

Being Prepared With the Right Technology

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Hurricanes. Mechanical failures. Missing replacement parts. From routine maintenance to unexpected operational difficulties, a wide range of events can affect the integrity of producing wells and facilities. Unfortunately, when these events occur, they typically cause downtime, resulting in delays, disruption, and, in some cases, even loss of oil and gas production. In the case of offshore, deepwater high-volume wells, an interruption in production even for a few hours can mean deferral or loss of millions of dollars.

Managing well integrity is a complex business. One important ingredient to ensure and facilitate an effective way to maintain operational efficiency and minimize downtime, no matter what the situation, is information. It simply takes information—the right information, delivered at the right time, to the right people.

Safe in the Storm

A quick review of this year's hurricane systems demonstrates what unexpected events can do to oil and gas production. Several major storms hit the Gulf of Mexico, including hurricanes Katrina and Rita, destroying some producing facilities and disabling hundreds for the short term. Were petroleum companies able to quickly and accurately prepare their facilities for the storms? How fast did operators of the damaged platforms get their production systems back up and running? The results depended in large part upon operators' access to critical information.

Even under normal conditions, ensuring the safety and integrity of producing assets remains the focus of operating com-



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panies, especially in offshore production. Operators must have quick access to high-quality data to make good decisions and maintain the integrity of their wells and production systems. The data must be accurate. And they must be available at an instant.

Ensuring well integrity involves much more than crisis management or reacting to unexpected operational difficulties. Broadly speaking, well integrity management is principally concerned with ensuring producing assets operate safely and profitably from cradle to grave. That being said, however, actual strategies for managing integrity vary widely depending on the operating company and the regulatory environment in which it operates. Oil companies must address a variety of unique operational complexities, from health, safety, and environment to well tests, preventive maintenance, and regulatory reporting. What is more, operators must consider these factors not only for current production, but also throughout the asset life cycle, from drilling proposal to well abandonment. But no matter the situation, the common factor to successful integrity management is the ability to efficiently share reliable information with decision makers and troops on the ground.

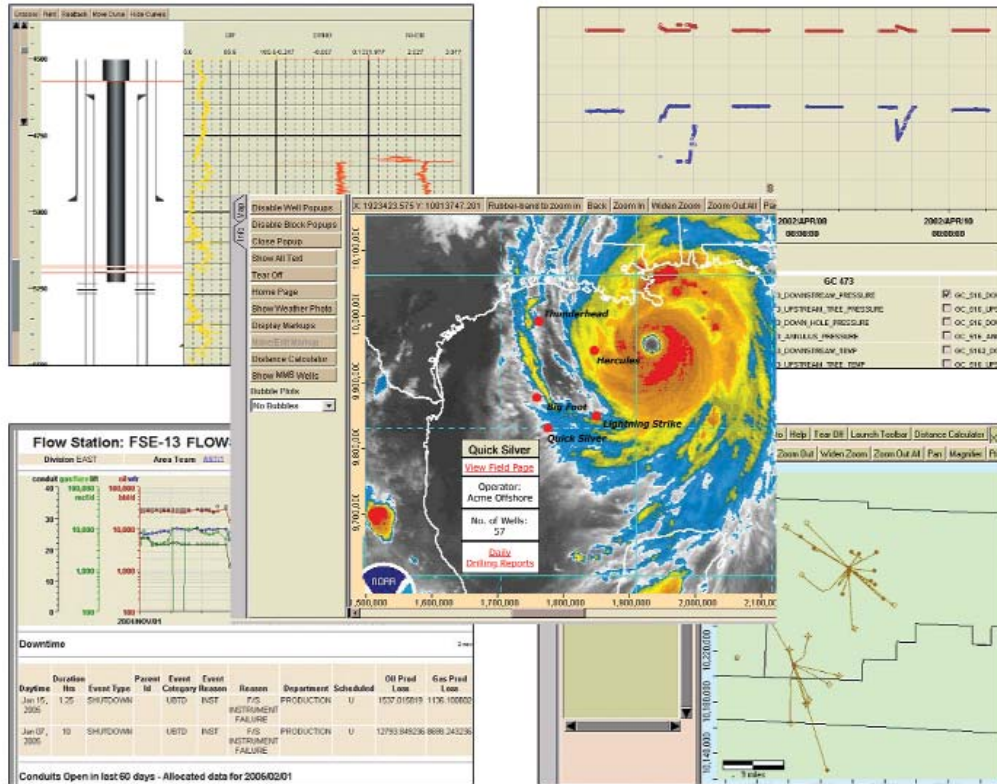
Unfortunately, right now at a majority of petroleum companies a significant amount of critical information is located in personal files, on disparate computer systems, and in remote offices. These sources are disorganized. Additionally, where structured data and digital documents exist, there are often multiple versions of the needed data or document, making it virtually impossible to identify correct and approved information efficiently. As a result, during an emergency and even under normal operating conditions, required information is difficult to access, organize, and communicate.

Consider this example. Personnel on a deepwater oil platform noticed a problem. There was annular pressure at one of the wellheads. They contacted the engineer on shore and explained their concerns. The engineer went to his paper files and found a picture of the equipment, as submitted by the vendor that manufactured it. The engineer instructed them to open a 1/2-in. valve on the right side of the wellhead, 3 ft above the metal grating. But there was no 1/2-in. valve at that location. Why? The engineer had only the proposed drawing in his files, rather than the as-built drawings of the product.

This lack of critical information and inability to communicate accurately did not just threaten production for the day. It also threatened the health and welfare of personnel on the platform, who could have mistakenly opened the wrong valve and caused severe problems.

Getting Information on Board

Petroleum companies do not just need access to drilling information and well data. They need up-to-date versions of a variety of important documents, such as operations manuals, specifica-



tion sheets, as-built drawings, policies and regulations, and communication plans.

Companies indisputably believe that optimizing operations and reacting to unexpected events require good data. Unfortunately, data alone are not enough, as most companies will attest. They have spent billions of dollars generating, collecting, storing, and managing data, much of which cannot be found or accessed, much less effectively used. Complicating matters are the real-world issues of disparate computer systems, global operations, remote offices, and data stored in personal files and hard drives. As a result, when decisions are pending and specific data are needed, they are not there. Well-informed, timely, information-driven decisions are virtually impossible.

But this does not have to be the case. And contrary to popular belief, integrating data does not always mean migrating data to a central repository or creating a master data store. It can be achieved by using the most effective technologies available to simply access and organize data from where it is already stored and managed. Rather than move data, companies may integrate multiple data sources and provide access points for end users. Technical data and documents can be combined in context with familiar business objects such as wells, fields, and reservoirs.

How could this impact a company's operations? Consider the example of a facility in the North Sea. A pump failed. When the replacement pump was installed, it also failed to work. Additional replacements were flown out to the platform on the next available helicopter. After a 16-hour wait, the replacement parts arrived. Unfortunately, they were the wrong parts. Rather than double-checking against a manual or technical drawing,

warehouse personnel had pulled the part out of a mislabeled bin. This mistake cost thousands of dollars. Fortunately, the part did not fit at all. If it had, a life-threatening accident could have occurred.

What if personnel on board the rig and personnel at the warehouse had easy access to the same quality information? If they had been able to collaborate electronically, actually viewing and confirming the part that was needed, a costly and potentially hazardous mistake could have been completely avoided.

Access to Vital Information

While most oil companies have embraced information technology that improves the amount of drilling and production-related data available to operators and the means to store and manage it, many have yet to fully realize the value of this wealth of data. Information and documents vital to the integrity of an asset remain locked in hard-to-access systems that often yield inaccurate or incomplete information.

Consider one final example. A part failed on a deepwater facility. The company was able to quickly locate a replacement part through its tagged inventory system, but it had to be machined to certain specifications before it could be installed. Unfortunately, the mechanical drawings could not be found. Since the part's manufacturer was halfway around the globe, its offices were closed for several hours. Until the manufacturer's offices opened the next day, production was at a standstill. Again, a minor repair job turned into a multimillion-dollar ordeal for the operator. Something as simple as a missing technical manual can stop production and threaten well integrity on the world's largest oil- and gas-producing assets. JPT