Questions for Third-party Providers
Questions Received from Mark Hutchins

Background - Ashford Technical Services’ perspective on the questions.

Ashford is focused on monitoring the drilling safety equipment on the rig including the BOP. The other companies in the third-party providers subcommittee are focused on monitoring the well. Well monitoring has been part of the business for years. In contrast, safety equipment monitoring is relatively new. Ashford installed one of the first BOP monitoring systems in May 2009. Since the Macondo event in April 2010 there has been a lot of interest and talk about BOP monitoring. However the field is still new and there are a limited number of players.

One of the major objectives of monitoring drilling safety equipment is to implement condition-based maintenance (CBM) - using actual usage metrics to drive BOP maintenance, instead of the current practice of replacing hydraulic components on a “somewhat” arbitrary basis. Obviously data acquisition is required as input to CBM.

Monitoring safety equipment is an ongoing operation. It is not associated with any given well. As such the monitoring equipment is permanently installed on the rig. It is important to monitor the safety equipment while drilling and also in between wells when testing and repair work is being done.

Part of our objective in answering the committee’s questions is to clarify what drilling safety equipment monitoring is and to distinguish it from well monitoring.

(1) Describe the role of third-party providers?

Ashford markets a system (Rig Watcher) that monitors the safety equipment on the rig. Generally our customers are the drilling contractors. The system collects data from the safety equipment, transfers the data to a secure server on shore, analyzes the data and presents information on the status of the safety equipment to the drilling contractor.

(2) How do you interface with industry customers, and how do you view this relationship?

Ashford is a provider of both equipment and services for monitoring drilling safety equipment including the BOP.
(3) **What services do you provide?**

Ashford monitors drilling safety equipment including the BOP. See answers to other questions for more detail.

(4) **How do the services lend themselves toward operational decision making?**

Monitoring drilling safety equipment leads to condition-based maintenance which in turn directly influences maintenance operations. Monitoring the drilling safety equipment has several additional functions: (1) provides a historical overview of BOP operations, (2) helps identify potential maintenance problems before they become critical (fix it before it breaks), (3) in the event of a major failure, provides historical information on BOP operations for forensic analysis and (4) provides historical information so that onshore personnel can help rig-based personnel with troubleshooting.

(5) **What about accountability between the Operator and your firm?**

Ashford’s customers are the drilling contractors. We collect data from drilling safety equipment, move the data to a secure location on shore, analyze the data to generate useful information and present the information to the drilling contractor so intelligent decisions can be made on maintenance and operations. Ashford provides the information; the drilling contractor makes decisions on what actions to take based on the information.

(6) **What level of automation and remote control is appropriate to balance accountability, responsibility, and operational efficiency?**

The function of safety equipment monitoring does not include remote control. Automatically analyzing safety equipment data to identify trends and potential problems is fundamental to improving safety. However, automation as related to control is not part of safety equipment monitoring.

(7) **What are your suggested protocols for remote oversight and the established chain of command?**

It is important to understand the role of real-time safety equipment monitoring. Using the all-important BOP as an example, the BOP is a hydraulic machine setting on the well head. It is energized with hydraulic fluid under high pressure. Most of the time is does nothing; but when a well control event occurs the BOP is expected to function flawlessly (it’s the last barrier for preventing a blowout). When the driller activates the BOP to close an annular or ram the BOP does a lot of things in a very short period of time – 30 to 45 seconds.
It is Ashford’s perspective that having someone remotely monitor the BOP in real time is unrealistic. Someone watching a BOP data stream where nothing happens for hours or maybe days is not going to prevent a blowout.

However it is important to review BOP operational information over time to identify various metrics and trends that will improve maintenance and help identify potential problems in a timely manner. This is not a real-time activity. To accomplish this objective a reporting interval (rig to shore) of several seconds up to a couple of hours is adequate. One could refer to this as “near” real-time monitoring.

The collected and analyzed data belongs to the drilling contractor. Ashford’s Rig Watcher system allows anytime, anywhere access to the information (via the web) so that the drilling contractor can make intelligent decisions on BOP maintenance, troubleshooting and operations. Generally Ashford does no participate in the decision making process.

(8) Are there critical operations and specific parameters that are typically monitored?

Most drilling safety equipment, including the BOP, is hydraulic. Monitoring includes the following hydraulic data: pressure levels, pressure values, flow rates, valve positions, temperatures, etc. All of this information can be analyzed and viewed over time (historical analysis and presentation).

(9) Does your company rely on any automation and predictive software in real-time monitoring?

Automation for control, no. Automated data collection is essential to safety equipment monitoring. Predictive software - yes as explained in other answers.

(10) What role could automation and predictive software tools play in real-time monitoring?

Answered elsewhere.

(11) Condition-based monitoring could be viewed as monitoring the operating condition of critical equipment and using any generated data to predict and proactively intervene when needed.

Exactly. We prefer to associate CBM with condition-based maintenance because it emphasizes how the data and information is actually used. To implement condition-based maintenance clearly requires that the equipment be monitored.

Other members of the third-party providers subcommittee will have a different perspective on CBM and may refer to it as condition-based monitoring.
(12) As such, what role could condition-based monitoring play in real-time monitoring? Describe how operating equipment using condition-based monitoring could be tailored and/or used for real-time monitoring.

As discussed in other answers, monitoring the safety equipment for the purpose of condition-based maintenance requires a long-term view of the equipment. If significant problems are identified by this analysis it is important to notify the appropriate personnel in a timely manner.

(13) Real-time monitoring technologies could be incorporated into BSEE’s existing safety and environmental regulations in order to supplement its inspection program.

Ashford’s perspective: The whole area of safety equipment monitoring is relatively new and quickly evolving. BSEE may be able to utilize some of this technology to achieve their objectives. Exactly how is BSEE’s call.

(14) How could BSEE leverage such technologies? What advice could you give to BSEE?

See answer to last question.

(15) Which activities could real-time monitoring supplement or replace?

The focus of safety equipment monitoring is improving maintenance and identifying problems before they become critical. This can be viewed as complementing or supplementing current rig operations.