BSEE

Forum on Next-Generation BOP and Control Systems Technology,
Management, and Regulations

May 22, 2012

U.S. Dept. of the Interior

South Interior Building Auditorium

1900 Constitution Avenue, NW

Washington DC 20245

Next-Generation BOP and Control Systems Technology, Management and Regulations.

- Panel #4 – What real time technologies are available to measure the "health" of BOPs in service and aid in the detection and response to "kicks"?
  - Moderator – Pisces Carmichael, Project Manager, Lloyds Register
    - Garry Davis- Group Manager, Center of Excellence Well Control Equipment, Moduspec USA
    - British Petroleum, Global Wells Senior Manager
    - Frank Chapman, President, Ashford Technical Services
    - Tony Hogg, Director of Subsea Engineering, Ensco

Next-Generation BOP and Control Systems Technology

- What real time technologies are available to measure the "health" of BOPs in service and aid in the detection and response to "kicks"?

- (I believe) This should be two questions:
  - What real time technologies are available to measure the "health" of BOPs in service?
  - What real time technologies are available to aid in the detection and response to "kicks"?
- The first question is clearly focused on BOP and BOP control systems, the second question should be addressed to a related, but different, audience.

What real time technologies are available to measure the "health" of BOPs in service?

- Redundant control panels.
  - As a minimum, every BOP control system has two places from where the system can be fully controlled and monitored:
    - The Driller's House where the Driller's Control Panel is located. This space is always occupied whenever the rig is connected to the well.
    - The Rig Office where the Toolpusher's Control Panel is situated. The office is most times, but not always, occupied.
- The HPU panel, on conventional systems, and the event logger, typically only on multiplex rigs, provide further place(s) from where the 'health' of the system can be assessed offshore.

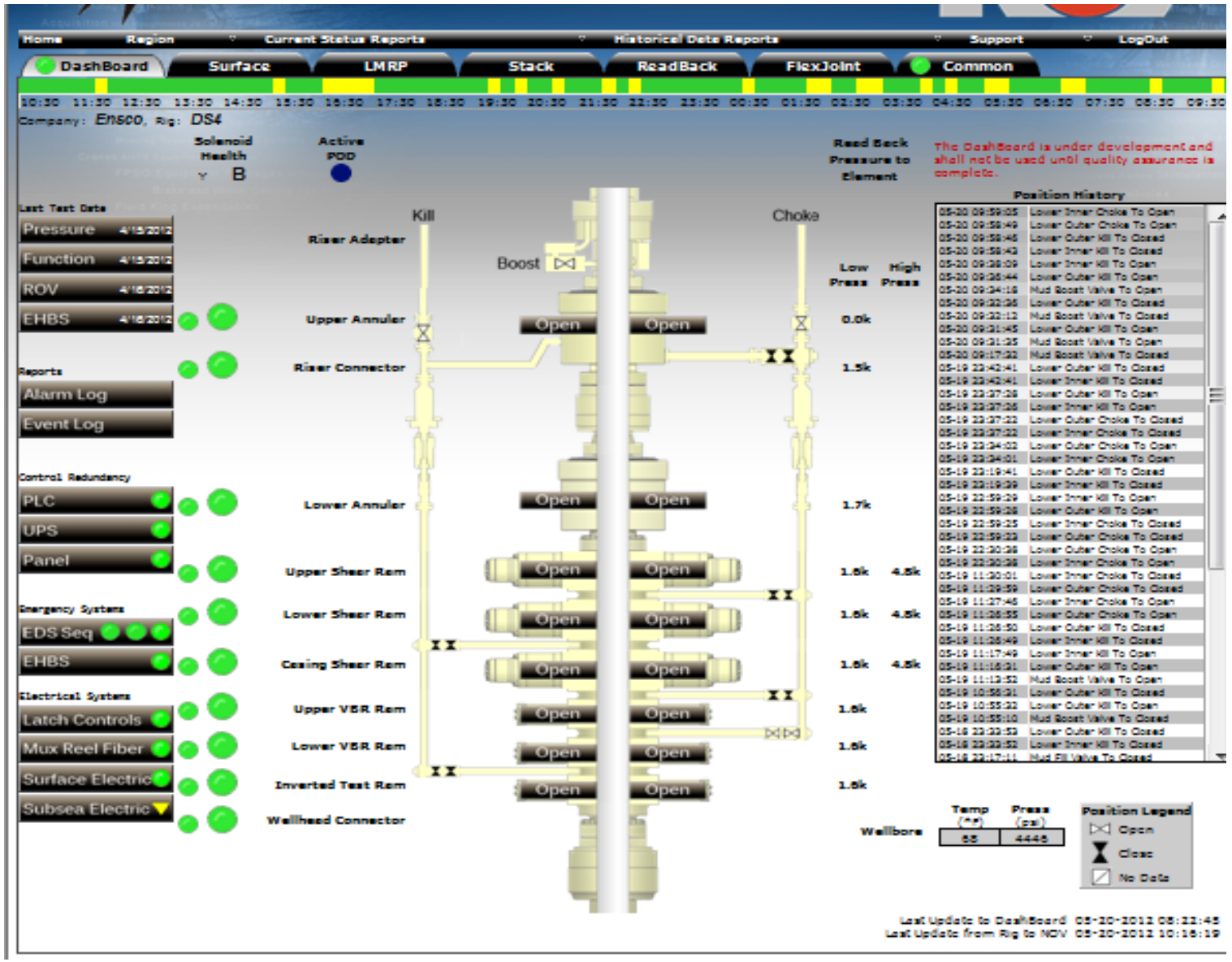
What real time technologies are available to measure the "health" of BOPs in service?

- Competent crews.
  - The information provided by these panels is normally sufficient to allow the subsea engineer, and others, to monitor the current 'health' of the fully redundant BOP control system at any time.
  - The front line will remain offshore where both the equipment and the crews who follow the operational and maintenance plans are located.
  - Support for these crews is provided from both Business Unit and Corporate offices as required.

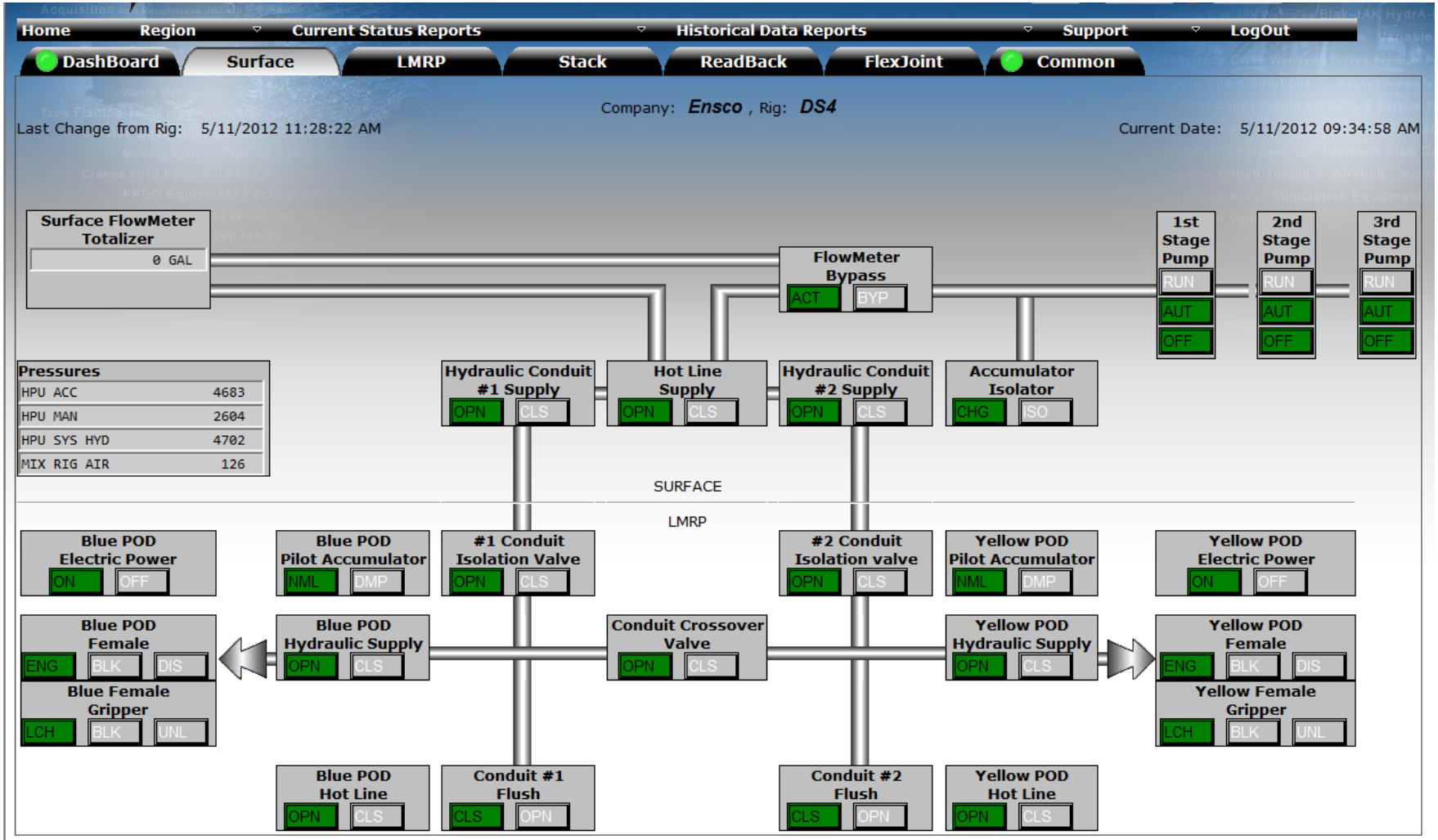
What real time technologies are available to measure the “health” of BOPs in service?

- Remote Monitoring.
  - Transmitting the event log information ‘live’ to the shore-base, or a dedicated monitoring center, will allow support personnel to see what the rig based subsea engineer can see, and to provide support/advice IF required.
  - Although there is no substitute for competent people offshore, there are times when peer discussions are very beneficial. The availability of real time information onshore will greatly enhance such discussions.
  - In the event of a major issue, the saved data will provide an accurate record to feed the investigation.

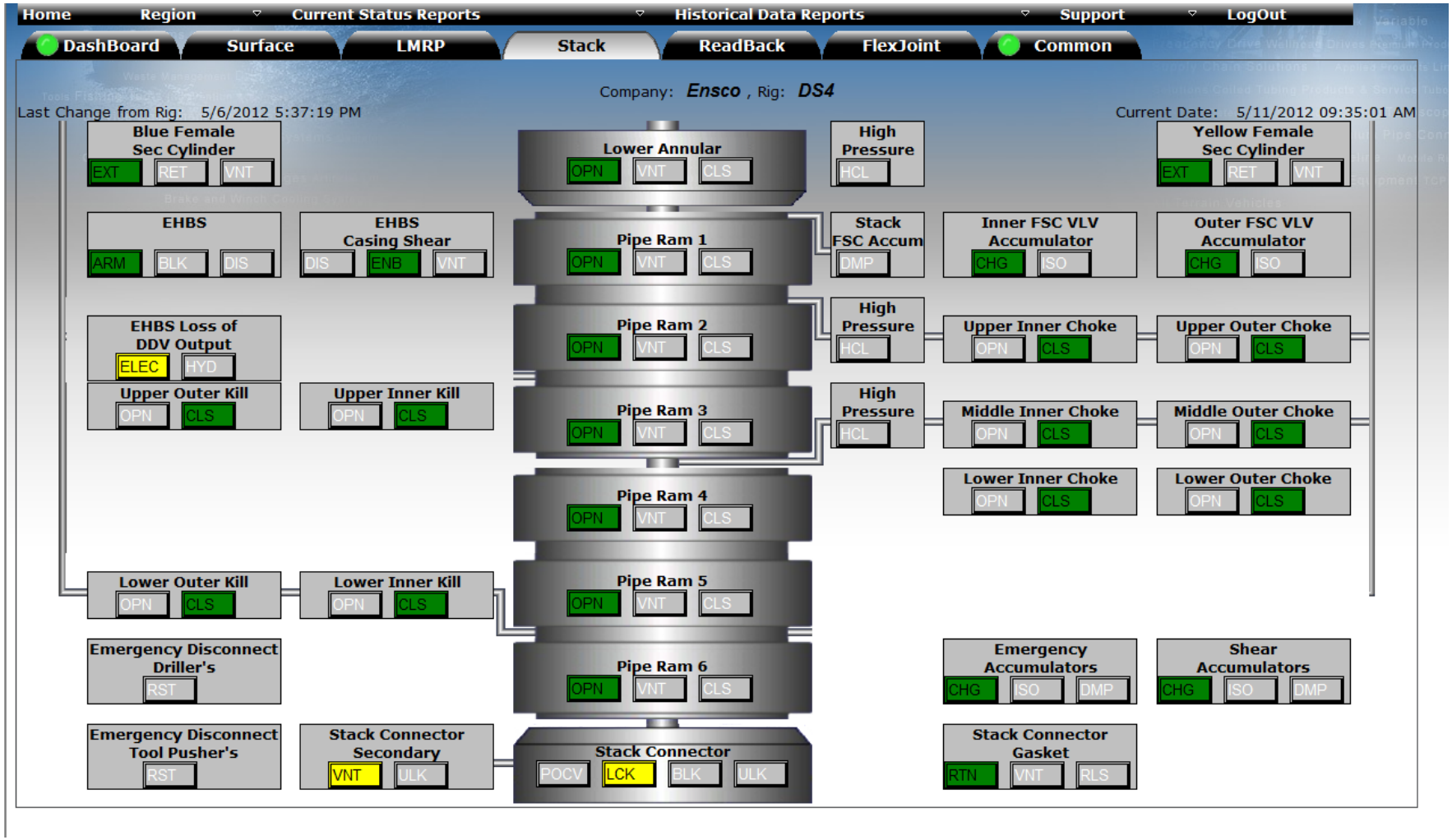
BOP Dashboard - system view



BOP Dashboard – surface system



BOP Dashboard- lower stack



BOP Dashboard - readbacks