CLEAN JACKSONVILLE
CLEAN JACKSONVILLE - General Construction
GTT Mark III Membrane Containment System

- Stainless Steel Corrugated Plating
- Inter-BARRIER and Insulation Spaces
- Composite Secondary Containment Membrane
- Positive Pressure of Inter-BARRIER Insulation for Vapor leak containment
GTT Mark III Membrane Containment System
Tank Protection Relief Valves

- Two Fully Redundant PRVs set for 700mbar
- Independent Safety Line to Vent Mast set by operator
Combined Dome - Cargo Handling

- Combined Vapor and Liquid Dome
- Loading and Bunkering piping are common at the Cargo Dome
- Spray and Stripping lines able to facilitate stripping, spray rail utilization, gassing up and cool down operations.
Cargo Pumps

- **Two (2) Primary Cargo Pumps**
  - Ebara Model 8EC-12,
  - Rated Capacity of 500 m³/hr, 262 HP, 3840 RPM
  - Single Stage, VFD Controlled: 40 Hz – 64 Hz
  - Minimum Starting Level: 1.25 M

- **One (1) Stripping/Spray Pump**
  - Ebara Model 1EC-063
  - Rated Capacity of 8 m³/hr, 5.5HP, 3600 RPM
  - 3 Stage, Fixed Frequency Control
  - Minimum Starting Level: 0.39 M
Custody Transfer Management System

- Coriolis Mass Flow Meter Technology
- Calculates Resonance signal produced of LNG moving through internal measurement piping

- Gas Chromatograph measures composition of LNG Product
- Continuous sampling - Analyzed by Helium carrier gas
Reliquafaction System

- Six (6) Stirling Cryocoolers
- Condenses Boil off Gas and Vapor from Marlin Ship
- Exceeds 125% BOG Management IGC Code requirements

- Electronically Driven
- Independent VFDs
- Wet Bulkhead Seal pressed with Nitrogen
Cascade Cooling System
Vaporizer and Glycol Water Heater

- DongHwa Vaporizer and Glycol Heater System
  - Primarily used if Ship cannot provide Vapor Return
  - Secondary Use: Gassing Up
  - Capable 90 C glycol water
The Clean Jacksonville Bunker Mast:
Bunker Mast Connection

- Liquid: 8” Hose reduced to 6” QC/DC
- Vapor: 4” Hose & QC/DC
- Quick Connecting
- No Intereting Required
Bunker Mast Connection
Deck Machinery

- Deck Machinery on the Barge
  - 4 Lantec 200 Series Mooring Winches
  - 1 Lantec 750 Series Mooring Winch
  - 1 Tech Crane Loading Crane
  - 1 Coastal Anchor Winch
  - 1 Pull Master M25 Bridle Winch
• Pressure Reducing Station
  • One pneumatic inline direct acting and one PID controlled valve with DVC
    • Steps Client C-Tank vapor return from a maximum 10 bar down to Operator desired setpoint.
  • Bypass valve allows for vapor return from a Client Membrane Tank
Electrical System

Power Management System
- Complete Automatic Control with preferential trip settings.
- Capable of receiving power from Tug for Limited Operations

Generators
- Cummins QSK19-DM 515 kW
  - Two in Lower Machinery Space
  - One in Standby Generator Room
Nitrogen System

- Two Nitrogen Generators
  - Generon Membrane Type
  - Rated Capacity
    - 38Nm3/hr each
  - 10barg, 97% N2 purity

- Two Feed Air Compressors
  - TMC Rotary Screw
  - Supplies:
    - Air to N2 Generators, Gas Sampling, Fuel Shut Off Valves, Sea Chest Blow Down
  - Desiccant Air Dryer located between compressors and Nitrogen Generator
Siemens CAMS Automation

- Controlled Stations:
  - Barge Equipment
  - Monitored from CCR or Tug
- Cargo Management
- Power Management
- Load Shedding
- Emergency Response
Telemetry Overview

MTU – Master Telemetry Unit
RCUa – Radio Communications Unit @ the Tugboat
RCUb – Radio Communications Unit @ the Barge
PU – Portable Unit (Optional)

Radio Data Network (MDLC Protocol in Cluster Mode)

MTU

RCUa @ Tugboat

RCUb1

ACE3600 RTU (Redundant CPU & PS)

Local HMI Display

Radio 1 VHF

Radio 2 5.2-5.8GHz

CAMS
## Fire and Safety Equipment

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<th>Equipment</th>
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<td>Flame/Heat/Smoke Detection</td>
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<tr>
<td>Fixed CO2 Protected Spaces</td>
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<td>ESD System / TPS</td>
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<td>Fire Pumps</td>
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<tr>
<td>Water Curtain / Water Spray</td>
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<tr>
<td>Nitrogen Smothering</td>
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<tr>
<td>Fixed Powder (350lbs) w/100ft Hose</td>
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<tr>
<td>Emergency Anchor</td>
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</tbody>
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*Image of safety equipment.*
Thank You

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