

TerranearPMC Safety Share

Week of April 20, 2015 – Deepwater Horizon; Five Years Later

It has been five years since the tragedy of the off-shore oil rig, *Deepwater Horizon* occurred, killing eleven of its workers. The exact date was April 20, 2010.

Deepwater Horizon was built for R&B Falcon (which later became part of Transocean). It was built by Hyundai Heavy Industries in Ulsan, South Korea. Construction started in December 1998 and was a fifth-generation of a specific model (RBS-8D) as a deepwater, dynamically positioned, column-stabilized, semi-submersible mobile offshore drilling unit. It was designed to drill subsea wells for oil exploration and production using an 18.75 in (476 mm), 15,000 psi (100,000 kPa) blowout preventer, and a 21 in (530 mm) outside diameter marine riser.

Deepwater Horizon worked on wells in notable underwater oil fields in the Gulf of Mexico, Atlantis and Thunder Horse. It was described at times as a "lucky" and "celebrated" rig, and in 2007 was still described as one of the most powerful rigs in the world. In 2006 it discovered oil in the Kaskida oil field, and in 2009 the "giant" Tiber field approximately 250 miles (400 km) southeast of Houston which has a vertical depth of 35,050 ft (10,683 m) below 4,132 ft (1,259 m) of water. This well was the deepest oil well in the world, and more than 5,000 feet (1,500 m) further below the seabed than the rig's official drilling specification stated on the company's fleet list.

Deepwater Horizon was leased to BP for a twelve-year contract from 2001 until September 2013. However, it was on April 20, 2010, while drilling at the Macondo Prospect, an explosion on the rig caused by a blowout, killing 11 crewmen and ignited a fireball visible from 40 miles (64 km) away. The resulting fire could not be extinguished and, on 22 April 2010, *Deepwater Horizon* sank, leaving the well gushing at the seabed and causing the largest oil spill in U.S. waters.

On that fateful day, at 9:45 P.M. while the final phases of drilling an exploratory well that a geyser of seawater erupted, shooting 240 feet into the air from the marine riser onto the rig. This was soon followed by the eruption of a slushy combination of mud, methane gas, and water. The gas component of the slushy material quickly transitioned into a fully gaseous state and then ignited into a series of explosions and then resulted in a firestorm. While an attempt was made to activate the blowout preventer, the controls failed. A blowout preventer (or BOP) is a specialized mechanical device used to seal, control and monitor oil and gas wells by shutting off a well hole and prevent the escape of the underground fluids. When a blowout occurs, it generally means that the drill pipe and well casing as well as tools and drilling fluid are blown out of the wellbore. Thus a BOP is a critical safety system for the crew as well as to the environment.

At the time of the explosion, there were 126 people on board; seven were employees of BP, 79 of Transocean, there were also employees of various other companies involved in the operation of the rig, including Anadarko, and Halliburton. Eleven workers were presumed killed in the initial explosion. The rig was evacuated, with injured workers airlifted to medical facilities. After the rig sank, its remains were located resting on the seafloor approximately 5,000 ft (1,500 m) deep at that location, and about 1,300 ft (400 m) (quarter of a mile) northwest of the well.



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Prior to this incident, a review of the history of Deepwater Horizon revealed there were prior events, including hazardous material spills and fires. As a matter of fact, the US Coast Guard had issued pollution citations 18 times between 2000 and 2010, and had investigated 16 fires and other incidents. While these events were not considered unusual for a Gulf platform (and have not been connected to the April, 2010 explosion and spill), there were other serious incidents that should have alerted BP and Transocean that specific safety and health controls needed to be reassessed. One such event occurred two years earlier in 2008 in which 77 people were evacuated from the platform when it tilted and began to sink after a section of pipe was accidentally removed from the platform's ballast system.

When the April 20, 2010 accident occurred, the *Deepwater Horizon* well operation was already running five weeks late. Internal BP documents show that BP engineers had concerns as early as 2009 that the metal casing BP wanted to use might collapse under high pressure. In March 2010, the rig experienced problems that included drilling mud falling into the undersea oil formation, sudden gas releases, a pipe falling into the well, and at least three occasions of the blowout preventer leaking fluid. The rig's mechanic stated that the well had problems for months and that the drill repeatedly *kicked* due to high gas pressure providing resistance. A confidential survey commissioned by Transocean weeks before the explosion states that workers were concerned about safety practices and feared reprisals if they reported mistakes or other problems, as voicing such concerns would require corrective actions that, in turn, would delay the already-hampered schedule.

According to Transocean, workers had been performing standard routines and had no indication of any problems prior to the explosion. However, preliminary findings from BP's internal investigation released by the House Committee on Energy and Commerce on May 25, 2010 indicated several serious warning signs in the hours just prior to the explosion. Equipment readings indicated gas bubbling into the well, which could signal an impending blowout. The heavy drilling mud in the pipes initially held down the gas of the leaking well. A BP official on board the rig directed the crew to replace the drilling mud, which is used to keep the well's pressure down, with lighter seawater even though the rig's chief driller protested.

After the disaster, investigations by numerous organizations were completed, where there was considerable finger-pointing by BP on Transocean and vice versa. While BP claimed that Transocean did not correctly interpret a pressure test, Transocean declared that BP did not listen to recommendations by the engineering consultant. Meanwhile, a review of seven major reports on the causes of the blowout indicate that six operations, tests, or equipment functions went wrong in the final 32 hours. Today, these corrective actions have been implemented on other off-shore well platforms. However, the tragedy is that eleven people lost their lives: they were fathers, husbands, sons and friends. If only those in charge would have paid attention and yielded to the telltale signs of the BOP not operating properly and not let scheduling override safety, these eleven workers would still be alive enjoying a productive life with family and friends. While we must understand that getting a job done is the reason we are all employed and ensuring the project is profitable, when any organization lets production get the upper hand on safety, a message that rings quite loud and clear cannot be misunderstood. Unfortunately, in so many parts of the world, life is considered cheap. If we really believe in our values for which so many have sacrificed so much, then maybe we need to let our actions speak louder than words and remember that going to work should never mean our safety and health needs to be compromised.

People in their right minds never take pride in their talents

Harper Lee, *To Kill a Mockingbird*

