

**5 x 22,000 cbm LEG/LPG-Carriers**  
**“Navigator Mars”, “Navigator Pluto”, “Navigator Venus”, “Navigator Saturn” &**  
**“Navigator Neptune”**  
**for NAVIGATOR HOLDINGS, USA**

**Project Data:**

**Shipyard:**

Jiangnan Shipyard, China

**Year of completion:** 1999/2000

**Classification:** GL

**TGE’s scope:**

EPCS-contract, gas handling system & cargo tanks, ship design development



**Vessel:**

22,000 m<sup>3</sup> semi ref. LEG/LPG carrier, type 2G  
 Length o.a. 171.5 m  
 Beam: 24.2 m  
 Draught (LPG): 11.0 m  
 Speed: 16.5 kn

**Characteristics of gas plant:**

**Capacity:** 22,000 m<sup>3</sup>  
**Number of cargo tanks:** 4 (bilobe type)  
**Material of cargo tanks:** 5 % Ni steel, 12 Ni 19; DIN Mat.-No.: 1.5680  
**Cargoes:** Ethylene/LPG/NH<sub>3</sub>/VCM  
**Design temperature / pressure:** -104 °C /4.7/5.4 bar g acc. to IMO, 3.4 bar g acc. to USCG  
**Maximum cargo density:** 972 kg/m<sup>3</sup>  
**Number of segregations:** 3  
**Cargo manifolds:** 3 liquid lines, 2 x 10, 1 x 8” ANSI 300 lbs flanges  
 3 vapour lines, 2 x 6”, 1 x 4” ANSI 300 lbs flanges  
**Loading- / Unloadingrate:** 2,000 m<sup>3</sup>/h / 2,000 m<sup>3</sup>/h  
 Deepwell pump 8 x 250 m<sup>3</sup>/h at 120 m LC  
 Booster pump 2 x 500 m<sup>3</sup>/h at 120 m LC  
**Number of cargo heater / vaporizer:**  
 1 direct sea-water heated type Capacity: 400 m<sup>3</sup>/h Propane from -42°C to 0°C at 15°C sea-water temperature

**Reliquefaction system:**

Cascade cycle, refrigerant Propylene  
 3 x SULZER compressor  
 3 x MYCOM compressor

**Cargo piping system:**

Stainless steel, AISI 316 DIN Mat.-No.: 1.4571

**Nitrogen generation plant:**

PSA type Capacity: 1,500 Nm<sup>3</sup>/h at 99.5 vol.% punity

**Deck Tank:**

Capacity: 2 x 125 m<sup>3</sup>  
 Design Pressure / Temperature: 18 bar g / -104 °C