

# Patti Marine delivers its first ATB tug



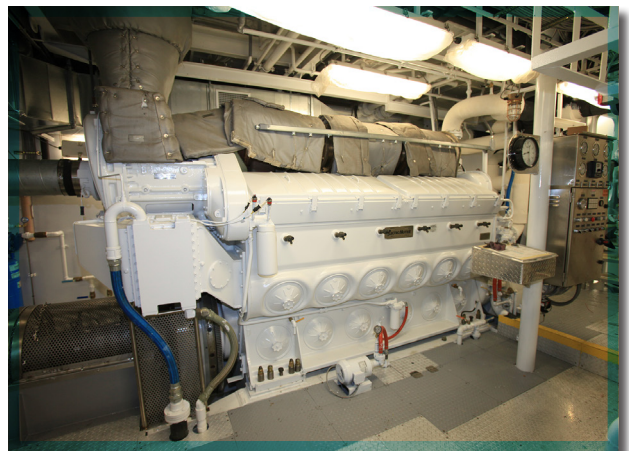
By Bruce Buls, Technical Editor

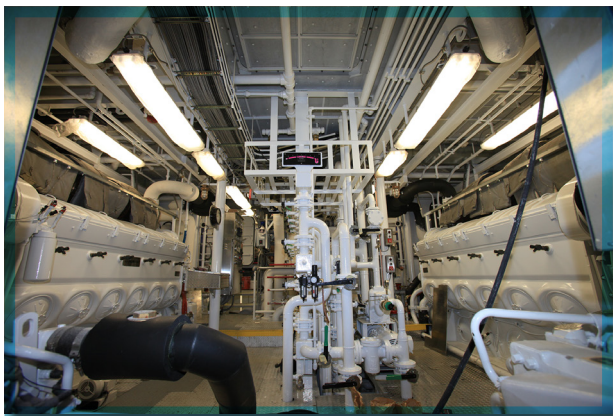
**Express Marine Inc.** has provided safe, reliable tug-and-barge transportation for dry bulk and liquid cargoes along the coasts of the Atlantic, the Gulf, the Caribbean and associated bays, harbors and rivers for over 100 years.

The newest tug for Camden, N.J.-based EMI was delivered from **Patti Marine Enterprises**, Pensacola, FL, on April 9. This is the third tug Patti has built for Express Marine. The first was the 102-foot, 3,000-hp Z-drive Duty , built in 2007. The second, the 94-foot Honor , also a 3,000-hp Z-drive, was built a year later.

The new tug is the 115' × 38' × 21' *Freedom*. It is the first new ATB for Express Marine and the first ATB tug that Patti Marine has built. It is also the tallest boat to come out of the Pensacola boatyard. "There was only a few feet of clearance from the top of the pilothouse to the bridge," said Patti Marine project manager Ashley Stone.

When the *Freedom* left the dock, it was on its way to the Panama Canal and then up the West Coast to Gunderson Marine in Portland, Ore., where the tug's 482' × 90' barge is being built. The tug will be mated to the barge using a Beacon Finland JAK-700P pneumatically actuated and electrically controlled ATB coupling system.





For the *Freedom's* crew, it should be a comfortable ride to the West Coast as Express Marine has gone out of its way to reduce noise and vibration on the tug.

For instance, there's a floating floor system made up of a composite structure that features 10-gauge plate over 2" of mineral wool that keeps vibration from being transmitted to the plate.

"The mess area is above the machinery space. You don't even hardly know the engine's on. We were thoroughly impressed," Stone said.

The wall paneling has extra noise reduction built into it, and the main engines and gensets are all flexible mounted.

The main engines are a pair of EMD 12-710G7C-T2 diesels putting out 3,000 hp each at 900 rpm. They power SteerProp SP35 azimuthing propulsors with 9.2' (2,800 mm), 4-bladed props. These are the largest SteerProp Z-drives ever installed on a U.S. tug, Stone said.

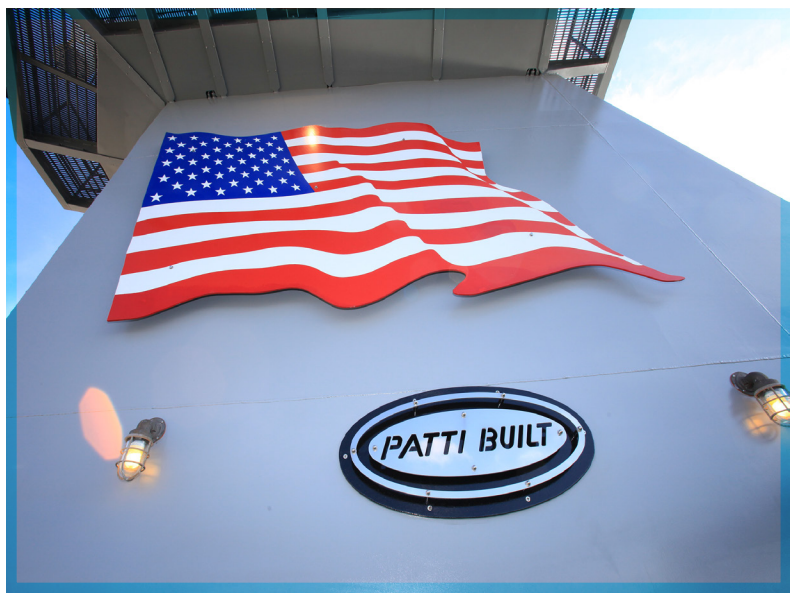
The *Freedom* shouldn't be tied up at a dock because of generator repairs as it has three John Deere 6081AMK330 gensets. Each one puts out 150 kw at 1,800 rpm. "Any one of the three can handle the vessel's load," Stone said.

The notion of having a good backup extends to the cooling system. "I'd never heard of this being done before," Stone said. "But they were concerned about being put in a critical situation because of debris."

The result is kind of a hybrid-cooling system, with both raw water going through a heat exchanger and traditional freshwater cooling with channels. If the raw-water system is clogged with debris, "she can run about 75 to 80 percent of the power by switching over to the closed-loop channel system," Stone noted.

Up in the wheelhouse is the first MICAD fuel-management system that Patti Marine has installed. With it, Express Marine's shore-based office can keep track of the amount of fuel being used on the *Freedom*.

When the *Freedom* is engaged in close-quarter docking maneuvers, the captain can control the boat with a tethered remote system. "He can take it where he wants to go," Stone said.



The tug also features a North Pacific Crane Co. MCT 10-40, 10-ton telescoping boom hydraulic crane with a 40' reach, and a pair of JonRie Intertech 20,000-lb.-capacity hydraulic capstans.

The *Freedom* SSRq s tankage includes 103,000 gals. of fuel oil; 2,400 gals. lube oil; 13,000 gals. wash water; 4,200 gals. potable water; and 2,000 gals. of sewage.

The tug is classed ABS Class A1 Towing Service AMS Machinery, ABS Load Line Assignment and is certified USCG Subchapter C (Uninspected Towing Vessel), working around the world.





# M/V "FREEDOM" - Hull 168

## Construction and Equipment Details

### Completion Dates:

April 2010

### Homeport:

Philadelphia, PA

### Special Features:

- This is the first ATB unit built by Patti Marine Enterprises. It will mate with a barge currently under construction at Gunderson Marine.
- Hybrid cooling system, mixing traditional channel (fresh water) coolers with heat exchanger (raw water) coolers. This approach allows for back-up operation in critical areas if the raw water system becomes clogged with debris.
- Near yacht quality finish on all wood-work
- Floating floor system on entire Main Deck level for isolation of noise from machinery spaces below.
- Largest SteerProp Z-drives installed on a U.S. tug
- MICAD fuel management system onboard
- Remote control for SteerProp Z-drives added for full bridge wing control
- This vessel is the largest of (3) tugboats built by Patti for Express Marine over the past (4)-years. The series of vessel names were DUTY, HONOR & FREEDOM.

Builder: **Patti Marine Enterprises, Inc.**  
 Attn: Frank Patti, Jr., President  
 Ashley Stone, Project Manager  
 306 South Pinewood Lane • Pensacola, FL 32507  
 Ph: (850) 453-1282  
 Fax: (850) 453-8835  
 e-mail: ashley@pattimarine.com

Designer: **Express Marine, Inc.**  
 Attn: Duncan MacLane, Naval Architect  
 2851 Adams Street • Camden, NJ 08105  
 Ph: (856) 541-4600  
 Fax: (856) 541-0338  
 e-mail: dmaclane@expressmarine.com

and

**Guido Perla & Associates, Inc.**  
 701 Fifth Ave, Suite 1200 • Seattle, WA 98104  
 Ph: (206) 768-1515  
 Fax: (206) 768-9700

Owners: **EMI-PA, Inc.**  
 Attn: Richard "Dick" Walling, President  
 Kenneth James, Vice President  
 Ph: (856) 541-4600  
 Fax: (856) 541-0338  
 e-mail: kjames@expressmarine.com

Mission: ATB Tugboat  
 Length: 115'-0"  
 Beam: 38'-0"  
 Depth: 21'-0" (@ Midship)  
 Draft: 16'-9" (Full Load)  
 Pin System: Beacon Finland – JAK-700P Coupling System  
 Main Engine: (2) EMD 12-710G7C-T2, 3,000 HP @ 900 RPM diesel engines  
 Z-Drive: (2) SteerProp SP35 Azimuth Propulsors, HJ3 high performance nozzle, 2800mm diameter, (4)-blade propeller  
 Shafting: (2) Cardan Shaft assembly with Centa torsional coupling  
 Controls: SteerProp  
 Gen-sets: (3) John Deere 6081AMK330, 150kW @ 1800 RPM  
 Hydraulics: JonRie InterTech  
 Crane: (1) North Pacific Crane model MCT-1040, 10-ton telescoping boom hydraulic crane, 40' reach  
 Tow Winch: None  
 Capstans: (2) JonRie InterTech series 421 hydraulic capstans, 20,000 lb. @ 30 FPM

Hull Construction: Steel  
 Crew Quarters: 13  
 Capacities:  
 Fuel Oil = 103,000 gal.  
 Hyd Oil = 400 gal.  
 Lube Oil = 2,480 gal.  
 Gear Oil = 1,200 gal.  
 Waste Oil = 2,540 gal.  
 Oily Water = 2,540 gal.  
 Potable Wtr = 4,200 gal.  
 Wash Wtr = 13,000 gal.  
 Sewage = 2,000 gal.

Electronics: Radio Holland  
 Class: ABS Class A1 Towing Service AMS Machinery; ABS Load Line Assignment; USCG, Subchapter-C Uninspected Towing Vessel  
 Tonnage: 198 (Gross Regulatory Tonnage) / 93 (Net Regulatory Tonnage)  
 676 (Gross ITC) / 202 (Net ITC)