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How monitoring by exception should work

A good “monitoring by exception” system on a gas field should help staff respond to what’s important – and not be bothered the rest of the time. But it needs to be properly set up. Michele Loseto from Honeywell Process Solutions explains how to do it, with an example from a coal seam gas field

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Advanced applications for Exception-Based Surveillance (EBS) can help natural gas firms reduce wasted time and effort in monitoring gas fields and wells, while also automating workflows for greater efficiency.

During production, operators face layers of data and information that make safe, productive and knowledgeable decisions difficult to see.

Sometimes the lack of this data – or the inability to integrate the data from multiple sources – can hide what is really happening in the field.

When combined with geographical and environmental challenges, limited well testing and a short supply of experts to meet operational needs, the task of monitoring, diagnosing and identifying coal seam gas optimisation opportunities and operating to plan can be daunting.

As a result, irregular operation, unexpected shut-ins, lifting equipment damage and production losses are common.

Oil and gas companies also need to tackle the uncertainty and inaccuracy that often impedes the process of bringing new fields on-stream.

Also, by sharing and distributing information between business and production operations processes only when needed, and providing predictive information in role-specific views, operational efficiency can be greatly improved.

When implemented by unconventional gas producers, an effective exception based surveillance solution addresses operational data, process safety, production surveillance and operational performance.

Operational Data: Laying foundations to overcome data challenges to effectively connect to

production operations is critical. The provision of a robust data access service supports consistent access to all data types, ensures data quality and provides long-term storage of historical information. This includes a flexible, high-availability environment for data access across fields and wells.

Process Safety: Advanced tools for digital intelligence support operators in increasing process reliability at a lower cost while ensuring safe operations. Reporting and interpreting of alarms and alerts is central to this solution. It also is critical for operations to act upon abnormal situations in an effective and timely manner to inventory and prioritize process- and safety-critical incidents.

Production Surveillance: Leveraging the value of digital field technologies, powerful Exception-Based Surveillance solutions deliver disparate reservoir and well data to desktops in a common enterprise view of field and well operations. This enables insightful monitoring of wells, pads and fields, as well as earlier response to emerging issues to ensure producing assets operate optimally. A single, prioritized view shows how wells are performing compared to expectations, while visual models predict what each well is capable of producing.

Operational Performance: The latest Exception-Based Surveillance capabilities enable improved anticipation of opportunities and risks in coal seam gas fields operations. By optimizing enterprise-wide federated data management, they present data as information in context to the challenge to the user, and allow design and execution of cross-functional workflows for EBS notification, intervention and decision support within collaborative workspaces. Additionally, users can capture expert knowledge and improve operational understanding.

Digital intelligence

With the right approach to Exception-Based Surveillance, coal seam gas firms can eliminate the need to rely on manual, time-consuming activities, such as accessing data from various reservoir and well-related operational/engineering applications and spreadsheets.

An effective Exception-Based Surveillance solution also supports complex and event-driven calculations and reporting to monitor well performance over short, medium and long periods of time.

The objective is to ensure Standard Operating Procedures (SOPs) are adhered to over the life-cycle of the well, and keep the reservoir and wells within the optimal operating envelope. If not, EBS initiates notifications to the right people should the well actually (or be predicted to) deviate from acceptable SOP thresholds.

Exception-Based Surveillance manages data federation, alarm and event recognition, alert generation and notification, and automates operational processes and “follow-ups,” helping to capture critical knowledge of decisions and interventions for review and serve as lessons learned.

This takes the load off of key experts and allows operation in safer, centralized environments, enabling the Well Response Team to focus on more value-adding, expert diagnosis and operating decision points, collaboratively.

Ultimately, early identification of well performance issues and faster restoration of optimal operation following shut-ins are key advantages of EBS technology. In addition, the ability to identify trends and issues from field production data to mitigate possible failures is an important step in reducing lifting costs, improving mean time between failures, increasing safety, and ultimately, offering a lower total cost of ownership.

Experience has shown gas operators employing this technology for exception-based surveillance can reduce the time and effort involved in monitoring gas fields and wells, while at the same time automating workflows for greater efficiency.

The results include increased safety, higher uptime, better production economics, improved operational decisions and more effective remote operations.

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