

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 1 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

Inspection Procedure of Offshore Containers

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 2 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

Contents	Page
1 YOUR SAFETY IS FIRST	3
2 SCOPE	3
3 REFERENCE STANDARDS	3
4 DEFINITION OF OFFSHORE CONTAINERS	3
5 OFFSHORE CONTAINERS' RATING	3
6 INSPECTION, EXAMINATION AND TESTING OF OFFSHORE CONTAINERS	4
6.1 PERIODIC INSPECTION / EXAMINATION AND TEST	4
6.2 LIFTING TEST – PROOF LOAD TEST	4
6.3 NON-DESTRUCTIVE TESTING (NDT)	5
6.4 VISUAL INSPECTION	6
6.5 OFFSHORE CONTAINER DATA PLATE	7
6.6 OFFSHORE CONTAINER INSPECTION PLATE	7
7 INSPECTION, EXAMINATION AND TESTING OF LIFTING SETS	8
7.1 PERIODIC INSPECTION / EXAMINATION AND TEST	8
7.2 PROOF LOAD TEST OF CHAIN SLING LEGS	8
7.3 NON-DESTRUCTIVE TESTING (NDT)	8
7.4 VISUAL INSPECTION OF LIFTING SET	8
7.5 MARKING OF LIFTING SET	9
8 REPORTING AND CERTIFICATION	9
9 Inspector Competency and Qualification	9

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 3 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

1. YOUR SAFETY IS FIRST:

Your safety wear is mandatory at job sites including in general: suit, shoes, helmet, gloves, ear plugs, glasses, and mask.

2. SCOPE:

This Procedure covers the inspection and testing of offshore freight and service containers (built in accordance with BE EN ISO 10855-1, with maximum a gross mass not exceeding 25,000 kg) and their associated lifting sets.

3. PRODUCT/ MANUFACTURE STANDARDS:

BS EN ISO 10855-1:2018	<i>Offshore containers and associated lifting sets - Part 1: Design, manufacture and marking of offshore containers</i>
BS EN ISO 10855-2:2018	<i>Offshore containers and associated lifting sets - Part 2: Design, manufacture and marking of lifting sets</i>
BS EN ISO 10855-3:2018	<i>Offshore containers and associated lifting sets - Part 3: Periodic inspection, examination and testing</i>

4. DEFINITION OF OFFSHORE CONTAINERS:

An offshore container is a "portable unit, specially designed for repeated use in the transport of goods or equipment to, from, or between fixed and/or floating offshore installations and ships.



5. OFFSHORE CONTAINERS' RATING:

This information to be used for proof load testing of offshore containers, and to be checked for presence in container's marking (offshore container plates).

R: is the rating of an offshore container: the maximum gross mass including permanent equipment and weight of the cargo, but excluding the weight of the lifting set.

$$R = P + T$$

Where:

P: is the payload: the maximum permissible mass of cargo which may be safely transported by the offshore container.

T: Tare weight (tare mass): the mass of the empty container.

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 4 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

6. INSPECTION, EXAMINATION AND TESTING OF OFFSHORE CONTAINERS:

6.1. PERIODIC INSPECTION / EXAMINATION AND TEST:

Offshore containers shall be inspected, examined, and – if necessary – proof load tested at intervals as recommended in **Table 1 – BS EN ISO 10855-1:2018**, as follows:

- At intervals not exceeding 12 months (annually): The inspection schedule consists of a Visual Inspection, the suffix to be marked on the inspection plate for this type is (V)
- At intervals not exceeding 48 months (4 years): The inspection schedule consists of Non-Destructive Testing (NDT) and Visual Inspection, the suffix to be marked on the inspection plate for this type is (VN)
- After substantial repair of alternation: The inspection schedule consists of Lifting Test (Proof Load Test), Non-Destructive Testing (NDT), and Visual Inspection, the suffix to be marked on the inspection plate for this type is (T).

The substantial repair / alternation is any repair / alternation performed on the container which may have an effect on the container or its elements that contribute directly to the integrity of the structure.

Note: If the inspection schedule includes a lifting test (proof load test), the NDT and visual inspection are both carried out after the lifting test.

6.2. LIFTING TEST – PROOF LOAD TEST:

- Lifting tests (proof load test) are performed after substantial repair or alternation.
- Prior to the test, the lifting points welds and adjacent areas (HAZ) shall be inspected for defects that may affect the integrity of the test, using NDT methods to detect surface cracks and other defects, such as MPI.
- For the lifting test, the container is loaded to give a total mass of $2.5 \times R$, and lifted using all pad eyes, this total mass can be obtained by putting an internal test mass / weights of:

$$(2.5 \times R) - T.$$
- Test load shall be evenly distributed inside the offshore container, if the mass put inside the container is insufficient, the rest of the load may be placed outside or under the container, provided that this gives a loading on structure similar to the distribution of the container loading in operating condition.
- After putting the required test loads, the container shall be lifted carefully by a lifting set with an angle to the vertical = design angle, and shall be suspended clear of the ground (at a height of 15 cm approx.) for a period of five minutes.
- After five minutes, measurements shall be taken: no deflection during the test shall be greater than $1/300$ of the span of the member. The container, and its lifting points, shall be post-test examined (Visual and NDT): it shall not show any signs of permanent deformation or other defects after the test.

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 5 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

6.3. NON-DESTRUCTIVE TESTING (NDT):

NDT are performed on lifting points (pad eyes) welds and adjoining structures. NDT methods shall be chosen with due regard to the conditions influencing the sensitivity of the methods.

Structural welds are examined as per **Table 7 – BS EN ISO 10855-1:2018**, as follows:

- Essential / Non-redundant primary structure: shall be inspected by
 - VT 100% of structure
 - MPT 100%, or LPT in case of examining a non-magnetic material such as aluminum
 - UT 100% of pad eyes and 20% of other structure parts, UT is performed depending on the thickness of the material to be examined, and the possibility
 - RT 10%, RT is performed depending on the thickness of the material to be examined, and the possibility
- Non-essential primary structure: shall be inspected by
 - I. VT 100%
 - II. MPT 20%, or LPT in case of examining a non-magnetic material such as aluminum
 - III. UT 20%, UT is performed depending on the thickness of the material to be examined, and the possibility
 - IV. RT 10%, RT is performed depending on the thickness of the material to be examined, and the possibility
- Secondary structure: shall be inspected only by VT (100%).

NDT methods are performed in accordance with the standard mentioned in **Table 2 – BS EN ISO 10855-3:2018**, as follows:

- VT: in accordance with (ISO 17637: *Non-destructive testing of welds — Visual testing of fusion-welded joints*)
- MPT: in accordance with (ISO 17638: *Non-destructive testing of welds — Magnetic particle testing*)
- LPT: in accordance with (ISO 3452-1: *Non-destructive testing — Penetrant testing — Part 1: General principles*)
- UT: in accordance with (ISO 17640: *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment*)
- RT: in accordance with (ISO 17636-1: *Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film*) and (ISO 17636-2: *Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors*)

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 6 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

The resulted indications shall be evaluated in accordance with acceptance criteria standards mentioned in **Table 3 – BS EN ISO 10855-3:2018**, as follows:

- **VT:**
 - For welds, of steel, nickel, titanium, and their alloys: ISO 5817: *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections - Level B*
 - For aluminum welds: ISO 10042: *Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections*
- **MPT – Level 1:** ISO 23278: *Non-destructive testing of welds — Magnetic particle testing — Acceptance levels*
- **LPT – Level 1:** ISO 23277: *Non-destructive testing of welds — Penetrant testing — Acceptance levels*
- **UT – Level 2:** ISO 11666: *Non-destructive testing of welds — Ultrasonic testing — Acceptance levels*
- **RT – Level 1:** ISO 10675-1: *Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 1: Steel, nickel, titanium and their alloys* (For aluminum, ISO 10675-2 shall be applied)

6.4. VISUAL INSPECTION:

- **General:**

The visual inspection shall include the exterior and interior of the empty container, the inspection shall include all load bearing parts, where adequate access to these parts is provided.

The inspection shall be carried out in a sufficient lighting conditions, and in an area providing suitable and safe means for lifting and supporting the container for the purpose of inspecting the underside.

The body shall be checked for dents, tears, or any signs of defects.

- **Marking:**

Marking plates (as per 6.5. and 6.6.) shall be checked.

- **Welds:**

Primary structure welds and adjacent areas (HAZ) – both inside and underside - shall be checked for cracks, corrosion, signs of overloading, or any other signs of defects.

- **Pad eyes and lashing points:**

All pad eyes and lashing points shall be visually examined both from inside and outside to ensure they are free from defects such as nicks, gouges, wear, distortion, elongation and any signs of cracking, distress or overload.

The diameter of holes in pad eyes shall match the shackle used, tolerance between shackle bolt and pad eye hole diameter shall not exceed 6% of the nominal shackle bolt diameter.

- **Structure:**

The structure shall be checked for corrosion, mechanical damage, or deformation.

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 7 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

- **Doors:**

Doors, frames, seals, hinges, locks, etc. shall be visually and functionality checked to ensure that they operate in a satisfactory manner without undue force being required.

- **Floor:**

The floor shall be checked - inside and underneath - for deformation, or signs of distress or overload (the floor shall be substantially flat).

Floor bears shall be checked to make sure they are free from corrosion.

Drainage facilities – where fitted – shall be checked, e.g. drain holes shall be free of debris.

- **Forklift pockets:**

If the offshore container is equipped with forklift pockets, these shall be checked for having the proper opening, for deformation, and the distance between the centers of forklift pockets at the same side.

6.5. OFFSHORE CONTAINER DATA PLATE:

The container shall be checked for the presence of (OFFSHORE CONTAINER DATA PLATE) in a clear and visible position (e.g. door). The following information shall be clearly and legibly marked on the data plate:

- Name of manufacturer
- Manufacturer's serial number;
- Month and year of manufacture;
- Maximum gross mass (R) in kilograms, excluding lifting set, at the design sling angle;
- Tare mass (T) in kilograms;
- Payload (P) in kilograms and intermediate deck payload (if applicable);
- Statement of conformity number / Certificate number – and identification of body issuing the statement of conformity;
- Design temperature;

6.6. OFFSHORE CONTAINER INSPECTION PLATE:

The container shall be checked for the presence of the (OFFSHORE CONTAINER INSPECTION PLATE) in a clear and visible position (e.g. door). The following information shall be clearly and legibly marked on the inspection plate:

- Owner's information, and container number (as per owner)
- Date of last inspection(s), the date of next inspection shall not be written on this plate.

The inspection plate may be combined with the data plate.

After the satisfactory completion of the inspection, examination, and/or test, the inspection plate shall be permanently marked with the following:

Inspection date (Year / Month / Day), together with the unique identification mark of AI Takamul, together with:

- Suffix **T**: for Proof Load Test + NDT + Visual inspection
- Suffix **VN**: for NDT + Visual inspection
- Suffix **V**: for Visual inspection only

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 8 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

7. INSPECTION, EXAMINATION AND TESTING OF LIFTING SETS:

7.1. PERIODIC INSPECTION / EXAMINATION AND TEST:

Lifting sets shall be periodically inspected, examined, and tested as per **table 4 – BS EN ISO 10855-3: 2018**, as follows:

- For initial certification: the complete lifting set shall be inspected as per the requirements of ISO 10855-2.
- At intervals not exceeding 12 months: The inspection schedule consists of a Visual Inspection of the complete lifting set, the suffix to be marked on the sling tag for this type is (V)
- At intervals not exceeding 48 months: The inspection schedule is as follows:
 - For sling components (except for legs): A Visual inspection and either NDT or Proof Load Test, for visual inspection and NDT: the suffix to be marked on the sling tag is VN, for visual inspection and proof load test: the suffix to be marked is T.
 - For chain sling legs: A Visual inspection and either NDT or Proof Load Test, for visual inspection and NDT: the suffix to be marked on the sling tag is VN, for visual inspection and proof load test: the suffix to be marked on the sling tag is T.
NDT for chain sling legs is performed on the end links for each leg plus 10% of leg length, the location of the 10% length to be inspected is determined upon the visual inspection.
 - Shackles and wire rope legs: only visually inspected, with no suffix to be marked.
- After substantial repair of alternation: The inspection schedule of the complete lifting set consists of Proof Load Test, NDT, and Visual Inspection, the suffix to be marked on the sling tag for this type is T. A substantial repair / alternation is any repair / alternation performed which may affect the integrity of the lifting set.

Note: If the inspection schedule includes a proof load test, the NDT and visual inspection are both carried out after the lifting test.

7.2. PROOF LOAD TEST OF CHAIN SLING LEGS:

A proof load test of $(2,5 \times WLL) \pm 2\%$ of a single chain leg shall be applied to each leg without shock. The load shall be applied for a minimum of 5 min before measurements are taken.

7.3. NON-DESTRUCTIVE TESTING (NDT):

NDT may be applied to sling components except for wire rope slings, Magnetic Particles inspection shall be applied to detect surface defects, the standards for inspection and acceptance criteria for MPI are as per tables (2) and (3) - BS EN ISO 10855-3:2018.

7.4. VISUAL INSPECTION OF LIFTING SET:

Chain slings, wire rope slings, shackles, and other components shall be visually inspected as per related ATS lifting inspection procedures.

	AI TAKAMUL COMPANY FOR ENGINEERING TESTS AND PROFESSIONAL SAFETY LIMITED Lifting Inspection	Doc No: QC-LIF-P-015
		Level: 3
		Page 9 of 9
Title: Inspection Procedure of Offshore Containers		Rev: 2
Established By: Ashraf Elsaid	Position: Lifting Supervisor	Date: JULY-2022
Approved By: Ahmed Mohamed	Position: Operation Manager	

7.5. MARKING OF LIFTING SET:

After the satisfactory completion of the inspection, examination, and/or testing, the lifting set inspection shall be marked either with an identification tag, or alternatively by one of the marking methods described in BS EN ISO 10855-2:2018.

Marking shall include the following:

Inspection date (Year / Month / Day), together with the unique identification mark of AI Takamul , together with:

- Suffix **T**: for Load Test + NDT + Visual inspection
- Suffix **VN**: for NDT + Visual inspection
- Suffix **V**: for Visual inspection only

This marking shall be placed on the identification tag or on the ferrule (of wire rope slings) as applicable.

8. REPORTING AND CERTIFICATION:

A certificate of test and thorough examination will be issued upon the satisfactory completion of the examination, i.e. the lifting equipment is safe to operate

A defect report will be issued if the lifting equipment fails to meet the requirements.

9. Inspector Competency and Qualification:

Inspector shall have minimum qualification of LEEA Foundation – LEEA Offshore Container Examination

