



**OTC 20154**

## **Innovative Solution for Emergency Repair of a Deep Water Riser (Avoiding Flooding and Re-Commissioning, Minimizing Lost-Production) A Case Study of Independence Hub Flex-Joint Repair**

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### **Abstract**

The export riser leaving the Enterprise Independence Hub platform is a 13,000 feet, 20” SCR, in 8,000 feet of water, with the capacity to handle more than 10% of the natural gas transported from the Gulf of Mexico.

In April 2008, Enterprise found a leak in the flex-joint assembly, located about 26 meters (85 feet) below sea level.

The goal was to repair the flex-joint with minimum down time. Normally the valves above the assembly would be shut and the flex-joint disconnected to replace the o-ring. This would cause the riser to flood, and once repaired, the riser would have to be de-watered and re-commissioned.

This paper will discuss the repair, using an innovative technology consisting of a remotely controlled (through-steel wall data communication) double block, piggable high-pressure isolation system (non-invasive). The system was pigged from the platform launcher, through the riser, and “set” immediately past the flex-joint.

Once the flex-joint was so isolated from the riser with this tool, the o-ring gasket was replaced subsea (at ambient), without flooding the remainder of the riser or pipeline, avoiding degassing (the riser and pipeline remained pressurized during repair) and avoiding re-commissioning.

The repair was completed, and Enterprise was able to resume gas flow, in 10 days, representing a significant savings in lost-production.

Considering MMS Safety Alert 264, and with deep water risers becoming more common, and more valuable given their high pressure/volume of production, this pressure isolation technology represents a method of allowing subsea repairs without flooding, potentially saving months of production.