



الشركة العمانية للغاز الطبيعي المُسال ش.م.م.
Oman LNG L.L.C.

PROCEDURE FOR THE INSPECTION AND TESTING OF LIFTING AND HOISTING EQUIPMENT

This document contains 12 pages

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Critical

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Changes from previous issue are indicated in the table below

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1. Purpose

This procedure details the responsibilities and process of ensuring that all hoisting and lifting equipment in addition to harnesses and lanyards **in use at O LNG Qalhat Complex** are in a safe working condition.

2. Scope

This procedure applies to all engineering staff and engineering contractors working at the O LNG Qalhat Complex and covers both stationary and mobile lifting equipment. This procedure covers O LNG owned equipment only, the GMS and other general onsite contractors shall have in place a similar procedure which covers their own equipment.

This procedure is applicable to but not limited, to the following types of equipment:

- Run Way Beams
- Beam Trollies
- Manual Operated Hoists (Chain Blocks)
- Wire Rope Slings Turnbuckles
- Bundle Puller
- Webbing Slings
- Eye Bolts
- Shackles
- Master Links
- Electric Overhead Travelling Cranes (Bridge Cranes)
- Mobile Hydraulic Jack Cranes
- Truck Mounted Cranes
- Mobile Cranes.
- Scissor Lifts
- Cherry Pickers
- Fork Lifts
- Harnesses and Lanyards
- Fall arrestors
- Material and Man basket
- Lifting Beams (Spread Beams)

Exclusion:

- All elevators, loading arms, mooring dolphins and ballard's shall be inspected and checked by the OEM, or a competent contractor. This shall be covered in a separate Maintenance service contract.
- Guying and stay wires and other items subject to static loading conditions only.
- Wire ropes arrangements used for pulling.

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- Ladders

3. Definitions

- **Certified¹ Contractor** - third party contractor who will perform qualification test on hoisting/rigging/lifting apparatus and issue conformance certificate.
- **Colour Code** – paint indicator/Tie wraps, which signifies the validity period as defined in the code table.
- **Contract Owner (QEN/2)** - the individual who in coordination with the contract engineer is responsible for the definition of work scope and monitoring/evaluation of contractor's performance.
- **Equipment Owners (QEN/1)** - shall be the following; Maintenance Coordinators are responsible for all equipment in their respective areas i.e. Process and Utilities. The Workshop Engineer shall be responsible for all other equipment including the Offsite area.
- **GMS** is the General Maintenance Services.
- **Hoisting/Rigging/Lifting Equipment** (stationary and/or mobile) - are any tool or device used in lifting, pulling, suspending and supporting loads. It can be used as one or a combination of one or more tools/devices.
- **Inspection** in this procedure refers to visual inspection carried out with sufficient detail to make a decision.
- **L.E.E.A** is the Lifting Equipment Engineers Association, the globally recognized trade association for all those involved in the design, manufacture, hire, repair, refurbishment, maintenance and use of lifting equipment.
- **CMMS** - the computerized maintenance management system used at OLNQ Qalhat Complex
- **Proof test** is the application of a proof load 125 % of the Safe Working Load (SWL) to ensure the hoisting equipment is suitable for its stated Safe Working Load.

¹ **Certified contractor** - authorized by a recognized standard body to perform inspection/testing/calibration and issue certificate(s) of conformance(s).

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4. Responsibilities

4.1 Contract Owner - QEN/2

- The contract owner shall ensure that a valid contract for the inspection and testing is in place and the certified contractor has the necessary devices and qualified personnel to perform the tasks, i.e., personnel have passed a qualification test. QEN/2 must ensure that the certified contractor is authorized by an internationally recognized body to issue conformance certificates.
- Testing and inspection frequency for heavy equipment shall be on a yearly basis as per **Table 5.4.1**.
- loose lifting equipment such as webbing slings, Shackles, I Bolts and harness/lanyards are inspected on a 6 monthly basis. They shall be inspected by the authorized QEN/2 inspector or it can be contracted to certified third party inspector on a 6 monthly basis and colour coded in house by the equipment owner.
- Harnesses and Lanyards with shock absorber visual inspection is managed by QEN/2 either through own Oman LNG QEN/2 inspectors or be contracted to certified third party inspector on 6 monthly basis and color coded in house by the equipment owner.

4.2 Equipment Owners – QEN/1

- The equipment owners shall be responsible for keeping the inventory of all equipment in their respective areas and registered in the CMMS.
- The owners shall be responsible of ensuring timely equipment inspection in accordance to the inspection and testing schedule set/defined in the CMMS.
- Discarding of damaged/defective equipment shall be responsibility of the equipment owner.
- Repair and re-inspection/certification shall be the owner's responsibility and inspection /recertification shall be performed by approved third party inspector under supervision of Oman LNG QEN/2 inspector.

4.3 OLNG Inspectors

- OLNG QEN/2 inspectors shall verify (actual Vs the CMMS) if appropriate colour codes are in effect/done regularly.
- The CMMS history entry/updating shall be the responsibility of the OLNG QEN/2 Inspectors.

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- If at any one-time equipment inspection by the Certified Persons or Contractor is not possible, the combined efforts of OLNG QEN/2x Inspector, equipment owner engineer and equipment owner supervisor shall be utilized. They shall use best practical engineering judgment; however, inspection by the Certified Persons or Contractor shall be carried out in the earliest opportunity in no later than 4 weeks past the due date.
- All repairs/defects and corrective actions highlighted during inspections shall be entered as work orders in the CMMS by the QEN2 Inspector.

4.4 Certified Contractor

- The Contractor shall provide calibrated load cells to perform load tests. Where practicable, the main mechanical workshop facilities may be used to perform these tests.
- For equipment not conforming to the set criteria, the Contractor shall put in writing a non-conformance report with recommended corrective actions addressed to the OLNG Inspectors and asset owners and agree on the required actions and re-inspection dates.

4.5 Hired Equipment

- Hired-in equipment which is required on an ad-hoc/shutdown basis shall be visually inspected by joined team consist OLNG QEN/2x Inspector, workshop engineer and respective area supervisor.
- The purpose of visual inspection is to find out any damage in equipment which consider a potential hazard which could contribute to accidents. The inspection should cover but not limited the following: any item within equipment having abnormal wear and tear, item malfunction, oil leakage, overheating, corrosion, abnormal noise, dislocation, visual crack, misalignment, overloading, abnormal slackening or elongation, and excessive vibration.
- QEN/2 inspector shall verify the equipment has valid certification and is operated by qualified operators prior to entry onto OLNG premises. Valid inspection certificates to be maintained by QEN/2 for the period of equipment being in OLNG.
- The workshop engineer-in-charge shall be responsible for writing the final performance evaluation of the contractor for future reference.
- The requester for the equipment shall ensure that the contractor providing these equipment has valid inspection certificates and qualified operator.

4.6 Equipment Routine Check

For mobile lifting equipment, a daily functionality check by the operator shall be done prior to use/entry into the complex, furthermore, on every first day of the week a thorough functionality check including engine condition shall be performed. Each contractor shall be responsible for the inspection and testing of their own equipment.

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4.7 Pre- use Inspection

Pre- use checks must be carried on the lifting equipment before the lifting equipment is used by the user though it is color coded. The objective of such checks is to pick up faults due to day-to-day wear and tear and malfunction of safety related equipment. If any defects are found the user or operator should report the defect to equipment owner or to QEN/2 inspectors in order to take the necessary, rectify action.

5. Procedure

5.1 Inspection Interval

All hoisting heavy lifting equipment such listed in table 5.4.1 shall undergo a yearly inspection. While loose lifting equipment shall undergo to a 6 monthly inspection cycle.

All lifting equipment shall be inspected within a period no longer than two months. The inspection shall be no earlier than 1 month prior to the due date, as per the CMMS schedules and no more than one month after the due date.

All equipment shall be tested as per the guidelines laid down in the Occupational Health and Industrial Safety Precautions, Decision No 19 dated 5 June 1982, L.E.E.A and as per relevant British or ASME Standards.

Runway beams located within compressor and GTG enclosures shall be inspected on an opportunity basis as access is limited whilst online.

5.2 GMS - Contractor

GMS contractor shall follow Oman LNG procedure for inspection and testing of hoisting and lifting equipment. It is the responsibility of the on-site Contractor to ensure that Contractor owned hoisting and lifting appliances operated by his company are safe and in good condition. All this hoisting equipment to be used at O LNG plant is required to be inspected/proof tested and passed by the Contractor Inspection department or, appropriate third inspection parties. The Contractor shall maintain evidence of the acceptance status of his lifting equipment upon request.

5.3 Colour Coding

A Colour Coding System (see figure 5.3.1) is used to indicate the validity period of hoisting equipment. The annual colour code shall be applied in an area where it is clearly visible. For loose lifting equipment it should be practical to colour code the entire side of the body. For some smaller items and nylon slings, tie wraps of the proper colour can be used or if the item has a metal tag the colour code shall be applied at the back side.

The area maintenance coordinator (AMC) designated for specific area is responsible for colour coding of the lifting equipment in his area.

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		Yearly Colour Code	6 Monthly Colour Cycle
Odd Years	2019	Yellow	Yellow
	2021		Blue
	2023		
	2024		
Even Years	2020	White	White
	2022		Green
	2024		
	2025		

Figure 5.3.1: Colour coding system in OLN

For OLN, the above mentioned colours in Figure 5.3.1 are used to represent the validity period of lifting/hoisting equipment. For yearly inspections the colour code shall be recycled every two years period odd year and even year in such a way that every odd year shall have yellow colour coding while white colour coding for every even year, e.g., yellow shall be used in 2013 and so on. The inspection for both yearly and 6 monthly can be spread over a period of maximum two months in order to balance the workload. Therefore, for equipment on a yearly inspection cycle and also for 6 monthly, both yellow and white are valid in Dec and Jan (odd and even years). In addition, for equipment on a 6 monthly inspection cycle, both yellow and blue are valid on June and July of every odd year and white and green for every even year.

It is not mandatory for external contracts apart from GMS contract to follow OLN colour coding system as far as they are implementing their own colour coding system. The Contractor shall maintain evidence of the acceptance status of his lifting equipment upon request.

Note: Colour coding is not necessary for runway beams as they are in higher elevation and not practical to be colour coded.

5.4 Identification Markings in the CMMS

Each piece of hoisting and lifting equipment as defined in the scope shall be suitably marked with a unique OLN identification number. Marking may be via a sticker, a plate or painted.

The equipment identification number shall consist of a prefix (as listed in Table 5.4.1) and a sequential number. The identification numbers for all lifting/hoisting equipment shall be registered in the CMMS as Equipment numbers against a tag.

This Equipment number is retained by the item throughout its existence, irrespective of its service and never duplicated or reused for other equipment. For Runway Beams a unique ID Number as well as the SWL is to be marked on the Beam.



Hoisting equipment, which does not bear the original manufacturers SWL markings, shall not be used at OLNG.

The table below shows identification tag numbers to be used at OLNG:

Equipment	Prefix	Insp. Frequency
Bundle Puller	BP...	6 Monthly Insp
Manual Operated Hoist (Chain Block)	CBLB/LCH ...	6 monthly Insp
Beam Trollies	TRLB...	1Yearly Insp
Turnbuckles	TB	6 monthly Insp
Shackles	SH ...	6 Monthly Insp.
Wire Slings	SL/A/TL/WR	6 Monthly Insp
Webbing Slings	FW or RW...	6 Monthly Insp.
I Bolts	EB ...	6 Monthly Insp.
Master Links	ML	6 Monthly Insp.
Harnesses and Lanyards	HR...	6 Monthly Insp.
Fall Arrestors	FA	6 Monthly Insp.
Fork Lifts	WMV ...	1Yearly Insp/ Load Test 4 Yearly.
Mobile Hydraulic Jack Cranes	WMV...	1Yearly Insp.
Truck Mounted Cranes	WMV ...	1Yearly Insp.
Mobile Cranes	WMV ...	1Yearly Insp/ Load Test 4 Yearly.
Scissors lifts	WMV ...	1Yearly Insp.
Cherry Picker	WMV ...	1Yearly Insp.
Run Way Beams	RB ...	1Yearly Insp.**
Winches	WN ...	1Yearly Insp**.
Electric Overhead Travelling Cranes	Tag ...	1Yearly Insp/ Load Test 4 Yearly.

**Visual yearly Inspection and load tested only prior to use.

Table 5.4.1

For all large pieces of equipment, the identification marking shall be stencilled onto the equipment in a visible location, these include overhead cranes, runway beams, mobile cranes and winches,

The smaller items shall be hard stamped on the crimping ferrules or attaching a labelled durable plate to a visible location, these include chain blocks, slings, shackles, eyebolts, master links and strops.

5.5 Reporting

On completion of testing and inspection, the Certified Contractor shall re-certify the equipment for the next validity period.

The QEN/2 Inspector shall issue an inspection report on the (small) lifting equipment inspected by him.

Original signed certificates shall be kept in a folder located in QEN/2 section
EDMS\QEN\QEN2\common\Inspection\Lifting Equipment



5.6 Record Keeping

All certificates of conformance and other related documents shall be filed in the QEN/2 section filing system. All inspection records shall be entered into the CMMS system under the relevant Tag/System No. The updating of the CMMS work order history record is the responsibility of the QEN/2 Inspectors.

Inspection and Testing records shall be kept for 5 years.

6. References

- Section 7, Chapters 2, 3 & 4; OLNQ Safety Regulations.
- Oman Occupational Health Safety Precautions, Decision No 19 dated 5 June 1982.
- ASME B30.9 / BS EN 13414-1 (Slings).
- ASME B30.5 (Mobile and Locomotive Cranes).
- ASME B30.17 (Overhead and Gantry Cranes).
- BS EN 13889-1 (Bow Shackle Screw Pins).
- BS 3243 (Chain Blocks).
- BS 2853 (Runway Beams).

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7. Appendixes

Appendix 1 - Work flow diagram for the inspection and testing of lifting and hoisting equipment at OLNG.

Appendix 1:

