

Automated Safety Instrumented Systems for Onshore Blowout Preventer Actuation

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Introduction

This bulletin provides information on existing and emerging technologies that could be integrated to bring a well to a safe state in the event other operational barriers fail. This publication is under the jurisdiction of the API Committee on Standardization of Oilfield Equipment and Materials (CSOEM).

This bulletin discusses strategies to create an automated blowout preventer actuation system, the challenges and obstacles associated with this type of system, current existing technology, and the methods of achieving widespread implementation of such a system.

An automated safety instrumented system is intended to bring a well to a safe state in the event that the site personnel do not recognize a well influx or are unable to respond to one. Safety instrumented systems have been used in process facilities (e.g., refineries, chemical, nuclear) as an integral part of a critical process system.

The implementation of an automated safety instrumented system should consist of input from the lease operator, drilling contractor, and original equipment manufacturer.

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Automated Safety Instrumented Systems for Onshore Blowout Preventer Actuation

1 Scope

1.1 This bulletin provides a review of the equipment and interfaces to be considered for the automation of a blowout preventer to place the well in a safe state in an onshore environment.

1.2 This bulletin provides an overview of components that can be considered for future research into developing an automated well control actuation system, such as:

- a) top drive;
- b) hook load weight indicators;
- c) drawworks;
- d) mud pumps;
- e) blowout preventers (BOPs);
- f) BOP control system (closing unit);
- g) internal BOP and/or full-opening safety valve;
- h) choke manifold;
- i) logic solvers;
- j) pressure control valve (pilot valve);
- k) surface and downhole blowout preventer;
- l) pipe tallies;
- m) managed pressure drilling equipment;
- n) open and closed channel flow meters;
- o) pit level sensors.

1.3 To the extent that this document reviews specific equipment arrangements, it is recognized that other arrangements can be equally evaluated in addressing well requirements and achieving safety and operational efficiency.

2 Normative References

There are no normative references in this document.

3 Terms, Definitions, and Abbreviations

3.1 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.