



Safety of Wireline Operations

Guidance on the Rig Up/Down of Wireline Lubricators and Toolstrings



STEP CHANGE IN SAFETY



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Resources

CD-Rom including:

1. Guidance Document
2. Wireline Lifting Operation Plan Template
3. Wireline Specific Lifting Plan template
4. Open Hole Rig Up Animation
5. Cased Hole Rig Up Animation
6. Test of Sheave type Toolcatcher



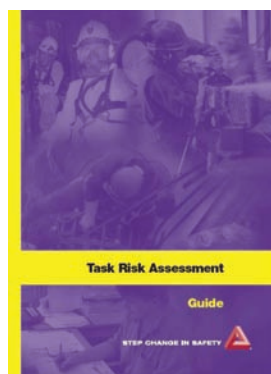
1. Introduction

The rig up and down of wireline lubricator assemblies and toolstrings are potentially hazardous activities which may cause serious harm to personnel, damage to plant and equipment and business loss.

The UK's Health and Safety Executive carried out a review of reported wireline lubricator/toolstring incidents which had occurred in the period 2005/2006, including one fatality. This trend of incidents continued through 2007. Analysis of the data indicated that the incidents were almost exclusively related to dropped toolstrings resulting from pulling the toolstring into the top sheave or stuffing box causing the wire to part. When the dropped toolstring is contained within the well bore/lubricator, there is little risk to personnel. However, when it is dropped outwith the lubricator or well bore, there is the potential for serious or fatal injury to personnel.

The analysis indicated that significant underlying causes of the incidents were failures or inadequacies in:

- Risk Assessment
- Training and Competence
- Supervision
- Communication



General guidance for the safe conduct of lifting operations is given in the Step Change in Safety publication 'Lifting and Mechanical Handling' Guidelines. The rig up/down of wireline lubricators and toolstrings are specific examples of lifting and the Step Change guidelines should be the basis for these operations. However, in wireline work, the wireline itself can be used as the lifting/support medium for toolstrings and this has resulted in failed wireline and a consequent dropped object hazard.

The aim of this document is to provide guidance specific to wireline operations which complements the general guidance in the 'Lifting and Mechanical Handling' guidelines to ensure that the risk of wireline failure and consequent dropped lubricators/toolstrings risks are as low as reasonably practicable.

Input from the wireline services workforce was provided at a workshop in May 2007 attended by sixty field wireline workers and has been incorporated in this guidance.

The guidance covers:

- Job Planning
- Communications
- Technical Considerations
- Training and Competence

2. Job Planning

Failing to Plan is Planning to Fail

Remember the five 'P's – Proper Planning Prevents Poor Performance

As in all activities, proper job planning is key to ensuring the safe and efficient conduct of the work. This is seen as critically important to wireline activity where there can be a difference in emphasis on job requirements between Town Office and Site. Office based engineers determine the work programme (e.g. what logs to run, intervals to perforate, etc) but may not consider fully the complexities and risks of carrying out the work which are left to site personnel to manage.

In order to ensure a proper focus on the practicability and safety of wireline operations, it is recommended that there be two main component parts to planning of a wireline job:



1. A Town Office planning meeting between the Well Operator and the Wireline Contractor to establish the high level requirements of the job and to ensure the practicability of the work. This will ensure that the wireline crew is not forced into impractical and hazardous rigups to meet well programme expectations.



2. A Site planning meeting to develop a lifting plan to ensure the safe conduct of the work.

2.1 Town Office Planning

The initial stage of job planning is a 'town based' meeting involving representatives of the Well Operator and the Wireline Contractor to develop an agreed outline plan for the wireline work. The aim is to identify the key elements to allow the work to be carried out safely. These include:

- Technical/safety considerations
- Supervisory and skills requirements
- Load considerations
- Communication considerations
- Identification of potentially hazardous rig ups or lifts
- Height/clearance restrictions

This will result in the development of a Wireline Lifting Operation Plan. (An example of a completed Wireline Lifting Operation Plan document is included at Appendix 1. A Wireline Lifting Operation Plan template is included in the Resources CD.)

The Lifting Operation Plan document establishes an agreed plan between Well Operator and Wireline Contractor for the safe conduct of the wireline work.



2.2 Site Job Planning

Using the Town Office produced Wireline Lifting Operation Plan as a guide, the site wireline crew, in conjunction with the rig/operations personnel, will develop a Wireline Specific Lifting Plan which will include a detailed lifting plan and diagram for the lubricator assembly and wireline toolstring. The development of the lifting plan provides a structured approach to the identification of risk associated with the rig up and subsequent wireline activity through to rig down.

The planning document should identify the safety considerations for the job. (A paramount consideration is the maintenance of a minimum safety gap from the top of the toolstring/lubricator assembly to the sheave.) It should be used as a prompt to identify possible safety issues rather than a 'tick sheet'. (An example of a completed Wireline Specific Lifting Plan is included at Appendix 2. A Wireline Specific Lifting Plan template is included in the Resources CD.)

The Lifting Plan is an integral part of the formal Risk Assessment. If a generic Risk Assessment exists for the work, then its relevance to the specific job must be reviewed and the Risk Assessment amended if additions/changes are identified.

3. Communications

The safe conduct of wireline operations requires clear and effective communication between both:

1. The Rig Crew/Operations personnel and the Wireline Crew, and
2. The individual members of the Wireline Crew.

3.1 Communication between Rig Crew/Operations Personnel and Wireline Crew



The wireline rig up is a lifting operation and the Lifting and Mechanical Handling Guidelines should be followed - communication between the Rig Crew/Operations Personnel and the Wireline Crew should be through a **single focal point** in the Wireline Crew. This requires that the Wireline Contractor person in charge of the rig up/down be clearly identifiable (e.g. hi-vis jacket). This will ensure that there are no conflicting requirements made on the personnel involved in the lifting operation which could result in an accident.

The importance of effective communication between Rig Crew/Operations Personnel and the Wireline Crew and the identification of the method of communication (e.g. Driller with Wireline Crew member in charge of the lift) should be stressed at Tool Box Talks and Pre-Job Safety Meetings.

3.2 Communication between Wireline Crew Members

Since the individual members of the Wireline Crew may not be visible to each other at all times (e.g. on different deck levels) it is recommended that inter-crew communication be by radio. This also removes the potential confusion arising from misinterpretation of hand signals. (The use of radios requires that good radio-telephony discipline be observed.)

Again, Tool Box Talks at the beginning of the work and at appropriate times thereafter are key to ensuring that everyone is kept aware of the job requirements and their part in it.



4. Technical Considerations

The risk of dropped lubricators/toolstrings and the consequences of such failure can be reduced by ensuring that:

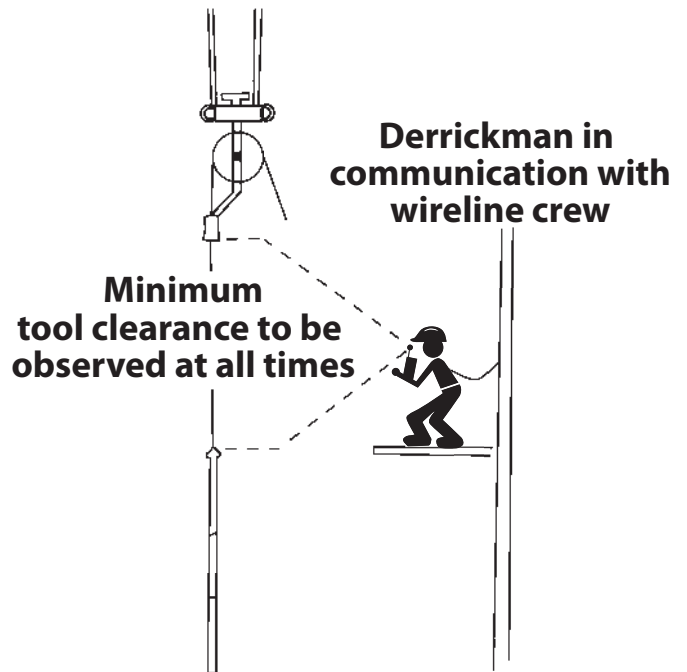
4.1 All lifting equipment used for wireline operations is covered by a suitable inspection regime and is certified.



Wireline lifting equipment includes the winch, all sheaves, handling subs and the wireline. (Guidance on wireline inspection and testing is given in 4.3 below.)

In particular, lubricators are to be rigged up/down using only certified lifting equipment. Personnel should be as remote as possible when lubricators are being raised/lowered and outwith the radius of possible fall.

4.2 The risk of pulling the toolstring into the top sheave/stuffing box and severing the wireline is minimised. This can be achieved by the following:



Sketch of Derrickman monitoring that minimum tool clearance is being maintained

- Ensuring that the minimum safety gap between the top of the toolstring/lubricator and top sheave is maintained at all times. This can be achieved by someone (e.g.derrickman) present at sheave height or by a camera. ('Guesstimating' from the rig floor should be avoided since this has resulted in error and pulling into the sheave.)
- Accurate depth zeroing
- Use of the hydraulic control valve (slickline) and cable tension limiter (electric line) to

ensure that the breaking strain of the wireline is not exceeded

- Proximity detection devices

It should be noted that the effect of these controls is negated should the top sheave or lubricator assembly be raised. The toolstring will be raised two feet for every foot that the sheave or lubricator is raised. For this reason, when raising the sheave or lubricator, it must be ensured that there is adequate slack in the wireline.

4.3 The wireline is properly maintained, inspected and tested.

The Wireline Contractor should have in place a Wireline Management Procedure, which covers:

Selection of suitable equipment

Considerations Include:

- Well Conditions
- Toolstring Load
- Sheave Dimensions

Inspection

- (i) Thorough examination by a Competent Person at intervals not exceeding 12 months. A certificate of inspection should be issued.
- (ii) Suitable in-service inspections with focus on the most stressed sections of wireline (e.g. section running over sheaves in a jarring operation.)

Testing – Break/torsion testing

Spooling - Smooth wrapping recommended

Wire 'cut off' practices - These should be related to the severity of service to which the wireline has been exposed. (e.g. limitation on the number of jarring operations before a section of wireline is cut off.)

Wireline Service History – useful in assisting wireline rejection/replacement decisions.

Computer wireline modelling programs can be useful in determining the loads on the wireline and assist in the Wireline Management process.

4.4 Toolstring weight does not exceed 20% of the breaking strain of the wireline.

4.5 Toolstrings are made up such that exposure to toolstrings suspended above head height is minimised.

Personnel must not be in proximity to toolstrings when they are being raised/lowered and should be outwith the potential radius of fall of the toolstring. When using the wireline for lifting/lowering the toolstring, travel should be minimised and the weight monitored on a currently calibrated weight indicator.

The preferred method of tool make up is downwards into the well bore, using tested and certified lifting equipment and tool clamps to support components of the toolstring during make up.

Consideration should be given to the use of a riser (e.g. if able to work from a deck above Xmas tree level) or mousehole to allow downward make up of the toolstring.



If, despite the above precautions, there is still a requirement for personnel to be alongside a load suspended by the wireline (e.g. for attachment of a wireline tool) the use of 'Quicklock' connections and subs that deflect through 90° can reduce exposure time and risk arising from dropped toolstrings.

4.6 A back-up safety device (e.g. toolcatcher) is included in the rig up to prevent the toolstring falling should, despite the above precautions, the toolstring be inadvertently pulled into the top sheave/stuffing box. Examples of such devices are included in Appendix 3.

5. Specific Wireline Rig-ups

Guidance is given on four generic types of rig up below with the objective of ensuring that only certified and tested lifting equipment is used in the rig up/down and exposure to suspended toolstrings is minimised:

Mast	Appendix 4.1
Platform Slickline	Appendix 4.2
Open Hole	Appendix 4.3
Heave Compensated	Appendix 4.4

Animations of Open Hole and Cased Hole rig-ups are included in the attached Resources CD.

6. Training and Competence

Wireline personnel should be given training in the specific rig up type in which they are involved and should be assessed as competent.

The member of the Wireline Crew responsible for rig up/down and lifting operations should be trained and assessed as competent in Slinging and Lifting.

Basic training in the procedures and correct use of hand held radios should be provided.



Appendix 1: Lifting Operation Plan

Wireline Lifting Operation Plan

To be completed during Town Office Planning Meeting



General Job Details				
Location	N. SEA		Field	MACALLAN
Client	NS OIL & GAS		Purpose of task	OH WL LOGGING
Well Name	DRAM 2		Rig/Platform	NS DRILLER
Well Number	51138-2A		Surface Pressure	0 psi

This form is to be used for planning of wireline jobs to ensure that they can be carried out safely.

If a Generic Risk Assessment is available, it should be used only as a guide to determining the lifting plan

Planning Team			
Name	Position	Name	Position
N. CASH	WELL ENG.		
I.D. EVERYTHING	SERVICE HAND		

The Planning Team should include as minimum an engineer, Ops Manager, client rep and Drilling Rep

Lifting Operation Details (see References for guidance)
<p>Key Considerations:</p> <ul style="list-style-type: none"> - TOP SHEAVE HEIGHT BELOW 100' - MAX TOOLSTRING LENGTH < 80' - TUGGERS AVAILABLE - AT LEAST 2 x 2 TONNE MAX PULL.
<p>Key Skills (including Supervisory):</p> <ul style="list-style-type: none"> - WL CREW WINCH TRAINING CURRENT - RIGUP EXPERIENCE - AT LEAST 1 WL CREW MEMBER TO HAVE RIGGED UP ON NS DRILLER BEFORE.
<p>Load Considerations:</p> <ul style="list-style-type: none"> - MAX D/H TOOL WEIGHT < 400 Kg
<p>Communication considerations:</p> <ul style="list-style-type: none"> - RADIO TO BE THE PRIMARY COMMUNICATION BETWEEN WL/DRILLING/DECK CREWS. - HAND SIGNALS TO BE DEFINED AT TOST. - WL CREW FOCUS POINT TO BE IDENTIFIED WITH HVIS VEST.
<p>Special or Additional considerations:</p> <ul style="list-style-type: none"> - WL LOGGING CABLE HEAD SAFETY CLAMP TO BE FITTED WHILE D/H TOOLSTRING IS RAISED TO INSERT RA SOURCES. - USE OF LOGGING CABLE FOR LIFTING ABOVE DF TO BE RESTRICTED TO RA SOURCE INSERTION IN D/H TOOL. - D/H TOOL TO BE STATIONARY BEFORE PERSONNEL APPROACH IT.
<p>Step By Step Lifting Plan (Can be attached to the plan)</p>

Appendix 2: Wireline Specific Lifting Plan

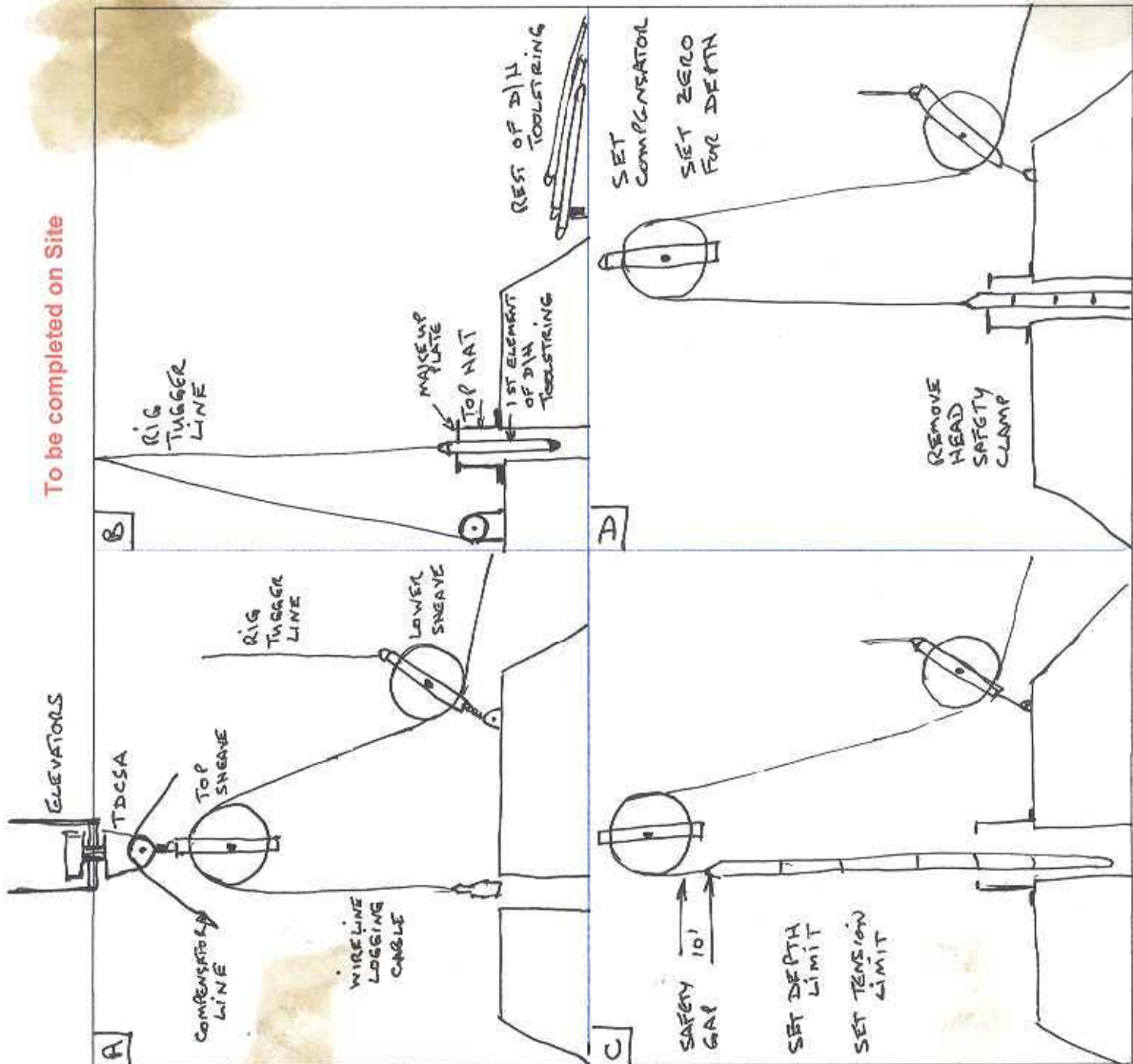
Wireline Specific Lifting Plan

INSTALLATION / SHIP/BARGE / OTHER (CIRCLE AS APPROPRIATE) OTHER PLEASE STATE	N-SEA DRILLER
LOCATION (MAIN DECK, REAR DECK, QUAYSIDE etc.)	DRILL FLOOR
Weight of Lift (Kg / Tonnes)	< 1.5 ton
Permit Required	YES/NO
Category 1. Routine 2. Non-Routine	YES/NO YES/NO
Risk Assessment Number	WL-30-144
Present Position of Load	CATWALK PIPE DECK
Load Position on Completion of Lift	IN WELL
Current Colour Code	YELLOW

Description of Lifting Operation

1. LIFT WL EQUIPT TO PIPE DECK
BESIDE CATWALK.
2. RIGUP WL SNEAVES & TDSCA **A**
3. RIGUP WL DIA TOOLSTRING **B**
4. CHECK TOOLSTRING & INSERT
RA SNEAVES **C**
5. ACTIVATE NEGATIVE COMPENSATOR **D**
6. SET DEPTH ZERO & R.I.H.

To be completed on Site



POSSIBLE Considerations (Not Exhaustive)		YES	N/A
<input type="checkbox"/> Weight Not Verified	<input type="checkbox"/> Language Barriers		
<input checked="" type="checkbox"/> High Centre of Gravity	<input checked="" type="checkbox"/> Is Support Required from Collateral/Adjacent?		
<input type="checkbox"/> Awkward size/ shape/ sharp edges	<input type="checkbox"/> Insufficient crew numbers to carry out the task		
<input type="checkbox"/> No Dedicated Lifting Points	<input checked="" type="checkbox"/> RIGUP EQUIPT REQUIRED		
<input type="checkbox"/> No Dedicated Rigging	<input checked="" type="checkbox"/> THE DOWN POINT IDENTIFIED		
<input type="checkbox"/> Attaching & Detaching free Load	<input checked="" type="checkbox"/> SAFETY SLING ON ELEVATORS		
<input type="checkbox"/> Conflicting Tasks in the area	<input type="checkbox"/>		
<input type="checkbox"/> Crew Familiarity with Operation	<input type="checkbox"/>		
STOP Ten Questions			
If you can't answer either, address in Step by Step Section			
1. Is the route clear of obstructions?		<input checked="" type="checkbox"/>	
2. Can secondary rigging or fall arresters be used?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Have barriers been positioned to prevent access by unauthorized personnel?		<input checked="" type="checkbox"/>	
4. Have safe areas been identified for personnel within barriers?		<input checked="" type="checkbox"/>	
5. Will the lifting Equipment Operator be able to see the Banksman throughout the operation?		<input checked="" type="checkbox"/>	
6. If radios are to be used is there a dedicated channel, not in use by others, identified and available?		<input checked="" type="checkbox"/>	
7. Can the speed of the lift be controlled/ limited?		<input checked="" type="checkbox"/>	
8. Has the speed of the winch and reaction time been factored into minimum clash distance?		<input checked="" type="checkbox"/>	
9.		<input type="checkbox"/>	<input type="checkbox"/>
10.		<input type="checkbox"/>	<input type="checkbox"/>

If you answered N/A to any of the Stop Ten Please expand on why in spaces below

- DECK CREW NEEDED

- DRILL CREW NEEDED

- DERRICK TUGGERS TO BE USED FOR LIFTING WL TOOLS TO DRILL FLOOR.

- PERMIT NEEDED.

- RADIO'S CN3 TO BE USED BY ALL DURING RIGUP LIFTING OPERATIONS

- DISTANCE BETWEEN D/H TOOL HEAD AND TOP WL SNEAVE NEVER TO BE LESS THAN 10'.

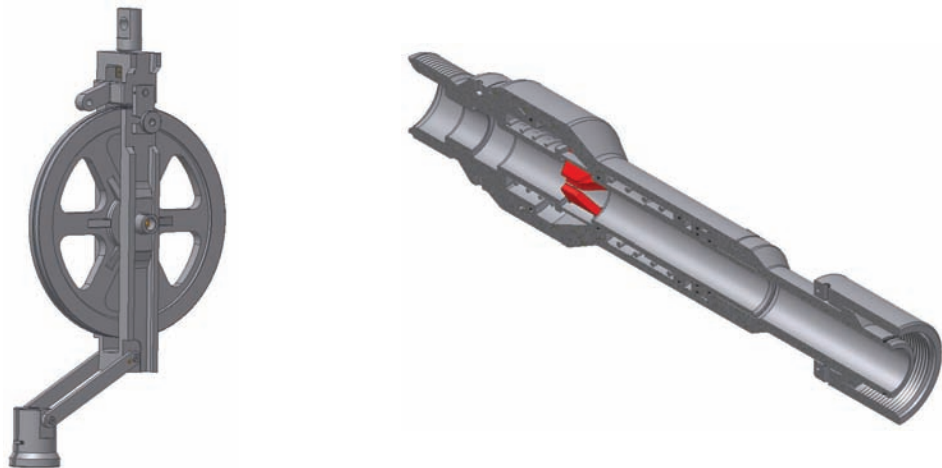
- IF NECESSARY USE DERRICKMAN AS SPOTTER.

- WL HEAD SAFETY CLAMP TO BE USED WHEN LIFTING D/H TOOL WITH WL CABLE.

STEP BY STEP DETAILS OF LIFTING OPERATION
1. POSITION WL TOOL PALLET BESIDE CATWALK & LIFT OFF TOOLS WITH CRANE.
2. ARRANGE D/H TOOLS IN LIFTING ORDER.
3. NOMINATE WL PERSON I/C OF RIGUP OPERATIONS.
4. HOLD TST WITH WL+DRILL+DECK CREWS.
5. DEFINE RIGUP SEQUENCE WITH DRIVER.
6. POSITION LOWER WL SNEAVE.
7. POSITION TOP WL SNEAVE & WEAVE COMP SNEAVE IN ELEVATORS.
8. THREAD WL CABLE THROUGH SNEAVES.
9. SPOOL OUT SLACK WL LOGGING CABLE ON CATWALK.
10. RAISE TOP WL SNEAVE TO 100' IN DERRICK.
11. RAISE INDIVIDUAL D/H TOOLS WITH TUGGER TO D/F & MAKE UP IN WELL.
12. CONNECT HEAD TO D/H TOOLSTRING AND CHECK OPERATION.
13. RAISE D/H TOOLS TO 90' AND INSERT BAR SOURCES.
14. LOWER TOOLSTRING INTO WELL & RESET DEPA 2500 → R/H

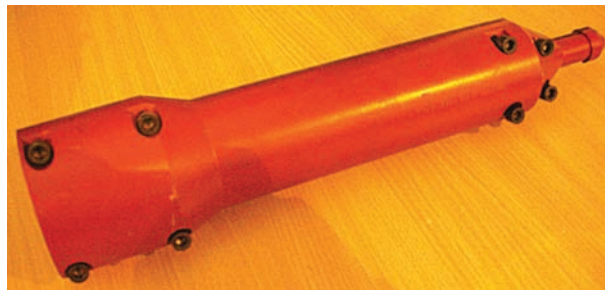
Appendix 3: Examples of Devices to Prevent Toolstrings Falling

1. Toolcatchers - Sheave type and lubricator sub



The Resources CD Rom includes a video clip of the sheave type Toolcatcher under test.

2. Wireline Head Safety Clamp.



3. Proximity Sensor and Alarm



Appendix 4.1: Mast Rig-up

Scope

These guidelines define the minimum safe operating requirements for Slickline Rig Ups using a Mast on Fixed Installations.

Key Rig up considerations

- The rig up should seek to minimise personnel access risks through manriding, etc.
- Lead rig up person should be clearly defined and identified (e.g. hi-vis jacket).
- Radios should be the primary method of communication for the rig up.
- Keep personnel away from suspended or moving loads – outwith possible fall radius.
- Use of a Tool Catcher is strongly recommended.
- Use of wireline for raising/lowering/suspending toolstrings during make up should generally be avoided. Where it is not reasonably practicable to do so, no person should be in proximity to the toolstring when it is moving. It may, on occasion, be necessary to work alongside a suspended toolstring (e.g. insertion of a radioactive source, change out of bottom tool.) In such cases, exposure time should be minimised (e.g. by use of Quicklocks).

Lifting Operation Plans

Prior to the start of the rig up operation, the Wireline Lifting Operation Plan must be reviewed. Using this plan, the Wireline Specific Lifting Plan (see Appendix 2 for an example) must be completed.

The lifting plan will include:

- Description of operation.
- Step by step details of the lifting operation from preparation through to completion.
- Diagrams of the proposed lift.

Ensure all lifting equipment to be utilized is available, in good condition, certified and tested. All lifting clamps, slings and chains should be visually checked prior to use and all shackles should be fitted with safety pins.

Toolbox Talk

Tool Box Talks (TBT) must be conducted including all personnel involved in the operation prior to appropriate stages in the process e.g. at start of operation, at shift change, or when any new members join the crew and when conditions change for any reason.



The TBT should address:

- The work site – ensure it is clear and tidy and barriered off with signs in place to ensure no unauthorised personnel enter the work site.
- The task or operation to be carried out and its objectives.
- The perceived hazards and risks.
- Requirement for special procedures and equipment to be put in place.
- Lines of communication and reporting – person in control of the lift to be identifiable (e.g. hi-vis jacket).
- Emergency procedures.
- Wellsite Lifting Plan review.

Rig Up Steps

The following are the key steps to be included in the Wireline Contractor's procedures:

- All necessary permits will be in place before start of operations.
 - Slickline/Wire shall be tested in accordance with the manufacturer's specifications prior to use.
 - Mast should be erected by competent personnel only.
1. Securely tie down the wireline unit and wireline mast using the tie-down points in a position with a clear and unobstructed view of the worksite.

2. All hatches, gratings and covers that are required to be removed to allow access to the tree shall have a slotted cover or barrier placed around and enclosing the hole. All work within the perimeter of this barrier shall be done wearing an approved safety harness attached to a designated point.
 3. Remove tree cap and make up riser sections/BOP to deck level using certified lifting equipment.
 4. Assemble the required tool string horizontally on deck. Measure and record dimensions of all components of the tool string. Install the tool string into the made up lubricator assembly.
 5. Attach the wireline clamp to the lubricator and insert the slickline into the clamp jaws to prevent any movement of the wireline tool string while raising the lubricator assembly from the horizontal position. Ensure there is sufficient slack line to prevent the slickline from being kinked while the lubricator assembly is being raised and to aid the removal of the clamp when required.
- SAFETY NOTE:** Care must be taken to coordinate all Wireline movements from this point to avoid the rope socket making contact with the stuffing box which may part the wire. (Ensure that sufficient slack is paid out.) The use of a toolcatcher sub in the lubricator is

strongly recommended to prevent fall of the toolstring.

6. Pick up the tool string weight using the wireline unit and remove the wireline clamp.
7. Move lubricator over top of BOP.
8. Lower the lubricator assembly on to the wireline BOP and make up the quick union connection.

The rig up can now be pressure tested.

Note: If a lower toolstring has to be installed in the riser, it should be made up and hung off at the BOP using certified lifting clamps.



Appendix 4.2: Slickline Rig Up on a Fixed Installation.

Scope

These guidelines define the minimum safe operating requirements for Slickline Rig Ups on Fixed Installations

Key Rig up considerations

- The rig up should seek to minimise personnel access risks through manriding, etc.
- Plan to break riser at deck level and utilise riser or mousehole for tool makeup.
- Lead rig up person should be clearly defined and identified (e.g. hi-vis jacket).
- Radios should be the primary method of communication for the rig up.
- Keep personnel away from suspended or moving loads – outwith possible fall radius.
- Use of a Tool Catcher is strongly recommended.
- Use of wireline for raising/lowering/suspending toolstrings during make up should generally be avoided. Where it is not reasonably practicable to do so, no person should be in proximity to the toolstring when it is moving. It may, on occasion, be necessary to work alongside a suspended toolstring (e.g. insertion of a radioactive source, change out of bottom tool.)

In such cases, exposure time should be minimised (e.g. by use of Quicklocks).

Lifting Operation Plans

Prior to the start of the rig up operation, the Wireline Lifting Operation Plan must be reviewed. Using this plan, the Wireline Specific Lifting Plan (see Appendix 2 for an example) must be completed.

The lifting plan will include:

- Description of operation.
- Step by step details of the lifting operation from preparation through to completion.
- Diagrams of the proposed lift.

Ensure all lifting equipment to be utilized is available, in good condition, certified and tested. All lifting clamps, slings and chains should be visually checked prior to use and all shackles should be fitted with safety pins.

Toolbox Talk

Tool Box Talks (TBT) must be conducted including all personnel involved in the operation prior to appropriate stages in the process e.g. at start of operation, at shift change, or when any new members join the crew and when conditions change for any reason.

The TBT should address:

- The work site – ensure it is clear and tidy and barriered off with signs in place to ensure no unauthorised personnel enter the work site.
- The task or operation to be carried out and its objectives.
- The perceived hazards and risks.
- Requirement for special procedures and equipment to be put in place.
- Lines of communication and reporting – person in control of the lift to be identifiable (e.g. hi-vis jacket).
- Emergency procedures.
- Wellsite Lifting Plan review.

Rig Up Steps

The following are the key steps to be included in the Wireline Contractor's procedures:

- All necessary permits will be in place before start of operations.
 - Slickline/Wire shall be tested in accordance with the manufacturer's specifications prior to use.
1. Securely tie down the wireline unit using the tie-down points in a position with a clear and unobstructed view of the worksite.
 2. Ensure the appropriately rated lifting equipment is used to lift the riser/lubricator sections and the BOP.

3. Make up tool string downwards into riser/mousehole using lifting clamps to support the load. Measure and record dimensions of toolstring components.
4. Attach the wireline clamp to the lubricator to prevent any movement of the upper toolstring while raising the lubricator assembly. Ensure there is sufficient slack line to prevent the slickline from being kinked while the lubricator assembly is being raised and to aid the removal of the clamp when required.
SAFETY NOTE: Care must be taken to coordinate all wireline movements from this point to avoid the rope socket making contact with the stuffing box which may part the wire. (Ensure that sufficient slack is paid out.) The use of a toolcatcher sub in the lubricator is strongly recommended to prevent fall of the toolstring.

5. Pick up the toolstring weight using the wireline unit and remove the wireline clamp.
6. Move lubricator over top of BOP. Lower upper toolstring and make up to lower toolstring. Pick up weight and remove lifting clamp.
7. Lower the lubricator assembly on to the wireline BOP and make up the quick union connection.

The rig up can now be pressure tested.



Appendix 4.3: Open Hole Rig Up.

Scope

These guidelines define the minimum safe operating requirements for Open Hole Rig Ups.

Key Rig up considerations

- The rig up should seek to minimise personnel access risks through manriding, etc.
- Lead rig up person should be clearly defined and identified (e.g. hi-vis jacket).
- Radios should be the primary method of communication for the rig up.
- Use of a Tool Catcher is strongly recommended.
- Keep personnel away from suspended or moving loads – outwith possible fall radius.
- Use of wireline for raising/lowering/suspending toolstrings during make up should generally be avoided. Where it is not reasonably practicable to do so, no person should be in proximity to the toolstring when it is moving. It may, on occasion, be necessary to work alongside a suspended toolstring (e.g. insertion of a radioactive source, change out of bottom tool.) In such cases, exposure time should be minimised (e.g. by use of Quicklocks).

Lifting Operation Plans

Prior to the start of the rig up operation, the Wireline Lifting Operation Plan must be reviewed. Using this plan, the Wireline Specific Lifting Plan (see Appendix 2 for an example) must be completed.

The lifting plan will include:

- Description of operation.
- Step by step details of the lifting operation from preparation through to completion.
- Diagrams of the proposed lift.

Ensure all lifting equipment to be utilized is available, in good condition, certified and tested. All lifting clamps, slings and chains should be visually checked prior to use and all shackles should be fitted with safety pins.

Toolbox Talk

Tool Box Talks (TBT) must be conducted including all personnel involved in the operation prior to appropriate stages in the process e.g. at start of operation, at shift change, or when any new members join the crew and when conditions change for any reason.

The TBT should address:

- The work site – ensure it is clear and tidy and barriered off with signs in place to ensure no unauthorised personnel enter the work site.
- The task or operation to be carried out and its objectives.
- The perceived hazards and risks.
- Requirement for special procedures and equipment to be put in place.
- Lines of communication and reporting – person in control of the lift to be identifiable (e.g. hi-vis jacket).
- Emergency procedures.
- Wellsite Lifting Plan review.

Rig Up Steps

The following are the key steps to be included in the Wireline Contractor's procedures:

- All necessary permits will be in place before start of operations.
 - Wire shall be tested in accordance with the manufacturer's specifications prior to use.
1. Position logging tools on catwalk.
 2. Position top sheave below heave compensator line sheave (if floater – not required for platform/jackup)) and support in

elevators; then thread logging cable head through.

3. Spool out slack cable on to catwalk sufficient for positioning of top sheave.
4. Raise top sheave slowly to logging height in derrick, paying out slack cable ensuring that no snags occur.
5. Raise first logging tool section to drill floor using appropriate tugger and certified lifting cap. Place in makeup plate over hole. (Use "top hat" to bring makeup point to waist level.) Continue in this manner until toolstring makeup is complete.
6. Connect wireline head to toolstring – check tool and then attach head safety clamp.
7. Set depth and tension limits on wireline winch.
8. Raise toolstring to insert sources/jewellery. (Maintain minimum safety gap between tool head and top sheave.)
9. Lower tool into well. Reset tool zero at drill floor. Remove head safety clamp. Run in hole.



Appendix 4.4: Heave Compensated Rig up

Scope

These guidelines define the minimum safe operating requirements for wireline rig ups on floating installations where heave compensation is required.

Key Rig up considerations:

- The rig up should seek to minimise personnel access risks through manriding, etc.
- Plan to break riser at deck level and utilise riser or mousehole for tool makeup.
- Lead rig up person should be clearly defined and identified (e.g. hi-vis jacket).
- Radios should be the primary method of communication for the rig up.
- Use of a Tool Catcher is strongly recommended.
- Keep personnel away from suspended or moving loads – outwith possible fall radius.
- Use of wireline for raising/lowering/suspending toolstrings during make up should generally be avoided. Where it is not reasonably practicable to do so, no person should be in proximity to the toolstring when it is moving. It may, on occasion, be necessary to work alongside a suspended toolstring (e.g. insertion of a

radioactive source, change out of bottom tool.) In such cases, exposure time should be minimised (e.g. by use of Quicklocks).

- Weather – rig up only if conditions are suitable. Maximum allowable heave to be agreed with Client/Installation Owner.

Lifting Operation Plans

Prior to the start of the rig up operation, the Wireline Lifting Operation Plan must be reviewed. Using this plan, the Wireline Specific Lifting Plan (see Appendix 2 for an example) must be completed.

The lifting plan will address:

- Description of operation
- Step by step details of the lifting operation from preparation through to completion
- Diagrams of the proposed lift

Ensure all lifting equipment to be utilized is available, in good condition, certified and tested. All lifting clamps, slings and chains should be visually checked prior to use and all shackles should be fitted with safety pins.

Toolbox Talk

Tool Box Talks (TBT) must be conducted including

all personnel involved in the operation prior to appropriate stages in the process e.g. at start of operation, at shift change, or when any new members join the crew and when conditions change for any reason.

The TBT should address:

- The work site – ensure it is clear and tidy and barriered off with signs in place to ensure no unauthorised personnel enter the work site.
- The task or operation to be carried out and its objectives.
- The perceived hazards and risks.
- Requirement for special procedures and equipment to be put in place.
- Lines of communication and reporting – person in control of the lift to be identifiable (e.g. hi-vis jacket).
- Emergency procedures.
- Wellsite Lifting Plan review.

Rig Up Steps (It is assumed that Pressure Control Equipment (PCE) is required)

Note: In a rig up where heave compensation is required, it is strongly recommended that a Coil Tubing Frame (CTF) be used.

The following are the key steps to be included in the Wireline Contractor's procedures:

- All necessary permits will be in place before start of operations.
 - Wire shall be tested in accordance with the manufacturer's specifications prior to use.
 - Ensure CTF has correct lift sub and elevators are correct size. Elevators are to be locked and not air assisted.
 - Cross check that the rig up height from bottom of winch hooks to bottom of frame is the same as per the Wireline Lifting Operation Plan.
 - Cross check top sheave hang off point is certified and suitable for job.
 - Ensure winch has suitable hook or shackle (no open ended hooks) and is certified.
 - Install top sheave prior to lifting CTF into derrick (minimize man riding operations).
1. Lift CTF into position.
 2. Lift BOPs and install appropriate crossover for riser. Use tugger with certified lifting caps and slings. Two tag lines should be used. Assist drill crew to position BOPs on riser and make up connection. Orient BOPs to give access to hydraulic connections and manual ram wheels.
 3. Assemble GIT (Grease Injection Tubes) on catwalk. Use GIT clamp or lubricator clamp, certified slings and shackles. Use of 12 ton shackle on flow tube housing will be required if using a lubricator clamp. Install In-Situ test sub.



4. Pull cable head up into bottom of lubricator and tie with rope to lower collar to allow assembly to be landed on drill floor if required.
5. Spool off wireline to allow free cable when picking up GIT assembly.
6. Lift GIT with rig tugger and crane (if necessary) to allow GIT control hoses to be fitted at drill floor (minimize man riding operations).
7. Remove rig tugger and switch to CTF winch. Tag lines to be fitted.
8. Lift GIT till 2ft above makeup position and tieback to frame to prevent swinging.
9. Install cable into top sheave (manriding required) and secure with clip.
10. Rig up toolstring using certified clamps and slings or lifting caps as required. Rig tugger is to be as central as possible. Lower toolstring into BOPs, land off and slacken off tugger to prevent rig heave lifting toolstring. (Experienced tugger operators (drill crew) are to assist and a nominated wireline crew member (identifiable with hi-vis jacket) will provide instructions. Tag lines are to be used and tied to the top of tools to assist in centralizing before making tools together. If rig heave is above agreed maximum limit, then rigging up should not be attempted.)
11. Once tool string is complete and hung off on BOPs, remove tugger. Pull cable head out of the lubricator and connect to the toolstring.
12. Rig up lower sheave assembly with suitable floor chain or rated and tested sling, wrapping around riser but allowing room for tidal movement and heave. Hold lower sheave steady with tugger or sheave stand.
13. Untie lubricator tag lines and allow lubricator to centralize above tool string.
14. Pick up tension with winch unit on tool string. (Experienced winch driver should have communication with nominated wireline crew member on drill floor.)
15. Remove tool clamp. Ensure suitable hole cover is used.
16. Lower toolstring in hole with winch unit until cable head is 10ft below BOPs.
17. CTF operator can now lower GIT winch to allow makeup of In-Situ test sub to BOP. Rig up is now ready for pressure testing.

Once wireline operation is complete, rigging down will be the reverse of rigging up. Pull back into catcher as above, using safe winching procedures. Once lubricator has been bled off, the toolstring must be let out of the catcher and dropped down before breaking above BOPS. CTF should then be lifted 2ft. Clamps will then be installed and cablehead removed.

Once GIT is tied back to frame, toolstring can be disconnected in sections as required using the tugger.

Note: The above rig up is for electric/braided line. A slickline rig up would be similar but without reference to GIT equipment.



Appendix 5: References

The following are useful references and guidance:

Current Legislation and Guidance

1. The Lifting Operations and Lifting Equipment Regulations 1998 (SI 1998 No. 2307)(LOLER)

Approved Code of Practice: Safe Use of Lifting Equipment. Lifting Operations and Lifting Equipment Regulations 1998 (ISBN 0717616282)

Leaflet: Simple Guide to the Lifting Operations and Lifting Equipment Regulations 1998 (www.hse.gov.uk/pubns/indg290.pdf)

Guidance: Technical Guidance on the Safe Use of Lifting Equipment Offshore (ISBN 0717621006)

2. Provision and Use of Work Equipment Regulations 1998 (SI 1998 No. 2306) (PUWER)

Approved Code of Practice: Safe Use of Work Equipment. Provision and Use of Work Equipment Regulations 1998 (ISBN 0717616266)

Leaflet: Simple Guide to the Provision and Use of Work Equipment Regulations 1998 (www.hse.gov.uk/pubns/indg291.pdf)

3. Management of Health and Safety at Work Regulations 1999 (SI 1999 No. 3242) (MHSWR)

Step Change in Safety Guidance

1. Lifting and Mechanical Handling Guidelines
2. Task Risk Assessment Guide

For further information on good safety practices and guidance visit the Step Change in Safety website www.stepchangeinsafety.net

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