

ACC

Acceptable Container Condition.

International Tank Container Organisation.

International Tank Container Organisation.

Suite 3, Charter House,
26, Claremont Road,
Surbiton, KT6 4QZ.
United Kingdom.

www.itco.org

ITCO Secretary.
Patrick Hicks.
Email: hicks@itco.org
www.itco.org

ITCO ACC Edition September 2017 ©

Liability Exclusion.

These guidelines were prepared with industry consultation.

Acceptable Container Condition is a general inspection guide and does not apply to a specific tank design.

The guidelines are intended for professionals only, qualified inspectors who have completed appropriate training, including training in health and safety requirements.

ACC does not take precedence over any contractual terms between parties, statutory regulation or the requirements of the Competent Authority.

Shippers, operators, carriers, service providers and others should carry out their own risk assessment of all matters contained within these guidelines and ensure the tank is fit for purpose, safe and reliable for transport and in accordance with the regulations.

The International Tank Container Organisation offer no warranty in relation to the completeness and accept no liability whatsoever for any events resulting from use of ACC Inspection Guidelines.

Contents.

- i. Introduction.
- i. Health and Safety.
- iii. Definitions.
- iv. Cleaning terminology.
 - 1. Cleanliness.
 - 2. Frame.
 - 3. Paintwork.
 - 4. Walkway and Ladder.
 - 5. Insulation and Cladding.
 - 6. Spillage compartments.
 - 7. Manway Assembly.
 - 8. Pressure Relief Device.
 - 9. Top Valves.
 - 10. Tank shell (Pressure Vessel).
 - 11. Bottom Valves.
 - 12. Heating.
 - 13. Markings.
 - 14. Miscellaneous.
 - 15. Test.

Appendix.

- A Cleanliness Certificate.
- B Internal Inspection Report.
- C Standard Seals and Gaskets.
- D Paintwork, Corrosion.

ii. Introduction.

This 4th edition dated September 2017 ACC Inspection Guideline is published by the International Tank Container Organisation. It supersedes all previous editions.

The objective of ACC is to establish an in-service inspection benchmark for an acceptable condition of a general purpose tank. ACC recommends when the condition of a tank component should be repaired.

ACC is designed for use when tanks are inspected at the time of interchange between one party to another, such as between owner, operator, lessee, shipper, depot and carrier. This will include, for example, inspections undertaken at the 'on-hire' or "off-hire" of a leased container.

ACC is not intended to imply an acceptable condition at time of manufacture or the quality of a repair.

ACC does not take precedence over any regulation, Competent Authority Directive, Health and Safety requirement or other governmental requirements.

ACC inspection guideline covers, primarily stainless steel UN Portable Tank T11 but it is also generally applicable to most tanks designed for transporting liquid substances i.e. T1 – T22.

The term "tank" is used within ACC to include portable tank, tank container, swap tank.

The term "owner" is used to describe the entity responsible for the tank at the time of the inspection. In this context it may be the owner, lessor, lessee, operator, shipper or other party.

Regulations, where mentioned, refer to IMDG but ACC might generally apply to other regulations to which the tank is specified. For specific requirements, the inspector should refer to the regulation.

ACC does not take precedence over technical or commercial requirements or agreements entered into between contracting parties.

Tanks might be fitted with equipment outside the scope of ACC or not fully covered by ACC. The inspector should verify items of the tank specification with the tank owner as might be appropriate.

The inspector should contact the tank owner when it is necessary to seek information concerning the tank specification, manufacturers manual or certification.

Any drawings or photographs included within ACC are for descriptive purposes only.

Although ACC includes notes regarding repair, it is not designed to determine the repair. The qualified repairer should recommend the repair procedure in line with industry best practice, normally "like for like" i.e. repair as new to the original specification and manufacturers recommendations.

Repairs and replacement parts, including valves, fittings and pressure relief devices (safety valves) should be undertaken to the manufacturers recommendations.

The tank user should carry out a risk assessment and ensure the tank is fit for purpose, safe and reliable for transport and in accordance with the regulations.

iii. Health and Safety.

All personnel undertaking these inspection guidelines should be trained in Health and Safety requirements in accordance with the Governmental regulations and Company Policy

Do not any operate valves or fittings or enter into any tank that has not been issued with a valid tank entry permit.

Ensure safe inspection procedures and practice according to Health and Safety regulations and requirements and the SDS (Safety Data Sheet).

Undertake a risk assessment, proceed only when safe.

iv. Definitions.

The inspection guide that follows lists the component parts of a tank container and defines the Tank Acceptable Container Condition (ACC) criteria for:

- Not Acceptable damage.
- Acceptable damage.

NOT Acceptable Condition.

- Is damage that affects the safety, structural integrity, cargo-carrying capability or the ISO dimensional integrity of the tank.
- This type of damage should be repaired

Acceptable Condition.

- Is damage that does not affect any of the above conditions and therefore:
- No repair is required.

Terminology.

Damages are described within ACC according to the terminology and damage code provided by ISO 9897 (CEDEX) container equipment data exchange. Other comparable terminology and damage codes may be in common industry use.

Bent (BT) Component is damaged by being bent e.g. deformed.

Bowed (BW) Component is damaged by being bowed e.g. damage is gradual over the length of the component.

Broken/split (BR) Component is damaged by being broken or split.

Contaminated (CT) Equipment is rendered unsuitable for cargo because of contamination by chemicals or other cargo products.

Corroded/rusty (CR) Component is corroded or rusty.

Corroded/holed (CO) Component is holed by corrosion.

Cracked (CK) Crack apparent either in surface or through part or all of component profile.

Cracked weld (CW) Welding seam is damaged by being cracked.

Dent (DT) Component is damaged by being dented e.g. a localised and often acute angled depression.

Foreign marks (ML) Labels, marks, logos, and graffiti, etc. not required by the owner.

Improper Cleaning (IC) The component has had an inadequate cleaning procedure performed.

Improper repair (IR) A repair that does not conform to owner's requirements or industry standards because the quality or condition could be defined as NOT Acceptable Condition due to, for example, its reduced structural strength, quality, improper materials or abrasive polishing of the shell.

If an existing improper repair is evaluated to be otherwise technically acceptable, no rework is necessary.

If the improper repair results from a current in progress repair, it is not acceptable.

Loose (LO) the component is loose.

Like for like (LL) A repair carried out using materials, parts and design equal to the original manufacturers specification.

Not within ISO dimensions (NI) Equipment is not usable because it is no longer within the ISO dimensional envelope.

Not within TIR regulations (NT) Equipment or component no longer complies with TIR regulations.

Odour (OR) Equipment is rendered unsuitable for cargo because of odour.

Out of Date (OD) Renewal of a periodic inspection, test or document is overdue.

Paint failure (PF) Component suffers from a breakdown of the paint system.

Saturated/wet (ST) Excess moisture is present within the component.

Wear & Tear (WT) The unavoidable deterioration of a component used under proper operating conditions.

Wear and tear is the age-related deterioration of the container or any of its component parts while being properly maintained and used for its intended purpose.

Deterioration resulting from improper use, improper maintenance or lack of maintenance is not wear and tear.

Replacement of leaking or contaminated seals and gaskets is a normal operating requirement and is not 'Wear and Tear.'

Wrong material (WM) Previous repair or replacement carried out using the wrong material, see improper repair.

v. Cleaning Terminology.

Cleaning Document.

The cleaning document is a written declaration that the tank container has been cleaned. Depending on the circumstances a cleaning document might be:

- Cleanliness Receipt.
- Cleanliness Certificate.
- Entry Permit (safety certificate).

Cleaning Receipt (Wash Ticket).

A document issued by the qualified person of a specialist cleaning contractor responsible for the tank container cleaning stating that the tank has undergone a cleaning process and is clean according to the standards and inspection process applied by the contractor.

See Appendix for an example of a cleaning receipt.

Cleanliness Certificate.

A document issued by a qualified person stating:

A visual examination has been carried out and the interior of the tank container, valves and fittings are free of contamination, odour.

See Appendix for an example of a cleanliness certificate.

Entry Permit (Confined Space Entry Permit).

A document issued by a qualified person of the repair depot, surveyor or safety consultant in order that personnel may enter a tank (confined space) and safely carry out prescribed tasks within a specified time.

See Appendix for an example of an entry permit.

Cleanliness Receipt or Certificate Validity Date.

An evaluation of the circumstances and the issue date should be undertaken to ensure that the tank container has not been used since the time of issue. Allowance should be made for the transit time between the point of cleaning and the off-hire depot. Circumstances may vary and it is not possible to set a specific validity date.

Validity date/time of an Entry Permit is specific to the risk and Health and Safety requirements and is limited to the specified time stated on the permit.

Contamination.

Cargo residue, particles of cargo and other substances that cause the tank not to be clean, dry and fit for purpose.

Interior Cleaning Inspection.

The term is used to include visual inspections made from the man-way without tank entry, by the inspector's entry into the tank and by CCTV.

Last Cargo Report.

A traceable document, often an electronic transmitted text, from a qualified and authorised person stating the UN Number and Proper Shipping Name of the last cargo, including the technical name if the last an N.O.S. substance (not otherwise specified).

Non dangerous cargo should state the technical name. UN number does not apply.

The brand name or proprietary name of the cargo is NOT the proper shipping name or the technical name.

Last cargo data should be entered on the cleanliness document.

It is an obligation of the tank owner to correctly declare the last cargo because it is the basis for the cleaning contractor to undertake a proper and safe cleaning service.

Qualified Person (Inspector).

A responsible person that is properly trained, competent and is authorised by the employer or governmental body as is appropriate, to undertake the task. The inspector should have normal visual acuity and undertake inspections in acceptable lighting conditions and using aids to inspection as appropriate.

Safety Data Sheet (SDS).

A document issued by the manufacturer of the cargo detailing the characteristics and safety procedures and transport information.

Scouring Pad.

Plastic derivative material used for cleaning e.g. 3M Scotch-Brite. Being softer than the stainless steel shell, the pad should not damage the shell surface.

Tank Cleaning Facility.

A company skilled in tank container cleaning, equipped with cleaning and waste disposal facilities and licensed by appropriate governmental agencies.

Transferable Stain.

A stain or discoloration which can be removed from the metal surface of the tank shell or fittings by a tank cleaning process that might include polishing with a nylon abrasive pad.

Conversely, a Non-Transferable stain cannot be removed and cannot react with the cargo.

ACC Acceptable Container Condition.

1. Cleanliness.

1.1 Interior.

NOT Acceptable Condition.

- Cleanliness document missing or improper.
- Contamination.
- Odour.
- Transferable stain.
- Corrosion.

Acceptable Condition.

- Water marks, non-transferable stains.

Note:

Ensure Health and Safety requirements. Verify the presence of a valid cleaning document.

An entry permit is required prior to tank entry.

Definitions and terminology, see introduction.

A mapping chart should, as appropriate, be used to report a NOT Acceptable Condition. Shell corrosion, pitting, grinding or gouges (see section 10).

1.2 Exterior.

NOT Acceptable Condition.

- Contamination.
- Excessive dirt.
- Excessive glue.
- Spillage compartment contamination, dirt or debris.

Acceptable Condition.

- Dirt not significantly noticeable and affecting fitness for purpose.

Note:

Check contamination for damage to paint or cladding, see section 3 & 5.

A tank transporting Dangerous Goods should be clean of the residue of substances (contamination) adhering to the exterior of the tank or its fittings.

1.3 Foreign Marks, Labels.

NOT Acceptable Condition.

- Cargo placards, labels or marks.
- Non-specified owner marks.
- Remnants of placards, labels or marks.
- Insecure label holders.

Acceptable Condition.

- Isolated marks/ adhesive not affecting operations.

2. Frame.

2.1 Corner posts.

NOT Acceptable Condition.

- Cuts, holes, gouges, cracks or split.
- Dents on a formed edge or face greater than 15mm.
- Dent, bent or bowed greater than 10mm extending over a length more than 300mm.
- Cracks or improper welds to corner fittings.
- Bent or bowed beyond ISO.
- Corrosion affecting the structural strength.
- Improper repairs.

Acceptable Condition.

- Dent, bent or bowed not exceeding 15mm depth except as qualified above.

Note:

Minimum insert length 150mm.

Minimum space between a corner fitting and an insert 300mm (if less extend to corner fitting).

Minimum space between inserts 300mm (if less extend insert length to incorporate both inserts).

Maximum of two inserts per post.

A repair should be an insert. An over-plate is a Not Acceptable repair. Some posts might be fitted by the manufacturer with a protection over-plate – this is not a repair over-plate and is acceptable.

2.2 Top, Bottom, Side and End Rails, Ancillary Bracing and Parts Including Load Transfer Areas* (If Fitted).

NOT Acceptable Condition.

- Cuts, holes, gouges, cracks or splits.
- Dent, bent or bowed greater than 25mm.
- Dent or bent preventing operation of valve or fittings.
- Bent or bowed and affecting the tank insulation.
- Bent or bowed beyond ISO.
- Corrosion holes or deep seated corrosion.
- Improper repairs.

Acceptable Condition.

- Dent, bent or bowed not exceeding 25mm.
- Dents in bottom face of bottom rails that do not affect the formed edge.

Note:

*The Load Transfer Area (LTA) is a frame component under the tank that transfers part of the tank mass to the truck chassis. Most 20ft tanks manufactured in recent years are not fitted with LTA's.

2.3 Corner Fittings (Corner Castings).

NOT Acceptable Condition.

- Cracked, cut or split.
- Dent or bent greater than 5mm.
- Aperture width greater than 66mm.
- Aperture elongated greater than 127mm.
- Any condition preventing proper locking of securing or lifting equipment.
- Corrosion causing thickness reduction.
- Missing.
- Not within ISO dimensions.
- Improper repairs.

2.4 Tank (Vessel) Connection to Frame*

NOT Acceptable Condition.

- Cuts, holes, gouges, cracks or splits.
- Dent or bent formed edge greater than 13mm.
- Dent or bent face greater than 15mm.
- Bent beyond ISO.
- Corrosion reducing the material thickness and impairing fitness for purpose.
- Improper repairs.

Note:

When there is damage to the tank connection to the frame, the tank shell must also be inspected for damage.

When there is damage or corrosion extending below the insulation and hidden from inspection, partially remove insulation as appropriate for inspection.

*This is the component that supports the tank within the frame. Nowadays most tanks are fitted within the frame within a circumferential "skirt". The component is below the insulation.

2.5 Stacking Supports (Mis-Stacking supports).NOT Acceptable Condition.

- Cuts, holes, gouges, cracks or splits.
- Dent or bent greater than 25mm.
- Bent or bowed beyond ISO.
- Severe corrosion.
- Improper repairs.

Acceptable Condition.

- Dents and distortions less than 25mm.

3. PaintworkNOT Acceptable Condition.

- Paint failure.
- Contamination and damage by cargo.
- Paint degradation greater than 8% Ri4*
- Improper repairs.

Acceptable Condition.

- Corrosion less than Ri4.
- Faded, discoloured.
- Abrasions.

Note:

*This refers to ISO 4628 Part 3: Assessment of degree of rusting. See appendix.

Protective paint systems break down over a period of time through exposure to atmosphere.

ISO 4628 identifies degradation by categorizing in six conditions Ri0 to Ri5.

Paint damage and corrosion should be repaired as part of routine maintenance.

Repair paint colour should be the same as the original i.e. like for like.

4 Walkway.

4.1 Walkway and Support Structure.

NOT Acceptable Condition.

- Cuts, gouges, cracks or splits.
- Dent or bent greater than 25mm.
- Bowed greater than 50mm.
- Trip hazard or other condition that is unsafe and not fit for purpose.
- Loose or missing fasteners.
- Bent beyond ISO.
- Improper repairs.

Acceptable Condition.

- Conditions not affecting safety.

Note:

If a condition, otherwise within the acceptable criteria, results in an unsafe condition and not fit for purpose, repair is required.

The length of repair inserts and sections should be extended to an existing support bracket.

If a collapsible handrail is fitted it should be operable, safe and fit for purpose. Inserts or section repairs to a post is not acceptable, replace full length.

4.2 Ladder.

NOT Acceptable Condition.

- Cuts, gouges, cracks or splits.
- Bent rungs greater than 15mm.
- Trip hazard or other condition unsafe and not fit for purpose.
- Loose or missing fasteners.
- Bent beyond ISO.
- Improper repairs.

Acceptable Condition.

- Conditions not affecting safety.

5 Insulation and Cladding.

5.1 Insulation.

NOT Acceptable Condition.

- Missing insulation material.
- Saturated e.g. by water or cargo.
- Burnt or baked.
- Improper repairs.

Note:

Burnt or baked insulation is an indication of heating or use above the specified maximum temperature. In the event of burnt or baked insulation check the condition of the tank shell and tank barrier coating.

Replacement insulation should be like for like.

5.2 Cladding.

NOT Acceptable Condition.

- Cuts, holes, cracks, splits, gaps allowing moisture ingress
- Dent, bent greater than 25mm or beyond ISO.
- Loose cladding or retaining straps.
- Loose, gaps or missing sealant.
- Loose or corroded rivets, fasteners.
- Corrosion allowing moisture ingress
- Contamination.
- Improper repairs.

Acceptable Condition.

- Abrasion not affecting fitness for purpose.

Note:

When the cladding is damaged check as appropriate, any components beneath the cladding e.g. insulation, tank shell, vacuum rings, heating system etc. to ensure acceptable condition.

When drilling into cladding, to remove or fit rivets, ensure components beneath the cladding are protected.

Minimum overlay riveted patch 150 x 150 mm.

Extend patch to the retainer strap or existing joint if the patch is within 30cm.

If multiple damages in same area, fit larger single patch.

The following criteria will apply when assessing the type and extent of repair:

GRP Cladding / composite cladding.

- Like for like specification materials & colour.
- Infill holes less than 25mm diameter.
- Infill & grp tissue to formed / moulded surfaces.

Aluminium and Stainless Steel Cladding

- Like for like specification grade materials & colour.
- GRP panels acceptable on the underside to overlay corroded aluminium panels.

6. Spillage Boxes and Compartments (Top and Bottom, With and Without Lids).

NOT Acceptable Condition.

- Dent or bent and fitness for purpose.
- Cracked, cut or split.
- Missing relief device ventilation aperture (if an enclosed compartment).
- Contamination.
- Loose, broken, contaminated, blocked, shortened or missing drain tubes.
- Loose, broken, non-operational or missing fasteners
- Missing or defective TIR /customs sealing ring (if an enclosed compartment).
- Bent or bowed beyond ISO.
- Improper repairs.

Acceptable Condition.

Dent or bent and fit for purpose.

Note:

Ventilation apertures (holes) should be designed to the specified relief device flow rate. The aperture may be in the spill box walls or the lid.

If fitted with a lid, ensure the fasteners are safe and secure for transport.

7. Man-way.

7.1 Hinged Man-lid and Swing-bolt (Hand-nut) Assembly.

NOT Acceptable Condition.

- Leaks.
- Cracks, cuts or split.
- Dent or bent greater than 6mm or preventing the sealing.
- Loose.
- Frozen, seized.
- Non-operational, not fit for purpose.
- TIR Customs sealing ring missing or broken.
- Pitting, corrosion or contamination.
- Improper repairs.

Acceptable Condition.

- Hand-nuts of similar design and material

Note:

Seals, gaskets, parts and fasteners should be to the manufacturers recommended specifications.

Fasteners should be tightened to the manufacturers recommended torque.

7.1.2 Hinged Man-Lid Seal.

NOT Acceptable Condition.

- Leaks.
- Cuts, cracks or dents affecting sealing.
- Incompatible or non-specified material, type or dimensions.
- Contamination.
- Missing.
- Incompatible or non-specified material.
- Improper repair.

Note:

Seal and gasket material and dimensions should be to the manufacturers recommended specifications.

Material should be compatible with the cargo.

7.2 Flanged Man-Lid (Bolted Man-lid).

NOT Acceptable Condition.

- Leaks
- Cracks, cuts or split.
- Dent, bent or bowed causing leaks.
- Loose
- Non-operational parts.
- TIR Customs sealing missing or broken.
- Pitting, corrosion or contamination.
- Improper repairs.

Note:

Seal and gasket material and dimensions should be to the manufacturers recommended specifications.

Fasteners should be tightened to the manufacturers recommended torque.

7.2.1 Flanged, Bolted Man-Lid Seal or Gasket.

NOT Acceptable Condition.

- Leaks.
- Cuts, cracks, dents affecting sealing.
- Incompatible or non-specified material, type or dimensions.
- Contamination.
- Missing studs, bolts, washers.
- Improper repair.

Note:

Seal and gasket material and dimensions should be to the manufacturers recommended specifications.

Parts and fasteners should be to the manufacturers recommended specifications.

Material should be compatible with the cargo.

7. 3 Calibration Chart & Depth Gauge (Dipstick).

NOT Acceptable Condition.

- Illegible or insecure.
- Contamination or corrosion.
- Bent preventing operation (dipstick).

Note:

A depth gauge (dipstick) is rarely specified and fitted due to the safety risks during its use and obstruction to cleaning equipment.

If required to be fitted, check with owner to confirm a risk assessment is undertaken.

8. Pressure Relief Device (Safety Valve).**8.1 Pressure Only Relief Device.**NOT Acceptable Condition.

- Leaks.
- Cracked or broken.
- Dent or bent and not fit for purpose.
- Pressure or flow rating not according to the tank specification.
- Pressure setting not according to device markings.
- Markings not readable or missing.
- Contamination.
- Corrosion.
- Missing parts.
- Missing or defective TIR /customs sealing ring.
- Improper parts, repairs, seals or gaskets.

Note:

Seals, gaskets, parts and fasteners should be to the manufacturers recommended specifications.

Fasteners should be tightened to the manufacturers recommended torque.

Flame trap is not an IMDG requirement to pressure only devices.

8.2 Pressure and Vacuum Relief Device.NOT Acceptable Condition.

- Leaks.
- Cracked or broken parts.
- Dent or bent and not fit for purpose.
- Pressure or flow rating not according to tank specification.
- Pressure setting not according to device markings
- Markings not readable or missing.
- Contamination or corrosion.
- Missing flame protection (flame trap) to vacuum relief device.

- Missing parts.
- Missing or broken TIR /customs sealing ring.
- Improper parts, repairs, seals or gaskets.

Acceptable Condition.

- Missing TIR /customs sealing ring if enclosed compartment with lid and TIR ring fitted.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

8.3 Flame Protection (Flame Trap, Flame Arrester, Clamped Gauze or Cowl).

NOT Acceptable Condition.

- Flow rating not according to tank relief device specification.
- Loose.
- Dent, bent affecting operation.
- Cut or split.
- Contamination affecting flow rate.
- Improper repairs.

Note:

Flame protection parts should be to the manufacturers recommended specifications.

Check flame protection gauze to verify flow rate is designed for the relief device.

Fasteners should be to the manufacturers recommended specification and torque.

Flame protection is a requirement to relief devices fitted with vacuum relief (including dual pressure and vacuum relief) and fitted to tanks permitted to transport flammable or self-reactive substances.

8.4 Rupture Disc (Bursting Disc, Frangible Disc) & Tell-tale Pressure Gauge.

NOT Acceptable Condition.

- Pressure or flow rate not according to relief device flow rating.
- Leaks.
- Broken disc.
- Broken, non-calibrated or illegible tell-tale gauge.
- Contamination or corrosion.
- Missing parts.
- Improper parts.

Note:

Rupture disc dimension, pressure and flow rate should be in accordance with the relief device manufacturers recommendation. Tell-tale indicator pressure gauge is required.

Rupture disc is a regulatory requirement for UN Portable tank instructions T5, 10, 12, 14, 16, 18, 19, 20, 22.

Refer to owner if fitted to other tanks or if other regulations apply.

9. Top Valves.**9.1 Airline (Vapour) Valves**NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Broken.
- Seized.
- Remote closure device not fit for purpose.
- Loose, improper or missing studs, bolts, washers
- Missing TIR customs sealing ring.
- Broken or loose pressure gauge (where fitted).
- Missing parts.
- Contamination or corrosion.
- Improper repairs, parts, seals or gaskets.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

9.2 Top Outlet (Top Discharge Valve).NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Broken.
- Seized parts and screw threads.
- Loose, improper or missing studs, bolts, washers.
- Missing parts.
- Contamination or corrosion.
- Missing TIR customs sealing ring.
- Improper repairs, parts, seals or gaskets.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.
Fasteners should be to the manufacturers recommended specification and torque.

9.3 Top Valve Dip Pipe (Syphon Tube).NOT Acceptable Condition.

- Leaks.
- Dent, bent, bowed and not fit for purpose.
- Crack or split.
- Loose.
- Contamination or corrosion.
- Gap at bottom of the DN80 (3") pipe max. 20mm, min. 10mm.
- Gap at bottom of the DN50 (2") pipe max. 13mm, min. 8 mm.
- Bottom support device misaligned, broken or missing.
- Improper repair or material.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.
Fasteners should be to the manufacturers recommended specification and torque.
Low profile dip tubes require the manufacturers recommended dimensioned gasket.

9.4 Ancillary Valves (Additional Top Valves if Fitted).NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Broken.
- Seized parts and screw threads.
- Loose, improper or missing studs, bolts, washers.
- Broken or loose pressure gauge (if fitted)
- Missing parts.
- Contamination or corrosion.
- Missing TIR customs sealing ring.
- Improper repairs, parts, seals or gaskets.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.
Fasteners should be to the manufacturers recommended specification and torque.

9.5 Top Outlet Screw Cap and or Bolted Blank Flange.

NOT Acceptable Condition.

- Leaks.
- Loose.
- Dent, bent and not fit for purpose.
- Broken or missing fasteners, studs, nuts, bolts, washers.
- Seized screw threads.
- Improper parts, seals and gaskets.
- TIR customs sealing ring, missing.
- Contamination or corrosion.
- Improper repairs.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

10 Tank Shell (Pressure Vessel) Interior and Exterior.

10.1 Tank Shell.

NOT Acceptable Condition.

- Leaks.
- Cracked, cut, split.
- Bent or bowed greater than 10 mm.
- Dent greater than 10mm or any loss of shell thickness due to stretching.
- Sharp dents or tool marks.
- Dent or bent vacuum ring greater than 10mm.
- Gouges and scratches deeper than 0.1 mm.
- Improper grinding /abrasive polishing or scratched coarser than 120 grit.
- Thickness below minimum specification.
- Corrosion or pitting reducing the shell thickness to less than the specified minimum.
- Pitting causing contamination traps.
- Stress corrosion or pitting
- Improper repairs.

Acceptable Condition.

- Manufacturers original construction tolerances e.g. rolling marks, shell bowing.
- Bowed over the length between exterior stiffeners not greater than 10 mm.
- Abrasions or scratches to 120 grit equivalent or finer.

- Superficial type A pitting with no resulting contamination trap or reduction of minimum thickness.

Note:

Ensure Health and Safety requirements when inspecting the tank. Ensure the provision of a valid tank entry permit.

Tank Shell Interior inspection should be carried in good light and from inside of the tank. Remote CCTV might be appropriate in due course, contact owner.

A tank shell report is required where defects revealed (See Appendix).

Improper polishing / grinding includes excessive irregular grinding pattern, abrasive scratches coarser than 120 grit and loss of thickness below the specified minimum.

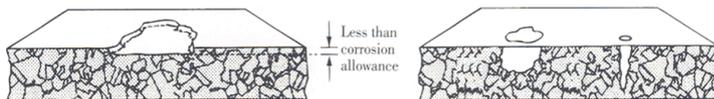
Shell thickness measurement requires the use of a calibrated ultrasonic thickness meter.

Corrosion pitting should be investigated to ascertain that cavity pitting is not present and that pitting is not obscuring stress corrosion cracking.

The investigation might require polishing of a sample surface area followed by visual examination with the aid of lighting, magnifying sight glass, ultrasonic thickness meter and, if appropriate, dye penetrant.

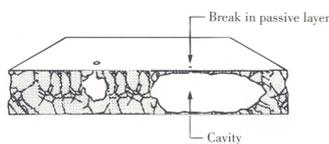
Lined tanks should be inspected in accordance with the lining manufacturer and owner's instruction.

Cross Section of Tank Shell: Types of Pitting.



Type A Shallow Clean Pit.

Type B Crater or Pinhole.



Type C – Pore or Cavity.

11. Bottom Valves Assembly (Three Closures - Internal Foot-Valve and Outlet Valve, Outlet Cap).

11.1 Foot Valve.

NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Broken.
- Seized parts and screw threads.
- Loose, improper or missing studs, bolts, washers.
- Missing parts.
- Contamination or corrosion.
- Missing TIR customs sealing ring.
- Improper repairs, parts, seals or gaskets.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

11.2 Outlet Valve (Butterfly or Ball Valve).

NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Broken.
- Seized parts and screw threads.
- Loose, improper or missing studs, bolts, washers
- Missing parts.
- Contamination or corrosion.
- Missing TIR customs sealing ring.
- Improper repairs, parts, seals or gaskets.

Note:

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

11.3 Outlet Cap (or Blank Flange).

NOT Acceptable Condition.

- Leaks.
- Bent and inoperable.
- Missing parts.
- Improper parts, seals and gaskets.
- TIR customs sealing ring, missing.
- Contamination or corrosion.
- Incompatible material.
- Improper repairs.

Note:

The outlet cap (or blank flange) is a “third closure” required by the regulations. It should be leak tight and compatible with the substances permitted to be transported.

Seals, gaskets and parts should be to the manufacturers recommended specifications.

Fasteners should be to the manufacturers recommended specification and torque.

11.4 Emergency Closure (Remote Trip Wire and Thermal Link).

NOT Acceptable Condition.

- Loose.
- Bent and not fit for purpose.
- Broken.
- Seized.
- Cable material not stainless steel.
- Improper repairs.
- Missing cable or warning mark.

12. Heating.

12.1 Steam Heating.

NOT Acceptable Condition.

- Leaks.
- Dent, bent and not fit for purpose.
- Bent or bowed into the tank shell.
- Broken or not fit for purpose steam condensate trap, relief device*
- Contaminated or corroded.
- Missing outlet cap and or retaining cable.

Note:

Steam systems should be leak tested.

Steam trap (condensate trap) and or relief device. *Check with owner if specified and required to be fitted.

12.2 Electric Heating (Heating Cable, Elements and Glycol Systems).

NOT Acceptable Condition.

- Loose.
- Dent or bent and not fit for purpose.
- Conditions that allow water ingress into electrical parts.
- Loose or corroded electric terminals or components.
- Leaks (glycol systems) or reservoir under filled.
- Missing parts.
- Improper repairs.

Note:

A heating test is required as part of the ACC inspection.

Tests, maintenance and repairs, including the replacement of parts, should be completed to the manufacturers recommendations.

Electric systems are usually specified to be fitted with a supply cable and DIN 60309, CEE 17 male plug 32Amp 440/480 Volt 4 pin including earth. Check requirements with the system manufacturer or tank owner.

12.3 Temperature Gauge.

NOT Acceptable Condition.

- Loose or gaps allowing water ingress.
- Broken.
- Broken, incorrect temperature.
- Improper repair.

Acceptable Condition.

- Condensation to the dial if gauge legible and fit for purpose.

13. Marks (Markings).

13.1 Marks (Decals) Regulatory and Operational Marks.

NOT Acceptable Condition.

- Loose.
- Missing or not legible.
- Foreign marks.
- Contaminated.
- Improper repairs.

Acceptable Condition.

- Abrasions not affecting legibility.

Note:

The tank is required to display marks required by ISO 6346 and in addition the regulatory approvals according to the tank specification.

13.2 Data Plate(s).

NOT Acceptable Condition.

- Loose.
- Corroded fasteners.
- Missing or not legible.
- Dent or bent affecting use.
- Bent or bowed beyond ISO.
- Improper repairs.

Acceptable Condition.

- Corrosion and abrasions not affecting legibility.

Note:

Data plate is a regulatory requirement.

14. Miscellaneous.

14.1 Document Holder.

NOT Acceptable Condition.

- Loose.
- Missing.
- Broken or not fit for purpose.
- Contaminated, foreign matter, water, cargo.
- Improper repair.

Acceptable Condition.

- Non-standard but fit for purpose.

14.2 Static electricity Earth (ground) lug.

NOT Acceptable Condition.

- Loose.
- Missing.
- Bent, broken and not fit for purpose.
- Contaminated or painted preventing electrical connection.
- Improper repair.

15. Test.

15.1 Air Leakage Test.

NOT Acceptable Condition.

- Leaks.

Note:

A leakage test is usually carried out by the ACC inspector as:

- Part of the inspection process.
- On completion of repairs.
- Prior to delivery to loading cargo.

Leak test (pneumatic) as part of ACC inspection.

Caution.

Valves and fittings should be opened slowly to check that no pressure or vacuum has built up in the tank.

Always keep head and face away from valves when opening.

Comply with Health and Safety procedures, undertake a risk assessment.

Test Equipment.

- Air pressure supply.
- Test rig (see sketch below).
- Adaptors as necessary.

Procedure.

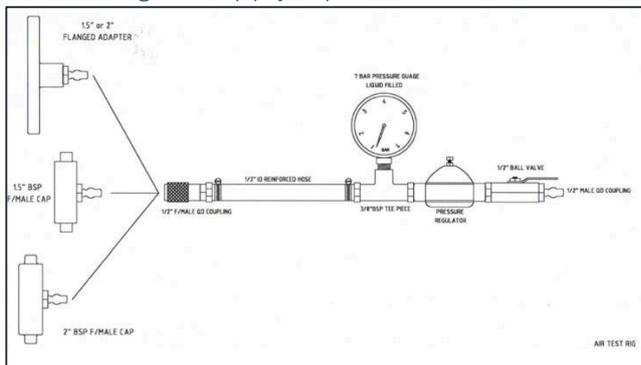
- Ensure all valves operate correctly and the tank is in a fit condition to be pressurised.
- Close all valves and remove outlet caps, outlet flanges e.g. top valve, bottom valve, airline valve.
- If an aperture is not fitted with a valve, the blank flange should remain in place.
- Safety relieve devices should not be removed.
- Check an acceptable man-lid seal is fitted, close man-lid and tighten clamps.
- Fit the test-rig to the airline valve.
- Pressurise the tank slowly, keep watch and be prepared to shut-off pressure in the event of leak.
- Hold the pressure, normally 1 bar pressure for a T11 tank, for minimum of 10 minutes.
- While the tank is under pressure check for leaks around the man-lid, valves and fittings using a Leak Detection Fluid. This function should be performed by a qualified QC person trained in Bubble Leak Detection.

- The preferred method for testing is to spray Leak Detection Fluid around external valves and flanges.
- The internal part of the valve may be checked by pulling a bubble over the outlet. Do not contaminate the valve by allowing the ingress of leak detection fluid.
- Keeping the foot-valve closed, open the outlet valve and leak test the internal opening of the foot-valve and external joints.
- Close the outlet valve and open the foot-valve. Leak test the internal opening of the outlet valve and external joints.
- Fit the outlet cap (or plate). Open the foot-valve and outlet valve and leak test the cap or plate.
- If the tank fails to hold pressure, identify leak positions and record findings on the repair estimate, or if the leak check is undertaken as part of a quality procedure or pre-trip inspection, rectify and re-test until satisfactory.
- Fasteners should be tightened to the manufacturers recommended torque.

On completion, release pressure, close valves, refit outlet caps and blank flanges.

Air Test Rig

Connecting air supply top tank



15.2 Periodic Inspection and Test (2.5 Year Intermediate and 5 Year Test).

NOT Acceptable Condition.

- Out of date, invalid test date.
- Illegible or missing test marking.

Note:

The Periodic Inspection and Test is a regulatory requirement carried out at 5 year intervals and in addition an intermediate inspection and test at 2.5 years.

An exceptional test might be carried out if the tank shows evidence of a condition that could affect the integrity of the tank e.g. damage, corrosion, leakage.

An exceptional test is also required if the tank is modified, including modification of the portable tank "T" Instruction and or welding works are undertaken to the tank.

The 5-year test is usually carried out with water under pressure (hydraulic).

The 2.5-year test usually pneumatic (air).

The depot is required to prepare and pressurize the tank for the test.

The owner appoints an AIB (competent authority accredited inspection body) to carry out the inspection.

The internal and external inspections and test requirements and the acceptance criteria is detailed in the regulations.

15.3 CSC Examination.

NOT Acceptable Condition.

- Out of date.
- Illegible or missing examination marking.
- Structural condition not meeting CSC requirement.

Note:

CSC (Convention for Safe Containers) is a requirement of IMO regulation.

The examination is undertaken after 5 years from date of manufacture and at 2.5-year intervals thereafter in accordance with the Approved Programme.

For tanks, the examination is usually undertaken as part of the periodic Inspection and Test (see 15.2) by the AIB. Alternatively, the Approved Programme may allow another qualified person to examine the tank.

The CSC plate is required to be marked with the Next Examination Date (NED).

If the tank is subject to an Approved Continuous Examination Programme (ACEP), an ACEP mark is required.

Cleanliness Report (Certificate).

SURVEY COMPANY NAME & ADDRESS:	
TANK IDENTIFICATION NO:	
PLACE OF ISSUE:	DATE & TIME of ISSUE:
CLEANING COMPANY NAME & ADDRESS:	
CLEANING PROCESS:	
LAST CARGO:	U.N. NO:
EXTERIOR – FRAME, TANK WALKWAY, MARKINGS CLEAN OF CONTAMINATION YES / NO	
INTERIOR CLEAN OF CONTAMINATION & ODOUR: YES / NO	
VALVES, MAN-WAY, FITTINGS CLEAN OF CONTAMINATION & ODOUR: YES / NO	
REMARKS:	
INSPECTION FROM THE MANLID WITHOUT TANK ENTRY YES / NO INSPECTION FROM INSIDE THE TANK YES / NO A visual inspection has been carried out in good lighting conditions and the interior of the tank, valves and fittings are free of contamination, previous cargo and odour. The tank is clean and dry.	
NAME (PRINT) (being the qualified surveyor)	SIGNED

Entry Permit (Confined Space Entry Permit).

Requirements for this permit might vary by the Health & Safety legislation in the country of issue and which takes precedence over this example.

Atmospheric tests required prior to tank entry include an oxygen deficiency test and additionally, flammable and toxic tests as appropriate.

ISSUED BY DEPOT - NAME AND ADDRESS:	
SURVEY COMPANY NAME AND ADDRESS:	
TANK IDENTIFICATION NO:	
LAST CARGO & UN No.	
CLEANING PROCESS:	
PURPOSE OF TANK ENTRY	
TESTS COMPLETED:	
PROTECTIVE CLOTHING AND SAFETY EQUIPMENT REQUIRED.	
A risk examination has been carried out and appropriate safety tests completed with acceptable results. The tank is safe to enter during the prescribed times.	
VALID FROM DATE/TIME	
VALID TO DATES/TIME	
NAME (PRINT)	SIGNED
The Authorised Safety Supervisor	

Appendix B. Mapping Chart.

TANK IDENTIFICATION NO.	LAST CARGO
LOCATION	UN. NO.
INSPECTOR:	

STAINING

SURFACE CONDITION
SURFACE RUST

SURFACE SCORING

 (Scratch/gouge marks)
PITTING

PITTING DESCRIPTION
 Indicate Type & Shape
 See Figure 5 of Section 9 on Corrosion
 Pitting in ACC.

DRAW PITTING TYPE
 or indicate A, B or C.

DRAW PITTING
 SURFACE SHAPE
 (Circular, elongated, etc.)

Pitting depth Average mm/inch
 Pitting depth Maximum mm/inch

Area of shell affected %

Is pitting light or heavy? L/H

Pitting in weld bead? Y/N

Pitting in heat zone of
 weld bead? Y/N

STAINING DESCRIPTION
 If tank is stained indicate
 colour

Area of shell affected %

Condition of syphon tube

Indicate weld seam on the plan

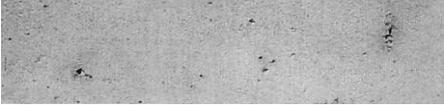
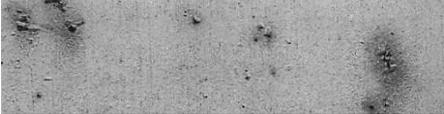
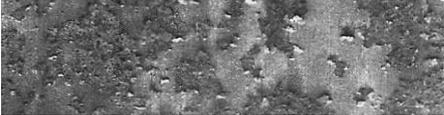
ADDITIONAL COMMENTS

Appendix C. Seals and Gaskets.

The seals and gaskets listed are for guidance to standard applications. Contact owner for seal and gasket requirements.

COMPONENT	PART	SEAL or GASKET
Pressure relief device	Pressure 'O' ring Vacuum Gasket to tank	PTFE Encapsulated silicon PTFE Solid PTFE or CF Envelope PTFE
Airline Valve	Seals Gasket to tank Cap	PTFE Solid PTFE or CF Envelope PTFE PTFE Solid
Man-Lid (hinged)	Seal	PTFE Encapsulated silicon PTFE coated Braided CF
Man-Lid (flange)	Seal Gasket	PTFE Solid PTFE Solid
Top Outlet Valve	Seals Gasket to tank Cap	PTFE Solid PTFE or CF Envelope PTFE PTFE Solid
Foot- Valve	Pressure 'O' ring Spindle Gasket to tank	PTFE Encapsulated silicon PTFE Solid PTFE or CF Envelope PTFE
Bottom Outlet Valve	Seals Gasket to tank Cap	PTFE Solid PTFE or CF Envelope PTFE PTFE Solid
Key: PTFE CF	Polytetrafluoroethylene (e.g. Teflon) COMPOSITE FIBRE	

Appendix D. Paintwork (Percentage Corrosion).

Corrosion %	Description
1%	
3%	
8%	
30%	
50%	

International Tank Container Organisation.

Suite 3, Charter House,
26, Claremont Road,
Surbiton, KT6 4QZ.
United Kingdom.

www.itco.org

ITCO Secretary.
Patrick Hicks.
Email: hicks@itco.org
www.itco.org