This is the largest Crowley class of ATBs, with 10 vessels in operation. This class features improved vessel cargo systems for maximum flexibility and cargo integrity. Though larger than the 550 class of ATBs, these vessels safely maintain 12 knots and can handle extreme weather. These ATBs were also designed for easy modification to allow transport of EZ chemicals such as cyclohexane, paraxylene and styrene.

650 Class Design Highlights:
- 181,640 barrels at 96% capacity
- Twin-screw Intercon notch connection
- 10,500-HP tug
- 1,508-1,799-HP per engine barge
- Designed to carry clean petroleum products, heated cargoes and EZ chemicals
- Barge built under the ABS SafeHull program
- Meets full SOLAS criteria for enhanced crew safety
- Redundant steering system with oversized rudders for maximum handling capability
- Transfer rates of up to 20,000 barrels per hour
- Cargo pump in each of the 14 cargo tanks to assure maximum cargo integrity and segregation flexibility
- Remote radar gauging in all cargo and ballast tanks
- Remote operated ballast system to enable vessel to exchange ballast at sea
- Dual-mode inert gas vapor collection system, with a layer of inert gas covering the product in the tank making the tank atmosphere too lean for combustion
- Enhanced mooring system featuring 1,000 feet of Spectra-type lines on split drums with a high-speed recovery rate of 100 feet per minute
- Two anchor windlasses each equipped with 10 shots of chain for offshore mooring operation
- Barge meets OCIMF and ISOTT requirements
- Vacuum system with three retention tanks to easily handle cargo changes
- Advanced foam firefighting system, fire monitor mounted on tug, fixed Co2 for all machinery spaces and foam coverage system for cargo manifold area

### 650 CLASS ARTICULATED TUG BARGE FLEET (ATB)

<table>
<thead>
<tr>
<th>Name</th>
<th>IMO Number</th>
<th>Year Built</th>
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<tr>
<td>Pacific Reliance</td>
<td>9386548</td>
<td>2006</td>
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<td>Gulf Reliance</td>
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<td>Resolve/650-2</td>
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<td>Integrity/650-4</td>
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<td>Courage/650-5</td>
<td>9369409</td>
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<td>Pride/650-7</td>
<td>9369423</td>
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<tr>
<td>Vision/650-10</td>
<td>9542609</td>
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</tbody>
</table>

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**GENERAL SPECIFICATIONS**

**FLAG**
United States

**BUILDER**
Halter Marine

**OVERALL DIMENSIONS**
- LOA Coupled: 675'9" (650-1/650-2)
- 683'9" (650-3 through 650-5)
- 689' (650-6 through 650-10)
- Breadth: 74'
- Depth: 40'
- Design Draft: 30'4"
- DWT: 27,023 LT

**TANK CAPACITY**
- Cargo @96%: 181,640 bbls
- MGO: 100 per 15 gallons/tank

**CARGO EQUIPMENT**
- Tanks: 14
- Segregations: 5
- Pumps: 5 Flowserve 4 Stage Deepwell
- 3P/S & 6P/S 51,528 bbls
- 2P/S & 5P/S 51,562 bbls
- 1P/S 24,564 bbls

**MACHINERY**
- **Main Engine:**
  - 2: CAT 3512 (650-1 through 650-6)
  - 2:2 CUMMINS QSK50-DM (650-7 through 650-10)
- **Emissions Standard:** Tier I
- **HP (per engine):**
  - 1,508 (650-1 through 650-6)
  - 1,799 (650-7 through 650-10)
- **Propeller:**
  - Fixed Pitch (650-1 through 650-5)
  - Controllable Pitch (650-6 through 650-10)
- **Generators:** 2
- **Ballast System:** 2 Deepwell Pump; 7,142 bbls/hr
- **Cleaning System:** ScanJet SC-30T 20.4m³/hr @ 8 bar (650-2/650-6/650-7/650-9/650-10 only)
- **Heating System:** Vapor Power ONC-5937-AHK-100
- **Lightering Pin:** 50" Bore Intercontinental Engineering Pin
- **Nitrogen IG System:** Air Products 1500m³/hr N2 flow rate at 3P/30 (650-3 and 650-4)

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*All information contained herein (including but not limited to any specifications, particulars, capacities, or capabilities) is believed to be correct, but is not guaranteed and is subject to change without notice. Particulars are entirely without warranty as to their correctness and interested parties must inspect the vessel, its certificates and drawings accordingly.*

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