

## Fire safety onboard

By Warren Garner

Fire prevention and protection are two of the most critical aspects of ship construction and maintenance. Because an onboard fire can devastate a vessel and threaten the lives of its passengers, engineers must use proper design and technology to quickly suppress a fire, prevent it from spreading between compartments, reduce the level of damage and protect the safety of the crew.

Safeguarding the cable and pipe penetrations is vital in minimizing damage. For this type of application, vessels such as the *Dolphin III* in the Gulf of Mexico have turned to the RISE multi-cable and multi-pipe penetration sealing system.

As the newest towing vessel in Dolphin Marine International's five-vessel fleet, the *Dolphin III* is a high horsepower tug that handles offshore construction, rig moving and ocean towing. Built in 2001, the 150-foot vessel, owned by the Galliano, La. towing company, is classified ABS-A1 ocean-towing and SOLAS certified. It is considered one of the most powerful offshore tugboats servicing offshore construction and drilling companies in the Gulf of Mexico.

In the fall of 2004, the *Dolphin III* sustained a fire in the engine room. Contained within the upper and lower engine room, the inferno buckled the surrounding steel, bulkheads and smokestack, melting almost everything in the rooms. The precise origin of the blaze remains a mystery, according to Dolphin Marine International, because the engine room was too damaged to identify its cause.

Most importantly, the crew aboard the vessel was not injured during the incident. The fire was extinguished by closing all



The *Dolphin III* returned to sea in April

ventilations and flaps, preventing oxygen from entering the engine room.

"I'm certain my crew could have been able to fight this fire," said Todd Cheramie, operations manager at Dolphin Marine International, "but not having to do so was one less concern to deal with at the time."

When the vessel was dry-docked early this year for repairs at Bollinger Shipyards, Algiers, La., Port Captain Chris Duet surveyed the damage. He examined the bulkhead piping penetrations and spotted one reason why the fire had not traveled to other spaces—the RISE multi-pipe system.

When the *Dolphin III* was originally built by Thoma-Sea Boat Builders, Bourg, La., the shipyard was the first in Southern Louisiana to install the RISE system, which is manufactured by Beele Engineering BV and distributed through W&O Supply.

"Not only was this fire safety system easier to design and install than traditional block methods," said Bobby Thomassie, operations manager at Thoma-Sea Boat Builders, "but it also provided a safer seal against the passage of unwanted fire, water and gas. Installing the RISE system was a great example of how shipowner and shipyard work together to select innovative products that can save time, money and, most of all, people's lives in the end."

Specifically designed for marine and offshore installations and with all major Classification Society and NAVSEA approvals, the RISE system seals both multi-pipe and cable penetrations. The multi-pipe system consists of three components: FRR/EHF rubber strips and filler sleeves, and a silicone-based fire resistant, water repellent sealant called FIWA.

When RISE is exposed to heat or fire, the rubber strips and sleeves expand five to ten times their original volume, creating a strong rubber mass within the penetration that can withstand tremendous pressures, while achieving its gas and watertight ratings. These features allow the RISE system to mitigate the passage of flames, fire and heat transfer from one compartment to another, preventing additional damage to equipment and possibly averting injuries or death to crewmembers.

"Despite the intensity and duration of the heat, I noticed the RISE system held its integrity on the piping penetrations," said Duet. "The sealant remained completely intact and... stopped the fire from spreading into... other compartments of the ship."

"In the engine room the fire had bowed out the steel bulkhead more than two inches, the copper tubing had melted all the way through and there was absolutely nothing left of the transit," he said. "But on the other side of bulkhead, where the RISE system had protected, the copper transit still appeared completely untouched and new."

After 95 days of repair work, a main engine overhaul, extensive tests and sea trials, and ABS requirement certification, the *Dolphin III* went back to work in April 2005 and has been active since.

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