Safety Alert 014 - ANP/SSM
Drilling column cutting by spurious actuation of BOP blind shear ram

This Operational Safety and Environment Superintendence alerts the oil, gas industry and other stakeholders about the occurrence of spurious activation of BOP blind shear ram closing function.

What happened?

During the drilling of phase 4 of an offshore well, the drilling column was cut due to the spurious actuation of the upper blind shear ram of the subsea Blowout Preventer (BOP). After the event, alarms and loss of communication with the Subsea Electronic Module B (SEM "B") of the yellow pod were verified. There was no record of the shear blind ram activation in the BOP event log. Figure 1 shows how the upper end of the column looked after cutting:

Figure 1 - Top end of the cutted column.

Well abandonment was carried out with the blue pod, after preemptively turning off the yellow POD SEM "B", which was inactive at the time of the spurious activation of the ram. At the time of the incident, BOP was operating with the yellow pod and SEM "A" active. There was no injuries or spillage of drilling fluid to the sea.

Potential consequences

Actuation of BOP blind shear ram during a drilling activity causes leakage of drilling fluid to the sea and interruption of the activity, which is allowable in case of activation of the device under the design

conditions. Spurious system failure can cause complications in operations, which would pose risks to safety and to the environment.

Identified causes

- The investigation determined as the most probable cause for spurious activation, contamination and corrosion on the electronic plates of the yellow pod SEM "B", even though it was inactive at the time of the event. Corrosion damage and moisture contamination were identified on the connectors plates and pins, for both SEMs of the yellow pod.
- Contamination and corrosion were considered as consequences of deficiencies in the BOP maintenance execution and management.

Lessons learned

- Establish a humidity control routine of BOP electronic modules in the company's maintenance plan.
- Establish detailed inspection routine of BOP electronic components in the company's maintenance plan.

Note: to perform a detailed inspection it is necessary to perform it in a place with good light and magnifying lens (or camera zoom). In this incident, the plates were inspected in the moon pool, but it was not possible to notice abnormalities in the components. Only after detailed inspection in the subsea workshop was it possible to identify the presence of contamination and corrosion in the electronic components.

- Establish procedures and processes to manage bulletins received from manufacturers. This procedure and processes should cover from the time of receipt of the bulletins to the confirmation of implementation.

Regulatory Framework

Item 13.2.4 of ANP Resolution No. 46/2016 establishes as the contract operator's assignment to establish, implement and document corrective and preventive actions to address deviations identified during the execution of plans and procedures.

Item 3.2.1 of ANP Resolution No. 46/2016 establishes as the contract operator's assignment to identify and guarantee academic training, training levels, experience, skill and knowledge specific to each function that enable the Workforce to perform the tasks related to the position held.

Item 15.1.1 of ANP Resolution No. 46/2016 establishes the Contract Operator's assignment to establish, document and implement clear and concise procedures, with specific instructions for the safe execution of activities assigned to Well Integrity Management, considering the specificities and operational complexities.

Item 13.2.3.c of ANP Resolution No. 46/2016 establishes as the contract operator's assignment to ensure that inspection, verification, monitoring and maintenance plans and procedures related to Well Integrity Management, at least, are in accordance with the manufacturer's manual.

Contact

For additional information regarding this safety alert, please contact ANP's Operational Safety and Environment Superintendence at incidentes@anp.gov.br.