				
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	<p>18. Show how to carry-out following basic maintenance</p> <ul style="list-style-type: none"> i. Protect bolt, nut, fittings etc with Denso Tape (Grease Tape) ii. Re-tighten bolt & nut iii. Protect 1" & 1 - ¼ " Hydraulic Hose connection iv. Take -out Air Starter from 'Crane Case' v. Clean - up Air Filter with air vi. Re - tension Fan Belt 				
	<p>19. What should you check BEFORE start the Power Pack (Show the Start - Up Maintenance Checklist and understand the requirement)</p> <ul style="list-style-type: none"> - Check hydraulic tank suction line ball valve fully open - Check hydraulic oil level in hydraulic tank is up to min level is less top-up - Check diesel level in diesel tank if less top up - Check Engine Oil Level - Check Air inlet / outlet and exhaust are not blocked - Check engine fan belt and guards - Check exhaust flame trap is fitted in exhaust heat exchanger after cleaning - Engine cranking is done with the help of hydraulic starter - Check accumulator pressure, should be greater than 2500psi - Check all hydraulic quick connectors for winch and BOP is connected properly - Check radiator coolant level 				

	20. What are the safety precautions to be alert while Power Pack running? - Check engine oil pressure is correct - Check radiator coolant for any leakage - Run the engine for 5-10 mins , warm up period, before putting on duty - Check coolant and hydraulic oil temperature, must not exceed 90°C - Check hydraulic oil pressure - Note incase of emergency shut of the engine by actuating the engine stop lever				
	21. Show how to carry-out the following basic maintenance: i. Protect bolt, nut, fittings etc with Denso Tape (Grease Tape) ii. Re-tighten bolt & nut iii. Service battery terminal and assemble back (+ve & -ve) iv. Check battery water level and fill – up battery water if necessary v. Check Compressor Hyd Oil Level and fill – up if necessary vi. Re – tension Fan Belt vii. Service ON/OFF switch				

	<p>22. What should you check BEFORE start the Air Compressor (Show the Start-Up Maintenance Checklist and understand the requirement)</p> <p>Before starting the slickline power pack or hydraulic power unit, it's crucial to perform a series of checks to ensure safety, functionality, and optimal performance. Below are some key checks to be carried out:</p> <p>Fluid Levels: Check hydraulic fluid levels in the reservoir. Ensure it's at the recommended level.</p> <p>Fluid Quality: Check the hydraulic fluid for contamination or impurities. If the fluid appears dirty, consider changing it.</p> <p>Leaks: Inspect the power pack for any visible leaks in hydraulic hoses, fittings, and connections.</p> <p>Hoses and Connections: Check all hydraulic hoses for signs of wear, damage, or deterioration. Ensure all connections are secure.</p> <p>Filters: Inspect hydraulic filters for cleanliness. If they are dirty, replace them as per the manufacturer's recommendations.</p> <p>Pressure Gauges: Verify that pressure gauges are functioning correctly. Ensure they provide accurate readings.</p> <p>Control Valves: Check all control valves to ensure they are in the correct positions and functioning properly.</p> <p>Safety Devices: Verify the functionality of safety devices such as pressure relief valves and emergency stop buttons.</p> <p>Bleeding Air from the System: If needed, bleed air from the hydraulic system to ensure optimal performance.</p> <p>Manuals and Documentation: Ensure that operator manuals and documentation are readily available for</p>				
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	<p>23. What are the safety precautions to be alert while Air Compressor running?</p> <p>Operating an air compressor requires careful attention to safety precautions to prevent accidents and ensure the well-being of individuals in the vicinity. Here are some key safety precautions to be aware of while an air compressor is running:</p> <p>Read the Manual: Familiarize yourself with the manufacturer's instructions and safety guidelines provided in the user manual.</p> <p>Location: Place the air compressor on a stable, flat surface to prevent tipping. Ensure proper ventilation in the operating area to prevent the buildup of fumes or gases.</p> <p>Personal Protective Equipment (PPE): Wear appropriate PPE, including safety glasses or goggles, hearing protection, and any other equipment recommended by the manufacturer.</p> <p>Electrical Safety: Use grounded electrical outlets and extension cords. Regularly inspect power cords for damage and replace them if necessary. Keep electrical components away from water to avoid electrical shocks.</p> <p>Pressure Relief: Before performing maintenance or disconnecting hoses, release the air pressure in the system using the pressure relief valve.</p> <p>Hose Inspection: Regularly inspect air hoses for wear, damage, or leaks. Use proper fittings and secure connections to prevent accidental disconnection.</p> <p>Automatic Stop: Ensure that the compressor is equipped with an automatic stop feature to shut off when the desired pressure level is reached.</p> <p>Noise Levels: Wear hearing protection, especially in environments where noise levels exceed safe limits.</p>				
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	<p>24. Why contaminated water should be drained from Compressor Tank before start the Air Compressor?</p> <p>Draining contaminated water from the compressor tank before starting the air compressor is an essential maintenance practice. Here are several reasons why it's important:</p> <p>Condensation Accumulation: Compressed air systems generate heat during operation, and as the compressed air cools down, condensation forms inside the compressor tank. This condensation can accumulate over time and result in the formation of water at the bottom of the tank.</p> <p>Water is a Contaminant: Water in the compressed air can lead to various issues. It can mix with lubricants in the system, causing them to break down and reduce their effectiveness. Water can also corrode the interior of the tank and other components.</p> <p>Corrosion Prevention: The presence of water in the tank can contribute to the corrosion of the tank itself and internal components. Corrosion compromises the structural integrity of the tank, leading to potential safety hazards and reducing the overall lifespan of the equipment.</p> <p>Tool and Equipment Damage: If water is allowed to enter the compressed air supply, it can damage pneumatic tools and equipment. Water in the air stream can cause rust, clog filters, and affect the performance of air-powered tools.</p> <p>Air Quality: Water in the compressed air system can carry contaminants and particulate matter. Draining the water helps maintain better air quality, reducing the risk of contaminating products or processes that rely on clean, dry air.</p> <p>Preventing Freezing: In colder climates, the water that accumulates in the tank can freeze, causing damage to the tank and associated components. Draining the water helps prevent freezing issues.</p>				
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	25. Show how to carry-out following basic maintenance <ol style="list-style-type: none"> Protect bolt, nut, fittings etc with Denso Tape (Grease Tape) Re-tighten bolt & nut Caring of pressure gauge Service Air Operated Pump Exhaust Check Hydraulic Oil Level and fill – up if necessary Release contaminated water from Air Isolator Release pressure in system upon completed job Take – out ¼ “ Snap Tite from Control Panel and service Pressure Manifold to be installed at Control Panel 				
	26. What should you check BEFORE start the Control Panel (Show the Start-Up Maintenance Checklist and understand the requirement)? <ul style="list-style-type: none"> - Check hydraulic level through the level indicator - The air filter is drained - Ensure that all air valves are off - Ensure that all needle valves and air regulators are CLOSE - Hand pump relief valves are Closed - Check all tubings, fittings etc. For any signs of damage. Replace as necessary. 				

	<p>27. What are the safety precaution to be alert while operating Control Panel?</p> <p>Operating a control panel, especially in industrial settings, requires adherence to strict safety precautions to prevent accidents, protect personnel, and ensure the proper functioning of equipment. Here are some general safety precautions to be aware of when operating a control panel:</p> <div> <div>1) Training and competency</div> <div>2) PPE</div> <div>3) Clear labeling</div> <div>4) Regular Inspection</div> <div>5) Environmental Consideration</div> <div>6) Regular maintenance</div> <div>7) Documentation</div> </div>				
	<p>28. Why contaminated water should be drained from Air Hose before start the Control Panel ?</p> <p>Draining contaminated water from an air hose before starting the control panel is important for several reasons, especially in industrial or pneumatic systems. Here are the main reasons for this precaution:</p> <div> <div>1) Prevent equipment damage</div> <div>2) Ensure Proper Functioning</div> <div>3) Protect Control panel Instruments</div> <div>4) Prevent contamination of Downstream system</div> <div>5) Ensure air quality</div> <div>6) Extend Equipment Life</div> <div>7) Enhance Safety</div> </div>				

	<p>29. Show how to carry - out following basic maintenance</p> <ul style="list-style-type: none"> i. Protect bolt, nut, fittings etc with Denso Tape (Grease Tape) ii. Re-tighten bolt & nut iii. Caring of pressure gauge iv. Service Air Operated Pump Exhaust v. Check Water Level and fill - up if necessary vi. Release contaminated water from Air Isolator vii. Release pressure in system upon completed job viii. Flush the system with Hydraulic Oil 				
	<p>30. What should you check BEFORE start the Test Pump? (Show the Start - Up Maintenance Checklist and understand the requirement)</p> <p>Before starting a test pump, it's crucial to perform a thorough start-up maintenance check to ensure the proper functioning of the pump and associated systems. Here's a generalized start-up maintenance checklist for a test pump:</p> <ul style="list-style-type: none"> 1) Review operating Manual 2) Safety Precautions 3) Visual Inspection 4) Water Levels 5) Prime the Pump 6) Check control and instrumentation 7) Valve Positions 8) Pressure Relief Device 9) Seals and Gaskets 10) Bleed air from system 11) Test run in manual Mode 12) Training and Competency 				

	31. What are the safety precautions to be alert of while operating Test Pump? - Make sure no trap pressure inside hose before disconnecting it - Check all tubings, fittings etc. For any signs of damage. Replace as necessary. - Ensure that all needle valves and air regulators are CLOSE - Ensure that all air valves are off - The air filter is drained				
	32. Why the system should be flushed with Hydraulic Oil? - To prevent from trap pressure when pumping the line.				
	33. Show how to carry – out following basic maintenance i. 1”Air Chicago Coupling ii. Drainage Valve iii. Check Valve iv. Relief Valve v. Protect following items with Denso Tape – Air Chicago Coupling, Drainage Valve & Relief Valve				
	34. What is the safety precaution to be alert of during spooling activity? - Check all the hook-up hoses are correctly connected between spooling device and power pack - Always secure unit back to suitable fixtures before use - Check all guards are in placed - Check the directional lever is in the central position and that the brake is applied				

	35. Show how you perform for the following basic maintenance <ul style="list-style-type: none"> i. Service O ring and O ring set ii. Service Sheave Wheel iii. Greasing Sheave Wheel bearing iv. Greasing Staff Am bearing v. Take-out used Stuffing Box packing vi. Change – out Sheave Wheel bearing 				
	36. Explain the Stuffing Box element to be checked during Pre-Start-up Job <ul style="list-style-type: none"> - Check the packing is not worn out - Check the sheave is the correct size - Check the upper and lower brass packing glands for wear - Check the sheave bearings for free spinning and side play - Check the sheave staff for freedom of swivel movement - Check the BOP Plunger for wear and freedom of vertical movement 				

	37. What is the safety precaution to be alert of during handling of Stuffing Box? -Inspect equipment - Follow manufacture instructions - Use proper technique - Keep work area clean - Monitor pressure and temperature				
	38. How to identify if the Stuffing Box require Standard Service or H2S Service? Identifying whether a Stuffing Box requires standard service or H2S (hydrogen sulfide) service involves understanding the operational environment and the potential hazards the equipment may encounter. A) Review equipment Specifications D) Perform risk management B) Access Operational Environment E) Inspect Equipment Labels C) Consult safety standards				
	39. Strip the Stuffing Box and service completely (2 times)				
	40. Strip the BOP and service completely (1 time)				

	41. Show how to carry-out following basic maintenance: i. Manual Stem ii. Inner and Outer Seal iii. Equalizing Port iv. Box – up thread connection v. Pin & Collar Down Thread Connection vi. Internal BOP body				
	42. What do you do during mob / de mob BOP from one location to other location				
	43. What are the safety precaution be alert of while BOP running? When running a Blowout Preventer (BOP), which is a critical safety device used in slickline operations to control well pressure and prevent blowouts, it's essential to observe several safety precautions to ensure the protection of personnel and equipment. A) Proper Training B) Equipment Inspection Response Plan C) Use personal protective equipment Maintenance D) Follow Procedures e) Maintain Control f) Emergency g) Preventive				

	<p>44. How to identify if the BOP requires Standard Service or H2S Service?</p> <p>Identifying whether a Blowout Preventer (BOP) requires standard service or H2S (hydrogen sulfide) service involves evaluating the operational environment and potential hazards that the BOP may encounter</p> <ul style="list-style-type: none"> A) Review manufacturer Specification B) Assess well condition C) Perform Risk Management D) Consult Industry standards 				
	<p>45. Show how to perform for the following basic maintenance for Lubricator and Pump Joint</p> <ul style="list-style-type: none"> i. Clean – up and greasing internal ii. Service box-up thread and o’ ring seal area iii. Service pin & collar down thread, o’ ring and o’ ring groove iv. Service bleed – off port 				
	<p>46. What is the safety precaution to be alert of during handling lubricator section?</p> <ul style="list-style-type: none"> - Check damaged or corrosion inside lubricator - Check the condition of the need valves on the lower section. If necessary, redress or replaced - Visual inspection of the internal bore for corrosion and “ wire tracking “ wear grooves 				
	<p>47. If the Lubricator working pressure is 5000 psi, how many Test Pressure to be carried out?</p> <ul style="list-style-type: none"> - 15,000 psi 				

	48. Show how to carry - out following basic maintenance for wellhead x-over i. Clean up and greasing internal ii. Service box - up thread and o'ring seal area iii. Service pin & collar down thread, o'ring and o'ring groove				
	49. What are the safety precaution to be alert of during handling wellhead x-over section and rig -up on top of x-mass tree Handling the wellhead crossover section and rigging up on top of the Christmas tree (X-mas tree) in oil and gas operations requires strict adherence to safety precautions to prevent accidents and ensure the safety of personnel and equipment. A) Training and competency F) Communication B) PPE g) Safe handling procedures C) Equipment inspection D) Lifting operation E) communication				
	50. Show how to carry - out following basic maintenance for Pump - in Tee i. Clean - up and greasing internal ii. Service box - up thread and o'ring seal area iii. Service pin & collar down thread, o'ring and o'ring groove iv. Service 1502 thread and rubber seal				

	<p>51. What are the safety precaution to be alert during handling Pump – in Tee?</p> <p>Handling a Pump-in Tee in oil and gas operations requires strict adherence to safety precautions to prevent accidents and ensure the safety of personnel and equipment</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>A) Training and competency</p> <p>B) PPE</p> <p>C) Equipment Inspection</p> <p>D) Secure work area</p> <p>E) Communication</p> </div> <div style="width: 45%;"> <p>f) Safe handling Procedures</p> <p>g) Pressure monitoring</p> </div> </div>				
Form C.4	EQUIPMENT HANDLING/EQUIPMENT PASSPORT				
	<p>1. What is Material Handling Equipment (MHE)? Name some example:-</p> <ul style="list-style-type: none"> ➤ MHE-material handling equipment. E.g. Forklift, crane, lorry, trailer, jip crane, gantry crane, jack trolley. ➤ MHE is a certified handling equipment to handle or move equipment example w/line units from one place to the another 				
	<p>2. How do you check for expired date of lifting equipment?</p> <ul style="list-style-type: none"> ➤ To check the label attached to the body f the equipment ➤ To check the display of due date, inspection date, MPI date, load test date and etc. 				

	<p>3. What is Equipment Passport?</p> <p>The equipment passport is a certificate of the equipment. This procedure provides guideline on the process of appointing equipment inspector and the measures required in ensuring all mobile industrial equipment supplied for use in SSB/SSPC. It ensures that such equipment is inadequately fitted with appropriate safety devices.</p> <p>The objectives of issuing an equipment passport to each mobile industrial equipment are:-</p> <ul style="list-style-type: none"> • To ensure that the equipment is safe in propose work site or classified hazardous area. • To ensure that all equipment are in good state of maintenance and safety feature such as guards, emergency cut-out device, etc. are in place and in good operating condition. • To ensure that non-approved equipment is tagged (danger –do not use) accordingly to prevent inadvertent use in company areas of operation or contractor sites. 				
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	<p>4. List down what are the maintenance schedule for the following:-</p> <p>i. 6-Monthly Planned Maintenance – Wireline Unit Power Pack</p> <ul style="list-style-type: none"> ➤ Carry out test run and diagnose any problems found. ➤ Inspect the power pack unit for leaks and external damage. ➤ Check all connections and mounting bolts. ➤ Change the engine oil and filters regardless of the condition. ➤ Check the oil and fluid levels. Top-up to the correct level. ➤ Check the condition of the engine and engine instruments. ➤ Inspect the hose connections and all hydraulic plumbing for leaks. ➤ Check for excessive black smoke; clean or replace the fuel injectors. ➤ Check satisfactory operation of hydraulic recharging pump or spring-type starter mechanism. ➤ Clean the engine crankcase breather and air box drain tubes. ➤ Check the exhaust rain cap is intact and moves freely. ➤ Grease all parts provided with grease nipples and linkages. ➤ Check the fan belts for wear or damage and correct tension. ➤ Check that the inlet shut down valve is functioning and activates automatic shutdown at the maximum engine rpm. ➤ Check that the “AMOT CONTROL” is functioning. ➤ Check the heat exchanger and radiator core for blockage, dirt and condition of fins. Wash thoroughly. ➤ Chip and patch up the corroded parts. ➤ Wash the entire unit with degreaser to remove dirt. ➤ Final inspection/function and load tests prior to storage or dispatch to the work site. 				
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	5. What is the colour code for lifting equipment? <ul style="list-style-type: none"> Yellow, green, blue, white. 				
	6. What is SWL? Where do you find this? <ul style="list-style-type: none"> Safe working load. At container, Lubricator. Skid, bop skid, wireline units, hyd. Mast and etc. 				
	7. What is MPI? And load test date validity for a container, lub skid, and wireline unit <ul style="list-style-type: none"> MPI is magnetic process inspection. Load test validity for:- container (12 monthly), Lubricator skid (6 monthly), wireline units (12 monthly) 				
	8. How long is the validity test date for Equipment passport and if you find one expired offshore what is your next course of action <ul style="list-style-type: none"> The validity test date for equipment passport is 3 month validity period, the OIM should ensure that the equipment is checked at least once a month and is still in good operating condition. 				
Form C.5	PERFORM PROBLEM TROUBLESHOOTING AND REPORT				

	<p>1. Why do you report for any abnormalities observed during wireline operation?</p> <p>All abnormalities are reported because it is important information gathered and collected for the record and future references.</p> <p>The flowing are few examples of this:-</p> <ul style="list-style-type: none"> • Safety valve - packing torn/parted/squashed - fishing neck worn out/deformed • Plug - dented mark/scratched -debris collected inside • Wax cutting - hard wax/blackish sticky -Yellow scale • Sand bailing - debris -fine sand/coarse sand and small pebbles • Drift run - Wax/scale stick at the body • Survey Run - Encountered tool string floating/hanging 				
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	<p>2. List the daily prestart check point?</p> <p><u>For Power Pack:</u></p> <ul style="list-style-type: none"> ➤ Check hydraulic tank suction line ball valve is fully open. ➤ Check hydraulic oil level in hydraulic tank is up to min level if less top-up. ➤ Check diesel level in diesel tank if less top-up. ➤ Check engine oil level. ➤ Check Air inlet /outlet and exhaust are not blocked. ➤ Check engine fan belt and guards. ➤ Check exhaust Flame trap is fitted in exhaust heat exchanger after cleaning. ➤ Engine cranking is done with the help of hydraulic starter. ➤ Check accumulator pressure should be greater than 2500 Psi. ➤ Check all hydraulic quick connectors for winch and BOP is connected properly. ➤ Check radiator coolant level. <p><u>For Reel Skid:</u></p> <ul style="list-style-type: none"> ➤ Check drum direction control valve is in Neutral or center position. ➤ Connect all hydraulic communication hoses. ➤ Check system pressure panel mounted rotary knob is in fully open position. ➤ Check wireline is properly connected with the Measuring Head Assembly. ➤ Check oil level in the lubricator tank. ➤ Check weight indicator hose, bleed the air and fill with fluid. ➤ Check 4-speed gearbox in neutral position. ➤ Ensure that the drum hand brake is applied. ➤ Check winch unit is properly locked with the deck. 				
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	3. If the diesel engine will not start what 2 things should you check point? <ul style="list-style-type: none"> • Top the diesel fuel • Bleed of air trap from the injector pump. 				
	4. If the engine run out of diesel what must you do to restart? <ul style="list-style-type: none"> • Report the problem to supervisor onsite • Report to FSM, MS, Om • Make the problem report ASAP and send to FSM, Maintenance supervisor and OM 				
	5. Why do you report for each break down of particular equipment? <ul style="list-style-type: none"> • Check and rectify the problem and stop work if the equipment can cause danger for wireline operation. 				
	6. How do you carry out trouble shooting of equipment? <ul style="list-style-type: none"> • To study the specification and design and find out the history of the equipment. • To take a photograph if found any physical damage. • To report all physical observation. • If applicable to simulate equipment on how they function and report your observation. • To disassemble and report any abnormalities on every equipment. 				

Assessed By:		Verified By	
Name		Name	
Position		Position	
Date		Date	



