



SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 1 of 7

1 PURPOSE

To ensure all Operational Drilling employees are provided with basic instruction in the standard processes for rigging up and drilling operations including awareness of any hazards and associated procedures required to reduce risk.

2 SCOPE

This procedure applies to all DCN Drilling operations, sites, rigs and operational drill staff.

3 REQUIREMENTS

The following requirements are standard Drilling Operations procedures that are consistent across the various drill rigs and sites, site specific procedures, rules, JHA's, risk assessments and safe work practices are to be considered based on the type of drilling and/or the site location specific hazards.

3.1 PERMIT / COMPETENCY REQUIRED

- Drilling operations competency
- Appropriate vehicle license
- DCN Drilling Induction
- Site Specific Induction if required
- Specific permits as determined by site specific risk assessment
- Underground services location permits

3.2 UNDERGROUND SERVICE LOCATOR APPROVALS

A competent Underground Service Locator (USL) is appointed to identify and detect underground services. A USL Plan is provided following the site assessment and the identified services are marked up on the ground using the standard marking practices for services. The USL Plan includes the following details:

- Type, location and depth of services detected
- Equipment used to detect services electromagnetic, ground penetrating radar
- Details of relevant suppliers service plans or gas obstruction plans
- Any additional permits required for high pressure gas lines

DCN Drilling generally use Underground Service Locator – Nick Mepsted Mob. 0274547699

<http://www.undergroundlocators.co.nz/>

3.3 EQUIPMENT REQUIRED

- Equipment required as per site and job specific requirements

3.4 STANDARD PPE REQUIRED

- Safety Glasses
- Safety Boots
- Safety Helmet
- Hi Vis Clothing

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SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 2 of 7

- Protective gloves, where required

3.5 ADDITIONAL PPE REQUIRED

- Fall prevention harness and lanyard available on rig
- Additional PPE as determined by site specific risk assessment

3.6 SIGNAGE REQUIRED

- “Authorized Access Only” signs installed at entrance to drilling site
- Warning codes to define limited access drill site area

3.7 HAZARDS

- As determined by site specific risk assessment or Job Hazard Analysis (JHA).

4 RESPONSIBILITY

It is the responsibility of the Supervising Driller to ensure rigging up and drilling operations are carried out in a safe and efficient manner; Drillers have the following responsibilities:

- Comply with all legal and job role obligations
- Ensure equipment is operated within limitations and maintained
- Ensure risk assessments are conducted
- Ensure all underground services are identified, detected, located and visually exposed prior to any drilling operations are undertaken
- Ensure hand clearing is undertaken as per procedures to a minimum depths of 1.5m
- Ensure housekeeping is maintained
- Ensure the training of off-siders and other operational staff in the requirements of this procedure
- Conduct tasks in accordance with statutory requirements, site procedures and any other relevant instructions

5 PROCEDURE

5.1 IDENTIFICATION AND DETECTION OF UNDERGROUND SERVICES

If there are potential for underground services at the drill site, then the SOP-101 Underground Services Identification Procedure shall be applied, this procedure includes requirements for:

- Use of qualified Underground Service Locator to identify underground service locations
- Identification, detection and location mark up of underground services on the ground at the drill site
- Approvals and permits from the service providers of the underground services if works encroaches on the close approach distance
- All services to be visually exposed prior to any drilling operations being undertaken
- Hand clearing to be carried out to a depth of 1.5m

Further detail on these procedures can be found within SOP-101 Underground Service Identification Procedures.

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----------------------	--------------------------	--



SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 3 of 7

5.2 RIGGING UP

Drill crews ensure the drill site is well prepared prior to driving machinery or equipment onto the site, checks are to be made to ensure:

- Ground is stable and can take the weight of the rig
- Debris or long grass is cleared from the site
- There are no overhead power lines in close proximity to work site
- Checks are undertaken to identify locations of any underground cables, water pipes or sewers
- All power lines are considered live and dangerous until it has been established they have been isolated, works are not to commence within close proximity to power lines without a close proximity permit
- Site access and egress is safe, with suitable road conditions, appropriate site entry and adequate clearance from other traffic.

On successful completion of drill site clearance the following procedures are followed to ensure appropriate rig set up:

- The drill rig is only moved and positioned with mast in the lowered position for travelling
- Ensure all crew members and other personnel are clear of the rig before start up
- Level the rigs with the stabilising jacks, ensure the rig is stable and cannot move
- Carry out checks on loose items, such as overshots or hoisting equipment and ensure they are secured and cannot snag or drop out
- Ensure all hydraulic hoses and wire ropes are clear before raising the mast
- When the mast has been raised to the required position, ensure that retaining pins and backstays are security and safety attached or locked in place
- If required use geotextile matting or plywood to protect grassed areas
- Arrange for the safe disposal of excess water, drilling mud spilled fuel and lubricants and arrange mud pits out of the direct rig working area
- Safely position any auxiliary equipment, such as cyclones and mud mixing plant and stabilise rod racks and trestles
- Whilst drilling on barge ensure the water is recirculated to ensure there is no dirty water going back into the tide.
- Ensure drill site has appropriate warning signs and cones erected securing the site and informing of no unauthorised access

5.3 DRILLING OPERATIONS

Site Drillers are to ensure all crew members are familiar with the associated hazards with drilling operations and ensure the following precautions are undertaken during drilling operations:

- When rods, casings or drill pipes are being raised or lowered, exercise care to ensure that the hoist plug or rotation head sub is screwed in, before taking up the weight

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----------------------	--------------------------	---



SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 4 of 7

- When running into the hole be sure that the joint being added is properly screwed in, before lifting out of the clamp or spanner
- When drill pipe is being added to the string or removed on the way out of the hole with a hook and clamshell being used ensure, before you start tripping, that the cable is in good condition. Also ensure that the cable clamps are on correctly and adequately tightened and that both the hook and clamshell are correctly in place before taking the weight of the pipe joint
- Ensure that rods/pipe/casing are firmly set in the clamp or spanner before trying to break the joint
- Operate retaining tools, such as rod safety clamps and rod spanners with care and do not allow them to come into contact with rotating tools
- Take caution when making or breaking joints and do not place any part of the body between stilsons, tongs or break out spanners and the drill mast
- When using stilsons or tongs, ensure they are set correctly and avoid burring of drill pipe and casing. If burrs do occur, file them off immediately to ensure there is safe placement for hands when handling rods and to ensure clothing cannot be snagged on rotating pipe
- When breaking the bit from the hammer, always use slips to hold rods in place and a bit basket to hold the bit
- When handling rods, do not place hands or fingers inside the threads as they can become sharp and may result in laceration injuries
- Avoid touching hot rods with bare hands
- Stack tubular goods in an orderly and secured manner, take caution when handling to avoid them rolling and catching fingers.
- Check the hoist plug or hook and clamshell and all water/air/sample swivels on a regular basis, ensure they are operating properly and are lubricated as required
- Climbing of the mast while the rig is operating is prohibited, if climbing the mast is necessary, this shall only be done so when the motor is stopped and a safety belt and lanyard is used to avoid slipping or falling
- Always replace guards over all chains, belts and gears if they have been removed to carry out repairs
- Operate the rig controls from a stable and convenient position
- Do not carry out mechanical work on machinery that is in operation and keep hands away from live winch cables. Never straddle cables that are being used for hoisting or pulling
- Ensure that chains, bearings and lever on the wireline winch are kept clean and that they are lubricated regularly
- When running wireline take caution that the rope does not form a loop that could go around an arm or neck of crew members
- When pulling the inner tube, pull steadily and be ready to stop, be alert for a hang up that could break the wireline
- Do not try to handle the inner tube until it has come to a complete halt and stabilised at the collar
- To take core from a core barrel, lay it across the trestles, extract the inner tube and then remove the core. Never try to remove the core from a core barrel suspended on the hoist plug

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SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 5 of 7

- For wireline barrels, remove the inner tube head assembly before removing core. Never try and remove core while the inner tube is hanging on the overshot. Use two inner tube assemblies
- Do not place an unprotected hand over the end of an inner tube when removing core as this could cause injury
- Do not stand in front of the inner tube when pumping out split inner tube or core from a triple tube core barrel with mud or water. Never use air to pump them out as they can become dangerous projectiles
- When geotechnical drilling do not hold sample tubes by the cutting edge as this is sharp
- When drilling use the pit provided to drill through as so the drilling fluid can be recirculated
- When heating wax for wax impressions use the heating equipment with care and try not to spill hot wax
- When the SPT hammer is in use, never place hands on the guide rod or anvil. Keep well back from the equipment when SPT tests are being carried out
- Maintain the working parts of an automatic trip hammer clean and well lubricated
- In the event of a diesel or oil spill, the rig spill kit used to soak up the spill. Used spill kits are disposed of in an approved waste site
- When nearing the end of the borehole try to use all the recirculated water up so there is no spillage on to the ground
- Empty the pit of drill cuttings and excess water down the drill hole

6 PROCEDURE STEPS TABLE

Additional steps, procedures and hazards may be included here where appropriate for site specific tasks.

STEPS	PROCEDURE	IMPORTANT INFORMATION
1.	•	
2.	•	
3.	•	

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SOP-100 Rigging Up and Drilling Operations Procedure

Version: 3.0

Date: 17-Nov-16

Page: 6 of 7

STEPS	PROCEDURE	IMPORTANT INFORMATION
4.	<ul style="list-style-type: none">	
5.	<ul style="list-style-type: none">	

7 TRAINING AND COMPETENCY

This procedure is to form part of the Driller and Offsiders training program, each crew member is to review this procedure and sign agreement to comply with the procedure.

8 REFERENCE/ASSOCIATED DOCUMENTS

Document Number	Document Title or Information Source	Location
HSE-01	HSE Management System Manual	Google Drive HSE-01
HSE-05	Training Competency and SOP Matrix	Google Drive HSE-05
SOP-101	Underground Services Identification Procedure	Google Drive HSE-08

9 DOCUMENT CONTROL

Version	Date	Description	Author	Approved
Version 1		Rigging Up and Drilling	David Penney	
Version 2 Draft 1	July 15	SOP-100 Rigging Up and Drilling Operations Procedure	HSE Team	
Version 2	Aug15	SOP-100 Rigging UP and Drilling Operations Procedure	HSE Team	David Penney
Version 3	Oct 16	SOP-100 Rigging up and Drilling Operations Procedure	HSE Team	David Penney

Include further detail defining rules and procedures for detection, identification and exposing underground services and provide adequate links to the new Underground Services Procedure.

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Version: 3.0

Date: 17-Nov-16

Page: 7 of 7

STANDARD OPERATING PROCEDURE RECEIPT SIGN OFF

SUPERVISOR TO HAND PROCEDURE TO EMPLOYEE, TRAINEE OR CONTRACTOR UPON COMMENCEMENT OF TRAINING

- Trainee to sign this copy and return to supervisor who will pass onto Training Supervisor for training records.
- Trainee to retain procedure for their own use and future reference.
- Training Supervisor to update Training Matrix of successfully completed training and/or instruction.

Comments:

Trainee Name

Signature

Date

Company Name

Supervisor Name

Signature

Date

Training Supervisor Name

Signature

Date

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