



# National Transportation Safety Board

## Marine Accident Brief

### Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*

<b>Accident no.</b>	DCA-12-LM-017
<b>Vessel names</b>	<i>FR8 Pride</i> <i>Rowan EXL I</i>
<b>Accident type</b>	Collision
<b>Location</b>	Aransas Pass - Port Aransas/Corpus Christi, Texas 27°49.1' N, 097°00.5' W
<b>Date</b>	May 2, 2012
<b>Time</b>	0718 central daylight time (coordinated universal time -5 hours)
<b>Injuries</b>	None
<b>Damage</b>	Estimated total: \$16 to 17 million ( <i>Rowan EXL I</i> : \$14 to 15 million; <i>F8 Pride</i> : \$2 million)
<b>Environmental damage</b>	Minor – limited spillage of hydraulic oil from damaged hydraulic oil piping
<b>Weather</b>	Clear skies, SE wind at 9 knots, seas 3 feet, air temperature 57° F
<b>Waterway characteristics</b>	Corpus Christi is a principal deep water port in the US Gulf of Mexico. Aransas Pass is the principal approach from the Gulf to Aransas and Corpus Christi Bays and their tributaries.

On May 2, 2012, at 0718, the oil tanker *FR8 Pride* collided with the mobile offshore drilling unit (MODU) *Rowan EXL I* in Aransas Pass, Corpus Christi, Texas. No one was injured in the collision, but the two vessels sustained an estimated \$16–17 million in damage.

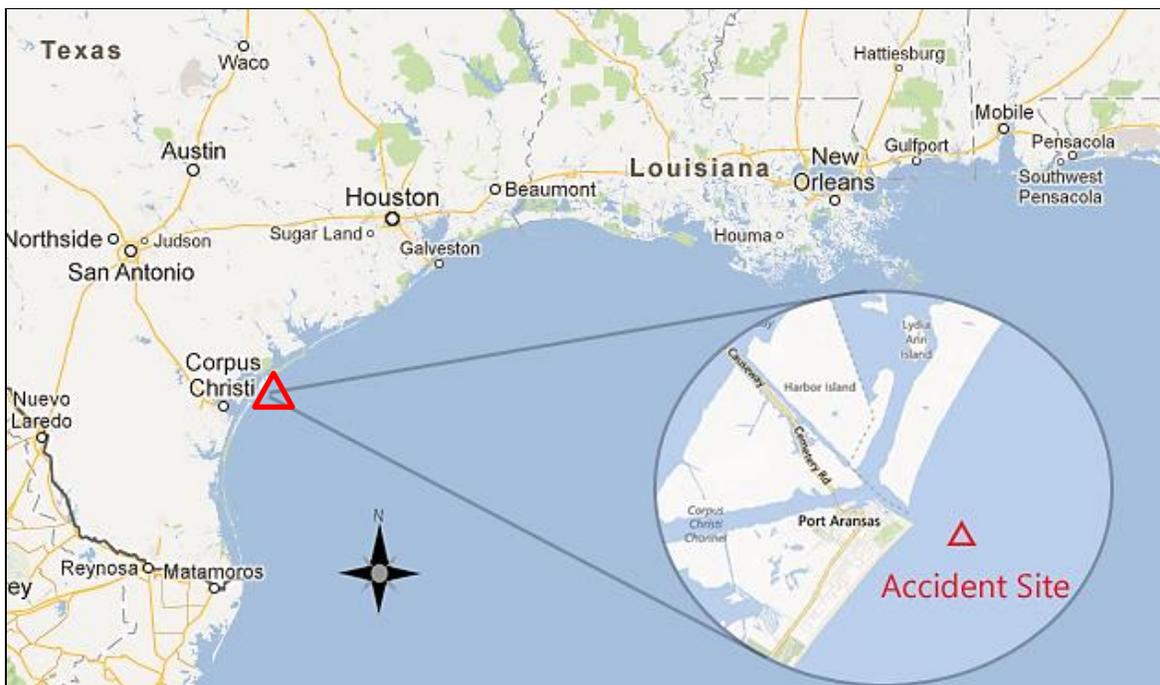


The *FR8 Pride* shortly after the collision. Photo provided by the Coast Guard.

## Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*



Photo of the *Rowan EXL I* before the accident, by David Hanstine Photography.



The collision site. Background by Bing Maps.

Earlier that morning, the 750-foot-long double-hulled oil tanker *FR8 Pride* got under way from an offshore fairway anchorage, inbound to Corpus Christi. At 0704, about 14 minutes before the collision, a local pilot boarded the *FR8 Pride* to take the ship into port. At 0714, as the

## Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*

*FR8 Pride* was increasing to full-ahead speed on a northwesterly course in the Aransas Pass channel, the ship's main propulsion engine suddenly slowed down significantly. The slowdown was automatically triggered by the main engine's electronic control system in order to protect the engine from damage. As a result of the engine slowdown, the *FR8 Pride*'s steering ability was greatly reduced, and the ship began an unintended swing to starboard, causing it to sheer out of the channel. Meanwhile, the MODU *Rowan EXL I*, also inbound to Corpus Christi, was about 400 feet outside the channel, on the starboard side and ahead of the approaching *FR8 Pride*. The non-self-propelled *Rowan EXL I* was being towed at 1 to 2 knots by three tugboats at its bow. As the *FR8 Pride* began to swing to starboard, the *FR8 Pride* pilot ordered hard starboard rudder in an attempt to make the ship's bow pass astern of the *Rowan EXL I*. However, at 0718, about 4 minutes after the engine slowdown began, the starboard-side bow of the *FR8 Pride* collided with the port side of the *Rowan EXL I* at about 8 knots. Shortly after the collision, which punctured the *FR8 Pride*'s hull below the waterline, the ship's forepeak tank flooded and the vessel grounded at its bow.

After the collision and within the timeframes required by Coast Guard regulations, the *FR8 Pride* pilot and crew, and the pilot on board the lead tugboat for the *Rowan EXL I*, were tested for drugs and alcohol. All results were negative.

Damage to the *FR8 Pride* consisted of two torn openings in the starboard side of the forepeak tank below the waterline, deformation and holing of the No. 1 wing ballast tank, buckling and deformation of the starboard bulwark from the bow to frame 249 (about 150 feet), damage to the starboard side forward hand rails, and damage to its forward mast.



Damage to the *FR8 Pride*, including the puncture to the hull below the waterline, visible in the lower center of the image. Photo provided by the Coast Guard.

## Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*

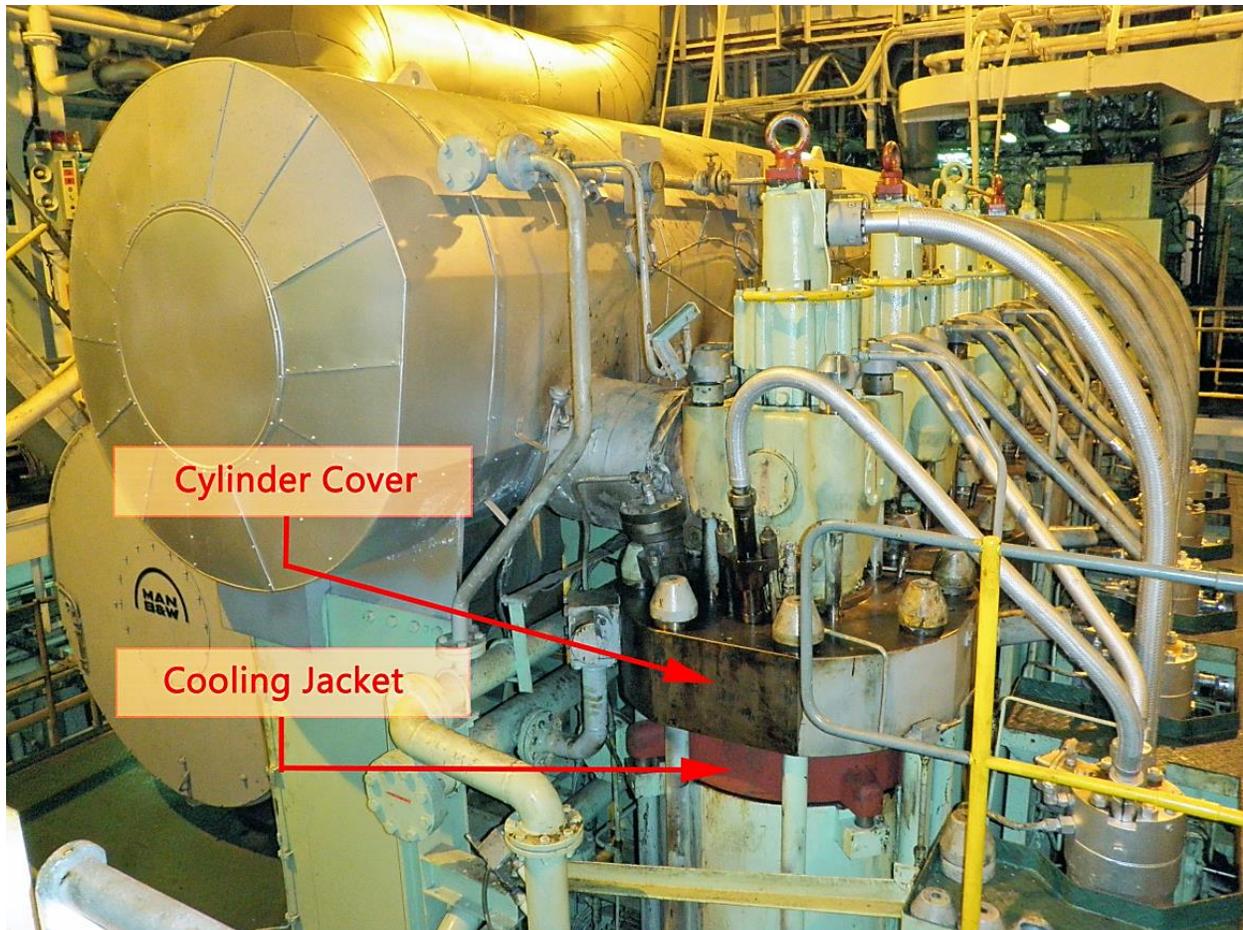
Damage to the *Rowan EXL I* consisted of deformation and tearing of the No. 3 port ballast tank bulkheads, deformation and tearing of No. 5 port ballast tank bulkheads, and buckling of the No. 7 port ballast tank and that tank's bulkhead. In addition, the port forward crane boom, crane support column and adjacent work platforms and piping systems, and the portside survival crafts were damaged.



The extensive damage to the port side of the *Rowan EXL I*, including its destroyed survival crafts (orange-colored) near the center of the photo. Photo provided by the Coast Guard.

The reason for the automatic slowdown of the *FR8 Pride*'s engine was that the cooling jacket on the engine's cylinder No. 5 had suddenly cracked. Jacket water began leaking from the cracked cooling jacket, and the main engine control system (Kongsberg AutoChief 4)—detecting the resulting pressure loss in the jacket water cooling system—protected the engine by reducing its speed.

## Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*



The *FR8 Pride*'s main propulsion engine, with the location of the failed engine component (cooling jacket for cylinder No. 5) indicated. Photo by the Coast Guard.

In the weeks before the collision, on two separate occasions, the cooling jackets on two of the *FR8 Pride*'s other cylinders (Nos. 2 and 3) had also cracked, and the ship's crew had repaired them. After cylinder No. 5's cooling jacket failure, which led to the collision, the crew called on the assistance of the engine manufacturer's service engineer, who identified several possible causes for the cracked cooling jackets. According to the service engineer's report, the cracks likely resulted from excessive thermal stresses imposed by rapid application of engine load when the ship's speed was increased from slow ahead to full ahead. However, the Kongsberg AutoChief 4 engine control system, which prevents engine damage from rapid changes in load by limiting fuel rack position according to a pre-set load application curve, was evaluated postaccident and found to be functioning correctly. In addition, the three cooling jackets were metallurgically tested in an attempt to determine why they had cracked. The test found no abnormal conditions such as flaws or defects, preexisting cracks, unusual metal composition, corrosion, or manufacturing defect. The metallurgical test report did express the opinion that the material used in manufacturing the cooling jackets (gray cast iron) might be inappropriate for this design application. However, according to the engine manufacturer, there had not been an unusual number of failures of this engine component within the population of this model engine, suggesting that no design deficiency exists.

## **Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I***

During the months before the collision, the engine's jacket water temperature control valve could not automatically maintain a steady water temperature in the engine when load changed appreciably. The crew had, therefore, been manually controlling the jacket water temperature during ship maneuvering. The crew's manual control appeared to have been effective before the failure of the No. 5 cooling jacket; according to the engine alarm system record, no high or low water temperature condition had occurred during the maneuvering period leading up to the collision. Therefore, the cause of the cracked cooling jackets remains undetermined.

## Collision of Oil Tanker *FR8 Pride* with MODU *Rowan EXL I*

### Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision of oil tanker *FR8 Pride* with MODU *Rowan EXL I* was the failure of the *FR8 Pride*'s main propulsion engine, which resulted in reduced maneuverability of the ship.

### Vessel Particulars

Vessel	<i>FR8 Pride</i> <sup>1</sup>	<i>Rowan EXL I</i>
<b>Owner/operator</b>	FR 8 Pride Shipping Corporation Thome Ship Management, PTE LTD	Rowan Luxembourg SARL
<b>Port of registry</b>	Majuro	Majuro
<b>Flag</b>	Republic of Marshall Islands	Republic of Marshall Islands
<b>Type</b>	Oil tanker, double hull	Mobile Offshore Drilling Unit (MODU)
<b>Built</b>	2006	2010
<b>IMO number</b>	9329760	9584451
<b>Construction</b>	Steel	Steel
<b>Length</b>	750 ft (228 m)	228 ft (69.3 m)
<b>Draft</b>	39.4 ft (11.9 m)	6 ft (1.8 m)
<b>Beam</b>	105.8 ft (32.1 m)	206 ft (62.6 m)
<b>Gross tonnage</b>	42,010	7,279
<b>Engine power</b>	15,153 hp (11,300 kW), direct drive diesel	n/a
<b>Engine manufacturer</b>	MAN B&W, model 5S60 MC-C	n/a
<b>Persons on board</b>	24 crew and 1 pilot	56

For more details about this accident, visit <http://www.nts.gov/investigations/dms.html> and search for NTSB accident ID DCA-12-LM-017.

**Adopted: June 27, 2013**

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under 49 United States Code 1131. This report is based on factual information provided by the US Coast Guard from its informal investigation of the accident. The NTSB did not conduct its own on-scene investigation.

<sup>1</sup> In December 2012, the *FR8 Pride* was renamed *LR Mimosa*, and its owner/operator changed. The flag of registration and surveying classification society remained unchanged.