



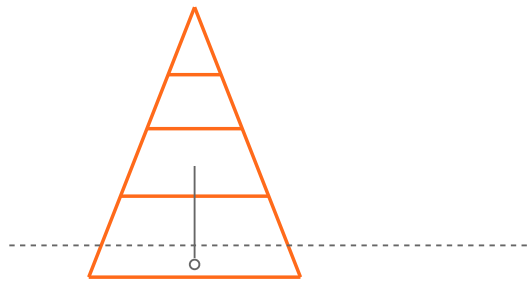
JMR LIFTING SOLUTIONS

Certified Heavy Lift Engineering

LIFT PLAN

Subsea Christmas Tree Deployment

Plan number: LP-2026-007



CLIENT	[CLIENT CONFIDENTIAL]
LOCATION	[LOCATION CONFIDENTIAL]
REVISION	Rev 0 — SAMPLE
DATE	02 August 2026
PREPARED BY	Muthuraj Jeyabal, LEEA Certified Appointed Person
AP CERTIFICATE NO.	8234-13608-8667-27-1
REVIEWED BY	JMR Lifting Engineering
STANDARDS	BS 7121 · LOLER 1998 · ASME B30

01 Executive Summary & Scope

Deployment of a subsea Christmas tree (XT) and spanner joint through the drill floor moonpool to 1500 m water depth, using the rig crane with guidewire-assisted lowering through the splash zone.

Key Parameters

Parameter	Value
Load weight (t)	78 t
Dimensions (L × W × H)	XT + spanner joint, approx. 6 m x 4 m x 5 m
Lift radius (m)	8 m
Lift height (m)	1500 m
Duration (est.)	12 hrs deployment
Location	Offshore drilling rig

Critical Risks

- Initial crane/radius selection required engineering revision — see Section 05
- Load overload beyond crane rated capacity at working radius
- Loss of control during dynamic/weather-sensitive lift phases
- Rigging failure due to incorrect sling angle or WLL selection
- Ground/foundation bearing failure under crane or outrigger loads

02 Load Data, Centre of Gravity & Dimensions

Subsea Christmas tree assembly with spanner joint, lowered through moonpool on guidewires to the seabed wellhead.

Weight Breakdown

Component	Weight
XT body & valves	61.0 t
Spanner joint	14.5 t
Running tool/attachments	1.5 t
Uncertainty allowance (1.3%)	1.0 t
Total	78.0 t

Centre of Gravity

Parameter	Value
X-axis	0.0 m from vertical centreline (X)
Y-axis	0.0 m (Y)
Z-axis	2.4 m above tree base (Z)

Lift Points

Single running tool interface on tree cap, guidewire posts at 4 corners

Dimensional Sketch

Simplified load outline with centre-of-gravity marker (not to scale):



03 Crane Selection & Configuration

Selected Crane: Rig floor crane

Parameter	Value
Rated capacity	100 t
Boom length	See configuration
Configuration	Drill floor crane, moonpool deployment, guidewire-assisted
Working radius	8 m
Capacity at working radius	100 t

Utilization Calculation

$(78 \times 1.30) / 100 = 101\%$ - exceeds safe working limit at surface - requires main hoist compensator. See revision note.

Utilization result: **101%** (exceeds 85% threshold — see revision note below)

Engineering Revision Note

WARNING: Initial utilization of 101% exceeds the safe working limit at the surface using the rig floor crane alone. **REVISED APPROACH:** deploy using a construction support vessel fitted with a 250 t Active Heave Compensated (AHC) crane, which reduces effective dynamic loading through the splash zone and provides adequate margin. Revised utilization = $(78 \times 1.30) / 250 = 41\%$, well within the 85% threshold.

Ground Bearing Pressure

Not applicable - floating drilling unit; deployment loads reacted through derrick/crane pedestal structure.

Standing / Pick Radius

Working radius maintained at 8 m throughout the critical lift phase.

04 Load Chart & Utilization Calculation

Manufacturer load chart extract for the selected boom/jib configuration:

Radius	Capacity
4 m	100 t
6 m	95 t
8 m → WORKING POINT	100 t
10 m	88 t
12 m	78 t

Dynamic Amplification Factor (DAF)

DAF applied: **1.3**

Total Lifted Load Including DAF

$(78 \times 1.30) / 100 = 101\%$ - exceeds safe working limit at surface - requires main hoist compensator. See revision note.

Ground Pressure Calculation

Not applicable - floating drilling unit; deployment loads reacted through derrick/crane pedestal structure.

05 Rigging Configuration

Parameter	Value
Sling type	Wire rope running tool sling with guidewire posts
Sling angle (min.)	90°
Number of slings	1
WLL per sling	110 t
Shackle grade	Crosby G-2150 150 t bow shackle, subsea rated
Spreader / master link	N/A - single-point running tool interface

Rigging Schematic (Summary)

Component	Specification
Hook / block	Rated to crane main hoist capacity, latch-equipped
Master link / spreader	N/A - single-point running tool interface
Sling legs	1 × Wire rope running tool sling with guidewire posts
Shackles	Crosby G-2150 150 t bow shackle, subsea rated
Sling angle from horizontal	90° (minimum safe angle 60° unless noted)

Sling Length Calculation

With a sling angle of 90° from horizontal, sling length is derived from headroom and spread geometry per rigging arrangement drawing; angle maintained $\geq$ the minimum safe angle for the configuration.

06 Rigging Load Calculations

Individual Sling Load

Formula: Sling load = (Load × DAF) ÷ (n × sin θ)

Single-point lift: (78 × 1.30) = 101.4 t -> select 110 t WLL running tool sling; splash-zone DAF 1.30 applied

Parameter	Value
Calculated sling load	101.4 t
Selected sling WLL	110 t
Sling utilization	92.2%
Sling safety factor (design)	5:1 minimum
Shackle safety factor (design)	4:1 minimum

Safety Factor Basis

All wire rope slings are selected to a minimum design factor of 5:1 against minimum breaking load, in accordance with LEEA COPSULE guidance. All shackles are selected to a minimum design factor of 4:1. Working load limits (WLL) are marked and certificated per item.

07 Ground Bearing & Site Layout

Ground Bearing Pressure

Not applicable - floating drilling unit; deployment loads reacted through derrick/crane pedestal structure.

Crane Pad / Matting

N/A - floating unit, DP-assisted station-keeping

Site Plan (Schematic)

Simplified site layout showing crane standing position, load path, and exclusion zone (not to scale):



08 Risk Assessment (BS 7121 Format)

Risk scoring uses Likelihood (L) × Severity (S), each rated 1–5. Residual score after controls is shown in the right-hand columns.

Hazard	L	S	Score	Controls	L	S	Score
Overload beyond crane capacity	3	5	15	Load chart verified; utilization capped below 85%; independent AP check	1	5	5
Crane mechanical/structural failure	2	5	10	Pre-use inspection; current LOLER thorough examination certificate	1	5	5
Load drop during lift	2	5	10	Certified rigging, redundant sling legs, trial lift at 25% load	1	5	5
Adverse weather conditions	3	3	9	Weather forecast monitoring; defined go/no-go thresholds	1	3	3
Personnel struck by load/rigging	3	4	12	Exclusion zone enforced; banksman control; no personnel under suspended load	1	4	4
Ground/foundation failure	2	5	10	Ground bearing calculation verified; crane mats/pads sized to load	1	4	4
Sling/shackle failure	2	5	10	Certified rigging to 5:1 (sling) / 4:1 (shackle) design factor; pre-use inspection	1	5	5
Overhead obstruction contact	2	4	8	Route survey completed; spotter assigned; boom angle indicator monitored	1	3	3
Splash-zone dynamic loading	4	4	16	AHC crane required (revised from 100 t rig crane); water entry velocity limited to <0.5 m/s	2	4	8
Overload at surface (101% util.)	4	5	20	REVISED: switch to 250 t AHC vessel crane; utilization reduced to 41%	1	5	5

Risk score key: **1–6 Low** · **7–12 Medium** · **13–25 High** — all residual scores must be Low or Medium with documented additional controls before lift authorization.

09 Method Statement

1. Confirm current LOLER thorough examination certificates for crane(s), rigging, and lifting accessories.
2. Conduct toolbox talk with all lift personnel; confirm roles per Section 11.
3. Establish exclusion zone and barrier the lift area; brief banksman and signaller.
4. Verify revised crane selection and working radius per Section 03/04 engineering revision note before mobilization.
5. Position crane(s) on verified ground bearing / matting per Section 07; set outriggers (if mobile) to full extension.
6. Rig load per configuration in Section 05; attach taglines; conduct visual rigging inspection.
7. Perform trial lift: raise load approximately 300 mm, hold at 25% of test criteria for a minimum dwell to verify rigging geometry, crane response, and brake holding.
8. Confirm sling angles, load indicator readings, and COG behavior match plan before proceeding.
9. Execute main lift at working radius 8 m
10. Travel/luff/slew load along planned path, maintaining radius and load chart compliance throughout.
11. Position load over set point; lower under controlled taglines to final bearing/foundation.
12. Confirm secure landing, release rigging tension gradually, and inspect for damage.
13. De-rig, remove accessories, and return crane to travel/stow configuration.
14. Conduct post-lift debrief and close out permit-to-work documentation.

10 Roles & Responsibilities

Role	Assignment
Appointed Person	Muthuraj Jeyabal, LEEA Certified Appointed Person (Cert. No. 8234-13608-8667-27-1) — overall lift planning responsibility
Lift Supervisor	[TBD — assigned at mobilization, LEEA/CPCS certified]
Crane Operator(s)	[Certified operator(s), current CPCS/NPORS or equivalent license]
Slinger / Signaller	[Certified slinger/signaller per LEEA/CPCS standard]
Banksman	[Certified banksman — controls exclusion zone and ground personnel]
Reviewed by	JMR Lifting Engineering

Contact

JMR Lifting Solutions — contact@jmrlifting.com

SAMPLE

11 Approvals & References

Signature Block

Role	Name	Signature / Date
Appointed Person	Muthuraj Jeyabal, LEEA Certified Appointed Person	
Client Representative	[CLIENT CONFIDENTIAL]	
HSE Representative	[TBD]	
Client Project Manager	[CLIENT CONFIDENTIAL]	

References

- BS 7121-1:2016 — Code of practice for the safe use of cranes
- LOLER 1998 — Lifting Operations and Lifting Equipment Regulations (UK)
- ASME B30.5 — Mobile and Locomotive Cranes
- LEEA COPSULE — Code of Practice for the Safe Use of Lifting Equipment
- Crane manufacturer load chart (referenced Section 04/05)

This document is a SAMPLE lift plan produced for demonstration purposes only. It does not constitute an approved lift plan for any live lifting operation. Actual JMR Lifting Solutions project deliverables include site-specific surveys, certified equipment schedules, and a signed authorization prior to any lift.