



TECHNICAL SPECIFICATION

CLIENT : OCI

®3 **SPECIFICATION NO. : ST22-31.4.36 – ENQI6421**

WO 8116 Rev3 (AS BUILT)

**DESCRIPTION : 20 x 31000 LITRE SWAP TANK
SERIAL NUMBERS TASU 231001 TO TASU 231020**

1.0 Technical Characteristics

1.1 Design & Testing

Tank - in accordance with:	IMDG, RID/ADR
- type:	IMO Type 4, RID/ADR L4BN
Frame - in accordance with:	ISO Compatible
- type:	ST22 Swap Tank

1.2 Nominal Capacity (±0,5;+0,75% Tolerance)	SI	US
	31000 m ³	8189 US gal

1.3 Frame Dimensions And Mass

®3	MPGM	34000 kg	74956 lbs	
	Tare Mass (as built))			3750
		8267 lbs		
	Length	7150 mm	23 ft 5,496 in	
	Width	2550 mm	8 ft 4,394 in	
	Height	2670 mm	8 ft 9,118 in	

1.4 Tank Dimensions

Internal Diameter	2426 mm	95,512 in
Tan to Tan	6112 mm	240,630 in
Shell Minimum Calculated Thickness	4,2 mm	0,165 in
Shell Construction Thickness	4,2 mm	0,165 in
Head Minimum Calculated Thickness	4,6 mm	0,181 in
Head Construction Thickness	4,7 mm	0,185 in
Dished Ends- Torispherical	Crown 2030 mm	Knuckle 200 mm
Reference Mild Steel Thickness	6 mm	

1.5 Pressure & Temperature Rating

Metallurgical Design Temp for Tank :	Max	130 °C	266 °F
	Min	-40 °C	-40 °F
Maximum Allowable Working Pressure	4,0 bar	58,0 psig	
Calculation Pressure	6,0 bar	87,0 psig	
Hydrostatic Test Pressure	6,0 bar	87,0 psig	
Maximum External Pressure	0,40 bar	5,8 psig	

1.6 NDE (Non Destructive Examination)

Shell	J.E. = 0,85	Radiography = spot
Ends	J.E. = 1,00	Radiography = full (100%)

Nozzle to shell junction welds to be dye penetrant tested.

1.7 Material Of Construction

Framework	:	Hollow section Plates Rolled section	EN 10210 S355 J2H / Supraform TM 380 EN 10025 S355 K2G3C / Supraform TM 380 EN 10025 S355 K2G3
Corner Castings			ISO Standard 1161 (top) and Overland (bottom) for 2550mm width with an additional set at 20 ft centres for step backs
Shell			Columbus TCG 316 L Cold Rolled 2B Finish C ≤ 0,03%
Heads			Columbus TCG 316 L Hot Rolled, Polished C ≤ 0,03%
Stiffening Rings (3 off 3mm thick)			ASTM A240 Gr 304

2.0 Tank Fittings And Accessories

2.1 Manhole

- Supplier Swift
- Quantity One
- Dimensions 500mm ID
- Specification Stainless steel 316; 4 bar pressure rating; 8 point fixing
- Gasket Genuine PTFE braided gasket

2.2 Cleaning Hatch

- Supplier Fort Vale
- Quantity One
- Dimensions 300mm ID
- Specification Stainless steel 316; 4 bar pressure rating; 4 point fixing 8UB/2750 118P
- Gasket Genuine PTFE braided gasket

2.3 Safety Relief Valve Assembly

- Supplier Fort Vale
- Quantity Two
- Dimensions 2_ " BSP Super Maxi Highflow, Part No G10/16312
- Specification +4,4 / -0,21 bar (+63,8 / -3.0 psi) - pressure vacuum valve with a gauze
- Gasket Klinger SIL C-4430/PTFE
- Remarks Provision is made for future fitting of a rupture disc and manometer.

2.4 Air Inlet Assembly

- Supplier BTR / Gestra
- Quantity One
- Dimensions DN 40 (1_")
- Specification Stainless steel 316 ball valve, terminating with a BSP outlet and cap.
- Gasket PTFE
- Remarks The assembly is situated tangentially off centre.

2.5 Top Discharge Provision

- Supplier Consani
- Quantity One
- Dimensions DN 80 (3")
- Specification Stainless steel 316 tank pad and blind flange
- Gasket Klinger SIL C-4430/PTFE
- Remarks Provision is made for the future fitting of a clamped 3" butterfly valve and a 3" syphon tube. The assembly is situated on a recessed horizontal tank pad . A syphon tube guide is fitted at the bottom of the tank. The tank pad is drilled 4 x M16 on a 160mm PCD.

2.6 Thermometer

- Supplier Consani
- Quantity One
- Dimensions 80mm dial diameter
- Specification Surface type. Dual scale - 20°C to 160°C / 0°F to 320°F

2.7 Bottom Discharge

- Supplier Fort Vale
- Quantity One

- Dimensions DN 80 (3") opening diameter
 - Specification Internal valve - 45° Highlift foot valve, Part No 826/1200 bolted to a steam heated tank pad
External valve - clamped butterfly valve, Part No 368/7000B, with a 3" BSP threaded connector closed by a stainless steel cap unite retaining chain preventing the cap from hanging below the frame.
- ③
- Gasket Klinger SIL C-4430 / PTFE
 - Remarks A cable remote control is connected to the internal valve handle. The remote is routed half way along the side of the tank
- 2.8 **Protective Housing / Spillbox**
- Supplier Consani
 - Quantity Two
 - Location Rear: Hatch / top discharge provision / air inlet
Centre: Relief valves / manhole
- ③
- Specification ASTM A240 - 304 housings with insulated lids and necks. Each housing is provided with concealed stainless steel tubes draining to the bottom part of the container. The lids are insulated with Armaflex 10-15mm thick
- 2.9 **Steam Heating**
- Supplier Consani
 - Quantity Equivalent total area of 10m₂
 - Dimensions 8 Runs 110mm x 5400mm longitudinal channels with 1" BSP male threaded inlet and outlet connections with stainless steel caps and retaining cables. PTFE gasket in caps.
 - Specification ASTM A240 - 316; 6 design pressure, hydrostatically tested at 10 bar
- 2.10 **Insulation And Cladding**
- Supplier Consani
 - Quantity The complete tank is coated with anti-stress corrosion lacquer (15-25 micron DFT) prior to insulation
 - Specification Insulation: Shell: 50mm Rockwool (55kg/m₃)
Ends: Glasswool, thickness to suit (16kg/m₃)
Cladding: Shell: 0,8mm thick mill finish aluminium (Grade 5251) with sealed lapped joints.
Ends: 2mm GRP domed ends, white (RAL9010), retained with stainless steel straps on rubber backings
 - Remarks The insulation is trimmed on the sides and ends to fit within ISO limits.
- 2.11 **Walkways**
- Supplier Consani
 - Quantity One longitudinal and two lateral sections (Long F-style)
 - Dimensions 475mm wide
 - Specification Marine resistant aluminium
- 2.12 **Ladder**
- One ladder 475mm wide is provided on the right hand side of the rear end frame. The ladder rungs have an anti slip surface. The ladder is hot dipped galvanised. A handgrip is provided at the top of the frame adjacent to the ladder. The bolts are tank welded.
- 2.13 **Corner Protection**
- 4-off per tank located at the top frame corners.
- 2.14 **Earthing Connection**
- 1 off stainless steel lug 60 x **40** x 2,5mm with 20mm hole, is located at the rear bottom end of the frame.
- 2.15 **Document Holder**
- 1-off clear PVC document holder is provided. The holder is water-resistant and is fixed in a position that affords adequate protection.

2.16 Decals

One set per tank as per code requirements. Owner logos supplied by client and applied by Consani.

2.17 Data Plates

One set of stainless steel data plates per tank as per code requirements

2.18 Calibration

One calibration plate marked in cm/litres is mounted to the spillbox neck. A calibrated dipstick, marked in cm/inches, is mounted to the manhole neck. Top of tank is full which corresponds to zero on the calibration plate and dipstick.

2.19 Accident Protection

A lightweight carbon steel protection frame is fitted to the rear end of the frame.

2.20 Side Lift Pockets

Lifting holes, for lifting in the empty condition, are provided on both sides of the tank.

2.21 Top Rails

Not fitted.

2.22 Bottom Rails

Not fitted.

2.23 Step Back Corner Castings

Step back corner fittings are provided at 20 ft centres.

2.24 Grappler Lift Points

Not fitted.

2.25 Collapsible Handrail

A stainless steel 304 electropolished collapsible handrail is fitted to the RHS longitudinal walkway

2.26 Valve Cabinet

An insulated stainless steel 304 valve protection box houses the bottom discharge assembly. An insulated, hinged and lockable lid is fitted.

2.27 Electrical Heating

Not fitted.

3.0 Finish

3.1 Shell	Internal Shell Surface Longitudinal Welds Circular Welds	2B finish As welded Bead penetrant fused, with bottom 600mm ground flush and polished to Ra = 1,3um max
3.2 Dished Ends	Internal Surface Weld Seams	Polished to Ra = 1,3um max Ground flush

3.3 Cleaning

On completion of fabrication, the vessel's internal surface is degreased, pickled, passivated and neutralised. A white cloth test will be performed on the internal surface to check for cleanliness. The opening points are sealed so that the tank is supplied clean and ready for use.

3.4 Painting (Hempel or Consani approved system)

The carbon steel frame components are shotblasted to SA 2_ and painted as follows:

First coat	Hempadur Zinc (1536)	30 micron min DFT
Intermediate coat	Hempadur Primer (1530)	30 micron min DFT

Final coat	Hempatex Hibuild (4641)	<u>70 micron min DFT</u>
	TOTAL	<u>130 micron min DFT</u>

Colour: Jet Black, RAL 9005

4.0 Test and Homologations

1. These tank containers are constructed according to an approved design.
2. Each production unit is subject to testing and non-destructive examination as required by ASME VIII Division 1, UIC and Consani's own quality requirements. Each unit is inspected by the independent Inspection Authority, Bureau Veritas.
3. The container has been subjected to a stacking test load of 32400kg per corner post and is approved for 3-high stacking (2 x 36000kg).
4. The tank fulfils the performance specification of the following International Organisation's regulations and recommendations and is supplied with their Approvals.

IMDG
RID/ADR L4BN

Additional approvals:

CSC
TIR / Customs
UIC (592-4)
UK - DETR

5.0 Documentation

The following documentation will be provided:

1. Certificate of cleaning (placed in the document holder).
2. Initial Inspection Certificate for each tank.

6.0 Products

Approved for products in classes 3, 6.1, 8 and 9 as applicable.

DESIGN: Compiled by : Reviewed by:

SALES/CONTRACTS :

CUSTOMER APPROVAL : _____

BY : _____

DATE : _____

From Enq i6421 to WO 8116 (08/07/2002)

- 1) Specification changed to a WO, serial numbers added.
- 2) Reference to UN portable tank removed. Now IMO Type 4 (1.1)
- 3) Head construction thickness revised, was 4.6mm, now 4.7mm (1.4)
- 4) Maximum external pressure was 0.41 bar, now 0.40 bar (1.5)
- 5) Calculation pressure added (1.5)
- 6) Manhole was 6 point fixing, now 8 point fixing (2.1)
- 7) Safety relief quantity revised, was one valve, now two valves (2.3)
- 8) Spillbox lids and necks are now insulated (2.8)
- 9) Insulation on barrel was mineralwool & PU, now Rockwool (2.10)
- 10) Insulated bottom discharge cabinet now fitted (2.26)

From WO 8116 to WO 8116 Rev1 (13/09/2002)

Cleaning hatch was Swift, now Fort Vale (2.2)

From WO 8116 REV1 to WO 8116 REV2 (15/10/2002)

- 1) RID/ADR L6BN, now L4BN (1.1, 4.0)

From WO 8116 REV2 to WO 8116 REV3 (26/11/2002)

- 1) As built tare mass added (1.3)
- 2) Note added regarding remote (2.7)
- 3) Armaflex added to spillbox lids (2.8)