

Deepwater Horizon and the Cost of Preventative Maintenance Failure

By Shannon Smith

Five years after the Deepwater Horizon oil spill, the actual BP executive summary of the investigation, BP states, “[Through a review of rig audit findings and maintenance records, the investigation team found indications of potential weaknesses in the testing regime and maintenance management system for the BOP \(blow out preventer\).](#)”

On April 13th, 2015, the Department of the Interior proposed new regulations for well control based on input from federal policy makers, industry groups, operators, equipment manufacturers, government organizations and others. The proposed rule requires, “... improved controls of all repair and maintenance activities throughout the lifecycle of the blowout preventer and other well control equipment.”

In a website press release, the U.S. Department of the Interior stated, “The blowout preventer, **an essential piece of safety equipment** used in offshore drilling operations, **was at a point of failure** in the *Deepwater Horizon* event, but several other barriers failed as well. The **cascade of multiple failures** resulted in the loss of well control, an explosion, fire and subsequent months-long spill.”

So, while many factors were involved, proper preventative maintenance could have prevented or at least minimized the impact of the incident.

Each TDI-Brooks vessel has a standard list of jobs in NS5 that are meant to ensure equipment is maintained proactively to prevent costly and potentially unsafe equipment failures. However, following the Preventative Maintenance System (NS5) doesn't cover everything.

If you see something that seems out of place or in questionable condition, fill out a safety observation card to ensure that the condition is reported and addressed by the appropriate person and that required repairs/ maintenance jobs are entered into NS5.

A temporary patch on a water pipe may seem insignificant and might be easily forgotten. If that pipe supplies your emergency fire hose, a failure of that patch in the event of a fire could easily result in significant damage up to and including the loss of the vessel.

While the following story is not related to the Deepwater Horizon, the message is the same: preventative maintenance is important. Paying attention may be the best prevention.



“In addition to more stringent design requirements, the proposed rule requires **improved controls of all repair and maintenance activities** through the lifecycle of the blowout preventer and other well control equipment.”
Brian Salerno, Director of the Bureau of Safety and Environmental Enforcement.

Got Something to Share?

If you have an idea for an HSE safety topic, a way to improve our processes or procedures or other suggestions, comments stories or pictures, send them to HSE@tdi-bi.com.

TOP 3 Safety Card Hits (Fleetwide this month)

Safety Attitude	7
Maintenance/ Inspections	6
Housekeeping	5

Engine Room Fire Prompts USCG Safety Alert



On March 11, 2015, the USCG issued a Marine Safety Alert with preliminary lessons learned from an engine room fire on the cruise ship Oceana Insignia that cost one crewman and two technicians their lives and another crewman was hospitalized.

The incident occurred in December 2014 while the ship was at berth. A bolted flange on the fuel supply line parted and fuel oil spray ignited when it contacted hot engine components. The main fire was quickly extinguished by the misting system, but smoke had already filled the space, preventing the men from finding an escape route.

The supply flange parted after three bolts completely loosened and the remaining bolt fractured. Several other broken bolts were found in the engine's hot box. The engine's manufacturer, Wartsila, has produced several service letters in which it states that fuel pumps are subject to the stresses of pressure pulses from injection pumps, normal engine vibration and heat expansion. Translation: "It is normal for screws and bolts to work their way loose as a result of normal use."

Marine Safety Bulletin 4-15 states, "The purpose of engineering personnel conducting rounds in machinery spaces is to identify and initiate intervention, preventative maintenance, and repair actions when unsafe conditions exist. Carefully accomplished, engineers will discover abnormalities as they occur, enabling them to minimize negative compounding events. Identifying discrepancies such as loosening bolts, leaking piping and flanges, excessive oil loss through poor seals and gaskets, failing pump seals, loosening of pipe brackets, inadequate lubricant levels, etc., are typical issues found when thorough inspection rounds are conducted. Each operating engine should be thoroughly examined several times a watch on all sides available noting potential leakages, loosening of components, proper drainage of air coolers, etc. All persons making rounds should be using very bright flashlights in the performance of their inspection duties."

In a time when we commonly monitor computer screens and readouts that tell us how engines and other systems are performing, it is easy to forget the basics. Visual inspections can identify many potential issues. Odd vibrations, power surges and delayed start up can indicate others. The best diagnostic tool is still the one between your ears. Like any tool, it is only effective if used.

Make sure contractors and employees discuss escape routes and potentially needed emergency equipment in the JSA before work begins. Keep it simple! Plan how to **see** (power loss, smoke), **breathe** (EEBD), **escape** and **alert** the bridge.

Safety Tips

As a result of this casualty, the Coast Guard strongly recommends that owner and operators of all types of vessels develop policy and procedures to ensure:

- They have **up to date service bulletins and service letters for critical equipment**, implementing the requirements specifically when such items relate to fire prevention and safety;
- That **service vendors, technicians, crewmembers**, or any persons working within machinery spaces **understand their escape routes and available emergency equipment before they start work** and; (Include as part of [TDI-Brooks Contractor Safety Meeting before starting work and pre-task JSA](#))
- That all engineering personnel **know how to perform effective and comprehensive inspections and rounds to** detect abnormalities and problematic systems, equipment, and components as early as possible.