

BOP Reliability from a Regulatory Perspective

By Bureau of Safety and Environmental Enforcement (BSEE)

Blowout preventer (BOP) reliability is extremely important. Operators, contractors and the general public want BOP's to work when needed. The idea of identifying the true health of the BOP is one that has been on the minds of all operators, contractors and regulators, and with some of the new technologies out there, it is finally becoming a reality. The goal of BOP reliability is three fold, we want the BOP to work when we need it, to decrease the amount of down time and to also look into extending the testing interval for optimization of the consumable goods that are in the BOP.

The complicated nature of the BOP with the number of subsystems and varying degrees of redundancy make the reliability models complicated. The input of the BOP in the reliability model will require specifically made models for the active BOP which include, but are not limited to:

- Identifying all functions of the BOP;
- Block diagrams describing the logic path that identify every component and is further broken down to major, minor and subcomponents;
- Establishing fault trees based on the block diagrams; and
- Integrating the fault tree and be able to monitor the actual status (tied into the POD¹, surface sensors, etc).

The ability to monitor the real time status of the BOP is a major factor in achieving reliability. Being able to monitor the BOP data that is being collected can result in more reliability and the ability to identify a component in its final life stage. Being able to identify patterns in components in the BOP will identify with field data the reliability of that particular component and subcomponents. While this technology is in its early stages, it has provided large amounts of data that has been used to identify common failures and their causes. Some of the causes have been alleviated from something as simple as a change in hydraulic fluid chemistry to the redesign of certain valves. With more data and investigations into the causes, the BOP reliability will surely increase and become more reliable in the future.

Disclaimer: The views and opinions expressed in this article are those of the author(s) and do not necessarily reflect the position or policy of any other IRF member.

¹ Assembly of subsea valves and regulators that, when activated from the surface, directs hydraulic fluid through special porting to operate BOP equipment.