



Petroleum Safety Significant Incident Report No. 03/2012

Failure of substituted fitting on drilling rig causes uncontrolled descent of derrick

Incident

A hydraulic cylinder used to lower and raise a rig's derrick was found to be faulty and was replaced with a substituted part, rather than that supplied by the original equipment manufacturer (OEM). The location of the hose connections on the replacement cylinder was different from that on the original component. When the derrick was being lowered, the hose fittings became fouled with another part of the derrick and were sheared off.

The derrick's fall was partially controlled by the other still-functioning cylinder until the derrick rested on its cradle, wedging the drilling line beneath. Up to 40 litres of hydraulic oil were released over the rig during the incident. Fortunately, no injuries were sustained.

The rig manager was not in attendance when the derrick was being lowered.

Contributory factors

The key factors contributing to this incident include:

- the installation of a non-OEM part that proved to be incompatible with the design of the derrick;
- there was no safety inspection of the newly installed hydraulic fittings to check for issues of non-compatibility;
- the risk assessment of maintenance undertaken on the rig was inadequate; and
- no senior supervisor was present during the lowering operation to recognise the potential problem and stop the process.

Preventative actions

- Develop and implement a system of safety maintenance checks of equipment before and after maintenance or repair work is carried out.
- Develop and implement a system for maintaining a stock of correct parts to be available to the drilling site when required.
- Ensure the risk assessment for the drilling rig considers potential hazards and risk if the rig's original design is changed by using substitute parts.
- Adopt safety procedures that require lowering operations to be directly controlled by a senior supervisor, whose experience could help identify safety issues sooner.

Alan Gooch

DIRECTOR PETROLEUM SAFETY

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