TECHNICAL SPECIFICATION

CLIENT : OCI

®3 **SPECIFICATION NO. : ST42-35.4.36 – ENQJ6421** **WO 8113 REV3 (AS BUILT)**

DESCRIPTION : 20 x 35000 LITRE SWAP TANK

SERIAL NUMBERS TASU 235001 TO TASU 235020

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:	ST42 Swap Tank

1.2 Nominal Capacity (□0,5;+0,75% Tolerance)

SI		US	
35000	**□**	**9246**	**US gal**

1.3 Frame Dimensions And Mass

	MPGM	**34000**	**kg**	**74956** **lbs**
®3	Tare Mass (as built)	**4060**	**kg**	**8950** **lbs**
	Length	7820	mm	25 ft 7,874 in
	Width	2550	mm	8 ft 4,394 in
	Height	2670	mm	8 ft 9,118 in

1.4 Tank Dimensions

Internal Diameter	2454	mm	96,614	in
Tan to Tan	6800	mm	267,717	in
Shell Minimum Calculated Thickness	4,2	mm	0,165	in
Shell Construction Thickness	4,2	mm	0,165	in
Head Minimum Calculated Thickness	5,2	mm	0,205	in
Head Construction Thickness	5,3	mm	0,209	in
Dished Ends- Torispherical	Crown 2380	mm	Knuckle 250	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	EN 10210 S355 J2H / Supraform TM 380
		Plates	EN 10025 S355 K2G3C / Supraform TM 380
		Rolled section	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.
- Gasket: Klinger SIL C-4430 / PTFE

®3 • 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 10m_
- 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/m_)
  Ends: Glasswool, thickness to suit (16kg/m_)
  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 chequer 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	2B finish
		Longitudinal Welds	As welded
		Circular Welds	Bead penetrant fused, with bottom **600mm** ground flush and polished to Ra = 1,3um max
3.2	**Dished Ends**	Internal Surface	Polished to Ra = 1,3um max
		Weld Seams	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)	70 micron min DFT
	TOTAL	130 micron min DFT

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 j6421 to WO 8113 (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 5.2mm, now 5.3mm (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 8113 to WO 813 REV1 (28/08/2002)

1) Cleaning hatch was Swift, now Fort Vale (2.2)

From WO 8113 REV1 to WO 8113 REV2 (15/10/2002)

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

From WO 8113 REV2 to WO 8113 REV3 (18/11/2002)

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