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1.0 Persons Affected

This Standard Operating Procedure (SOP) affects all Transmission & Distribution Services employees and contractors who operate, or assist in the operation of, a Digger Derrick or a Boom Truck.

2.0 Purpose

This SOP provides the standard for making a lift with a Digger Derrick or a Boom Truck.

The purpose of this procedure is:

- To establish a standard for making a lift within the Transmission and Distribution Services
- To provide a detailed job process for employees and contractors who perform this procedure within the course of their job

3.0 Rationale

This SOP will support the safety of our personnel by ensuring safe working methods are consistently used for making a lift with a Digger Derrick or a Boom Truck. This SOP will also ensure optimal use of equipment for the purpose of minimizing wear and tear.

This SOP requires that work performed by Transmission and Distribution Services employees and contractors satisfies all applicable policies and regulations.

4.0 Scope

In-the-Scope of the Procedure

- The procedure includes the following:
    - Set up equipment
    - Perform a dry run
    - Determine safe working load(SWL) of winch line
    - Make a lift
    - Complete post operations

Out-of-the-Scope of the Procedure

- The procedure does not includes the following:
    - Multi parting of the winch line
    - OH&S Compliance - Perform Pre-Operating Mobile Equipment Inspection SOP
    - Digger Derrick & Pole Puller - Pull Wood Pole - De-Energized SOP
    - Digger Derrick & Pole Puller - Pull Wood Pole - Energized SOP
    - Digger Derrick - Set Wood Pole - De-Energized or New SOP
    - Digger Derrick - Set Wood Pole - Energized SOP
    - TRNSP Compliance - Securing Loads SOP

5.0 Policies and Regulatory Requirements

This SOP is a result of the following:

Policies:

- SaskPower Hazard Control Policy

Regulatory Requirement(s)

Saskatchewan Occupational Health and Safety Regulations, 1996

- Part XI: Powered Mobile Equipment
  - Section 155: Visual Inspection
  - Section 156: Inspection and Maintenance
  - Section 164: Dangerous Movements
- Part XIII: Hoists, Cranes and Lifting Devices
  - Section 199: Interpretation
  - Section 201: General Requirements
  - Section 203: Load Ratings
  - Section 204: Designated Operator
  - Section 206(3): Rated Loads
  - Section 208: Determining weight of load
  - Section 210(1)(4): Designated Signaler
  - Section 212: Hoists, cranes with outriggers, etc
  - Section 215: Log book
  - Section 206: Inspections
- Part XIV: Rigging
- Part XXX: Additional Protection for Electrical Workers
  - Section 465(2): - Proximity to exposed energized high voltage Electrical Conductors
- Table 22: Minimum Distances from Exposed Energized High Voltage Electrical Conductors
- Exemptions:
  - Section 208(1)(2)(3): Load Gauge
  - Section 211(3): Anti-Two Block

Other

American National Standard

- ANSI A10.31 - 2006

Manufacturer's Specifications

SaskPower Procedures

- SaskPower Bonding and Grounding Procedures
- SaskPower Limits of Approach
- SaskPower Standard Protection Code

SaskPower Safety Rulebook

6.0 Roles, Responsibilities and Prerequisites

In-the-Scope of the Procedure Role(s)	Quantity Required	Responsibilities	Prerequisites
Operator	1	1. Operate the equipment as per guidelines established in the following procedure.	1. An employee must be designated as a qualified operator of a Digger Derrick or Boom Truck, or to be under the supervision of a qualified Digger Derrick or Boom Truck operator.
Operator's Assistant	1 or more	1. Assist the Operator in making a lift. 2. Designated Signaler, as required.	1. Under the supervision of a qualified Digger Derrick or Boom Truck Operator.

7.0 Tools and Equipment

Tools and Equipment and Quantity Required:

- Digger Derrick or Boom Truck
- Load to be lifted
- Ground lead
- Ground electrode
- Digger Derrick Operating Manual or Boom Truck Operating Manual
- Rigging and associated fittings
- IPT's Crane and Rigging Handbook
- Manufacturer's Load Chart

8.0 Planning and Preparation Checklist

Things to Check Before Starting the Procedure:

☐ Completed Hazard and Risk Assessment and Job Plan

☐ Completed Fleet Services' Digger or Boom Truck Daily Inspection Checklist

☐ Completed OH&S Compliance - Perform Pre-Operational Equipment Checks SOP

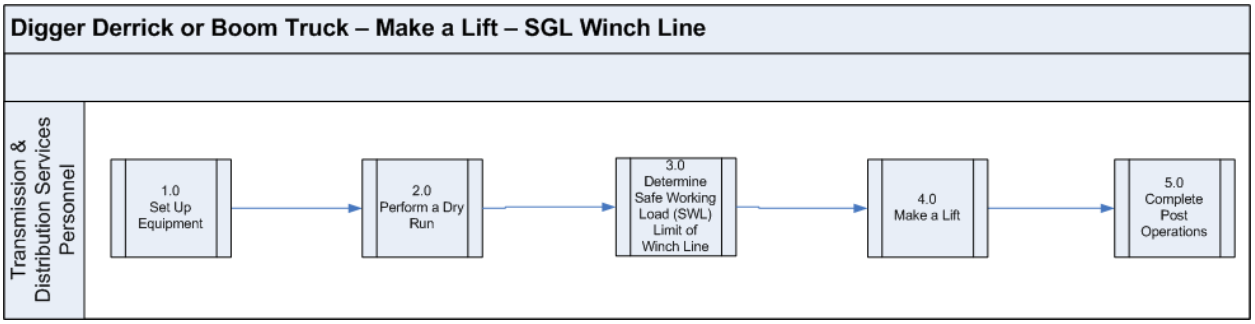
☐ Completed TRNSP Compliance - Perform Pre-Trip Air Inspections SOP

☐ Completed TRNSP Compliance - Perform Pre-Trip Chassis Inspection SOP

☐ Applicable Personal Protective Equipment (PPE) is available and in good condition

9.0 Procedure

High Level Flowchart



The Procedure

This Standard Operating Procedure covers the method of making a lift with a single winch line with a Digger Derrick or Boom Truck.

Digger Derrick or Boom Truck synthetic winch lines are capable of lifting 4000 Lbs safely with a properly inspected single winch line.

1.0 Set Up Equipment

1.1 Set Up Digger Derrick or Boom Truck

1.1.1 The Operator shall position the Digger Derrick or Boom Truck as outlined within the job plan.

- *Ensure the area is clear*
- *Apply parking brake*
- *Engage Power Take Off (PTO) as per manufacturer's specifications*

1.1.2 The Operator and/or Operator Assistant(s) shall extend all outriggers.

- *As per the manufacturer's specifications.*
- *Ensure the area is clear*
- *Lay out outrigger pads as specified for the Digger Derrick or Boom Truck*

Note: The use of outrigger pads is **mandatory** at all times.

- *Ensure outriggers are fully visible while extending*
- *Dig out surface area as required if outriggers cannot be fully extended*
- *Block the outriggers as required to stabilize the Digger Derrick or Boom Truck*

1.1.3 The Operator shall level the Digger Derrick or Boom Truck.

- *As per manufacturer's specifications*

1.1.4 The Operator and/or the Operator Assistant(s) shall ground the Digger Derrick or Boom Truck if identified within the Hazard and Risk Assessment.

2.0 Perform a Dry Run

Performing a dry run identifies where the load is to be lifted from and where it is to be placed. This establishes the range of motion required by the boom to confirm that the capacity is not exceeded without the load attached. Performing the Dry Run can ensure the stability of the unit.

Note: A Dry Run is not required if the known weight is less than the minimum capacity of the Capacity Chart, however this does not ensure the stability of the unit.

Note: Use of the winch line through the third stage extension increases the chance of wear on the rope. Operators should use second stage when working environment allows. When using the third stage you are working with a maximum 6:1 sheave-to-rope diameter ratio, not 8:1 as per the manufacturer's guidelines.

2.1 Confirm Range of Motion

2.1.1 The Operator shall confirm the allowable capacity of the equipment at any stage during the lift.

- *Refer to the manufacturer's load and stability charts*
- *Ensure the weight of the load does not exceed the allowable capacity*
- *Take note of the angles of the boom and the horizontal load radius at the key positions*

Note: It may be possible to increase equipment capacity by re-positioning the Digger Derrick or the Boom Truck closer to the load.

2.2 Does the Load Exceed Boom Capacity Chart?

2.2.1 The Operator shall determine if the load that is to be lifted exceeds boom capacity chart as a larger piece of equipment is needed to make the lift safely.

- *Yes, (load exceeds boom capacity chart), proceed to step 5.1 Perform Post Operational Duties*
- *No, (load does not exceed boom capacity chart), proceed to step 3.1 Is the Winch Line Synthetic or Wire Rope?*

Note: Do not attempt to make the lift if no combination of the Digger Derrick or Boom Truck and boom positions can lift the load safely.

3.0 Determine Safe Working Load (SWL) Limit of Winch Line

3.1 Is the Winch Line Synthetic or Wire Rope?

3.1.1 The Operator shall determine if the winch line is synthetic or wire rope.

- *Synthetic rope, go to step 3.2 Does the Load Exceed 4000 Lbs?*
- *Wire rope, go to step 3.3 Establish Safe Working Load(SWL) Limit Wire Rope*

3.2 Does the Load Exceed 4000 Lbs (Synthetic Rope)?

3.2.1 The Operator shall determine if the load that is to be lifted exceeds 4000 Lbs as multi parting of the line or using a piece of equipment with a greater load rating capacity shall be considered.

- *Yes, (Exceeds 4000 Lbs(Synthetic Rope)), go to step 5.1 Perform Post Operational Duties*
- *No, (Does not exceed 4000 Lbs(Synthetic Rope)), go to step 4.1 Prepare to Make a Lift*

3.3 Establish SWL Limit of Wire Rope

3.3.1 The Operator shall establish the Safe Working Load Limit of the wire rope.

- *Refer to the wire rope manufacturer's specifications*
- *If the wire rope manufacturer's specifications are not available then the following formula would apply: SWL= D^2 x 8* ***Note:*** *This formula is calculated in Tons*

3.4 Does the Load Exceed SWL of Wire Rope?

3.4.1 The Operator shall determine if the load that is to be lifted exceeds SWL of wire rope as using a piece of equipment with a greater load rating capacity shall be considered.

- *Yes, (Exceeds SWL of wire rope), go to step 5.1 Perform Post Operational Duties*
- *No, (Does not exceed SWL of wire rope), go to step 4.1 Prepare to Make a Lift*

4.0 Make a Lift

4.1 Prepare to Make a Lift

4.1.1 The Operator shall position the boom.

- *Ensure the area is clear*

4.1.2 The Operator shall lower the winch line to the load.

4.1.3 The Operator Assistant(s) shall safely rig the load.

- *Refer to IPT's Crane and Rigging Handbook*

4.2 Make a Lift

Note: Tagline(s) should be used to control the load when a risk is identified to the assistant(s) within the Hazard and Risk Assessment.

4.2.1 The Operator shall lift the load.

- *Ensure the area is clear*
- *Slowly raise the load a few inches, and hold momentarily to ensure the winch brake will hold the load*

4.2.2 The Operator shall slowly move the load to the desired location.

- *Ensure the area is clear*

4.2.3 The Operator Assistant(s) shall guide the load by hand or by a tagline(s), as required.

4.2.4 The Operator Assistant(s) shall unhook the winch line.

4.2.5 The Operator shall retract the winch line.

- *Ensure the area is clear*
- *Ensure the winch line is rolling up on the drum level*

5.0 Complete Post Operations

5.1 Perform Post Operational Duties

5.1.1 The Operator shall completely retract all boom extensions.

5.1.2 The Operator shall place the boom in the boom rest.

- *Ensure the area is clear*

5.1.3 The Operator Assistant(s) shall secure the boom in the boom rest.

- *Using the proper tie-down points as per manufacturer's specifications*
- *Stowing the boom with the winch line through the third stage is not allowed*

5.1.4 The Operator shall retract outriggers.

- *Ensure the area is clear*

5.1.5 The Operator shall disengage Power Take Off (PTO) as per manufacturer's specifications.

5.1.6 The Operator shall release parking brake.

5.1.7 End of Procedure.

10.0 Acronyms, Definitions and Symbols

Abbreviations and Acronyms:

PTO - Power take-off

SGL - Single

SOP - Standard Operating Procedure

SWL - Safe Working Load

WLL - Working Load Limit

Definitions

Blocking

The act of building up materials to stabilize outrigger pads, refer to IPT's Crane and Rigging Handbook.

Boom Truck:

A truck that is equipped with a hydraulically driven structure or device that

(a) is mounted on a turret that is secured to a truck,

(b) is supported to provide stability, and

(c) is equipped with a boom that

(i) is telescoping or articulating, and

(ii) can swing or hoist or raise and lower its load

Crane:

Equipment that is designed to lift loads, lower loads, and move loads horizontally when they are lifted.

Designated Signaller:

A worker designated pursuant to Occupational Health & Safety Regulations clause 132(1)(a) to give signals.

Pre:

(Prefix) before, earlier

Post:

(Prefix) after, later

Qualified Operator (OH&S Regulation 204):

(i) The holder of a journeyman's certificate in the crane and hoist operator trade issued pursuant to the Apprenticeship and Trade Certification Act;

(ii) The holder of a proficiency certificate in a sub trade of the crane and hoist operator trade issued pursuant to the Apprenticeship and Trade Certification Act;

(iii) an apprentice in the crane and hoist operator trade who is working under the direction of a person described in sub clause (i) or (ii); or

(iv) Any worker who:

(A) has received training, and has experience, in the safe operation of a crane that, in the opinion of the director, is equivalent to or superior to the training and experience of a person mentioned in [OH&S] sub clause (i), (ii) or (iii); or

(B) is a member of a category of workers whose training and experience in the safe operation of a crane, in the opinion of the director, is equivalent to or superior to the training and experience of a person mentioned in sub clause (i), (ii) or (iii).

Note: The approved SaskPower Digger derrick Training Program meets the requirements of Regulation 204(iv) (A)

Range of Motion:

Is the pick up and drop off points of the load.

Safe Work Load:

The maximum mass or force which the product is authorized to support in a particular service. This is based on a percentage of the ultimate load or breaking strength of the rigging.

Tagline:

A rope used to control the rotation and motion of the load.

Working Load Limit

The maximum mass or force which the product is authorized to support in a particular service. This is based on a percentage of the ultimate load or breaking strength of the rigging.

Symbols

N/A

11.0 SOP Components

SOP Component Name	SOP Component Type	SOP Component Description	Location of SOP Component
Digger Derrick or Boom Truck – Make a Lift – SGL Winch Line	Flowchart	The high level and mid-level flowchart for the procedure.	SOP Online – Digger Derrick or Boom Truck – Operations – Digger Derrick or Boom Truck – Make a Lift – SGL Winch Line

12.0 SOP Owner

SOP Owner
Operations Supervisor

13.0 References

References	Location of Resource
Synthetic Rope Study & Recommendations June 24, 2003	SafetyNet(Domino.Doc) for the official, controlled version
Safety Bulletin July 8, 2003	SafetyNet(Domino.Doc) for the official, controlled version