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Remote Monitoring Drives Key Benefits

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ALBUQUERQUE, N.M.–To understand the benefits of remote monitoring, or any "new" technology for that matter, a producer must be able to quantify and measure the impact of that technology on its business. However, to develop a full picture of the business impact, the producer needs to begin to track these measurements before implementing the technology. Only with data taken both before and after the implementation can a producer understand what has changed as a result of the new technology.

In the case of remote monitoring, reported benefits are grouped into four broad categories:

- Improved data integrity (more accurate data collected more timely);
- Increased production;
- Decreased environmental liability; and
- Reduced field service costs.

For each of these key value propositions, there are measures that serve as indicators of the overall success of the system in terms of improving overall oil field profitability. Each of the value propositions, and their associated metrics, should be considered in turn.

Improved data integrity is the most difficult benefit to quantify, but is often cited by those who have implemented a remote monitoring system as being the most significant. There are some measurements that producers can track, such as the timeliness of data reporting. Remote monitoring provides information to producers on a set schedule (typically twice each day), and each reading is available nearly in real time. By tracking the staff time required to put raw data in an electronic form, producers can review the direct cost in having the same information available as they can with a remote monitoring system.

It is, however, a highly subjective process for each producer to ascribe a dollar value to having all the data available quickly and electronically. Fortunately, since the direct cost of remote monitoring is typically offset by the measurable financial benefits of one or more of the other three categories, it is not necessary to have a hard value. Still, producers should endeavor to take some time prior to implementing a remote monitoring solution to consider what value they associate with enhanced well status information.

Increased Production

On the surface, increased production would appear to be the easiest benefit to track, requiring the producer to merely examine production prior to implementing remote monitoring and compare it to production afterwards. Unfortunately, this gross measurement is inadequate in understanding the impact of remote monitoring. Natural declines in production and "long" duration downtimes caused by workovers or other well issues are not impacted by remote monitoring. The true metric becomes increases in production as a result of reduced "short" duration downtimes.

A classic example in gas production is compressor stoppages, which occur on a regular basis for many producers. For companies that have pumpers with high well counts or who cannot get to each well every day, this is particularly important, since a well could site idle for multiple days simply because no one has been on location to restart the compressor. How can one measure this benefit? Since pumpers keep detailed logs of the times and dates they visit each well, as well as the status of the site (including whether the compressor is functioning), it is possible to simply review the logs for two or three months prior to implementing remote monitoring to determine the number and approximate length of short outages.

These logs do not indicate, of course, exactly when the compressor shut off, but over time (and several incidents), an average downtime can be developed for these short incidents. It is appropriate to only count short incidents as those outages where additional trips and work required to get a well back online would not apply. By tracking this information for a few months before and after implementing remote monitoring, one can quickly measure a direct benefit from increased production. At today's oil and gas prices, reductions of even a few hours a month in downtime–particularly in high-volume wells–can more than cover the costs of the remote monitoring service.

Reduced environmental liability is another benefit that is hard to measure directly, because it is difficult to know when remote monitoring has prevented one particular spill that would have otherwise happened. However, it is possible to measure the reduced cost of cleanups over time and across a producing company's entire system. The company can look back at all the spills that have occurred in a system in the past six months to a year–spills that had to be reported to regulatory authorities, as well as smaller ones the company may have cleaned on its own (in areas where applicable)–but only those spills that might be prevented by remote monitoring should be included (such as tank battery overflows). It is important to include not only "hard" costs such as renting a vacuum truck and paying disposal fees, but also "softer" costs such as staff time, the hourly equivalent cost of equipment the company might already own, and the value of the spilled oil or other substance.

Based on these calculations, the operator then will have a baseline for tracking the benefit of remote monitoring. If a com-

pany had one fewer spill a month, how would that impact the net cost of remote monitoring? One company, for example, reported that the hard cost reduction of one small spill a month across its system, not including staff time, equipment or lost revenue, amounted to $1,500-$2,000 a month in savings. This savings alone can be enough to pay for the cost of implementing remote monitoring technology.

Reduced Servicing Costs

The reduction of field servicing costs also is difficult to measure. To fully capture the value, one has to look at the reduced costs that come from monitoring an entire production operation, and not merely a few problem wells. However, if an operator is prepared to commit to such a full-scale rollout, the savings are generally substantial. To get a good baseline measure of the value received from remote monitoring, the transportation cost for a company's field service staff can be tracked in one of two ways: recording and tracking hard gasoline costs for vehicles, or preparing and evaluating mileage logs.

As an example, one small company that has implemented remote monitoring across its entire system reports that its staff of three field service personnel in one service region have each reduced their average driving mileage from 250 miles prior to using remote monitoring to 100 miles a day (or 450 fewer miles/day for all three). At the federal reimbursement rate of $0.485/mile, this works out to a cost savings of more than $6,500 a month.

This savings does not even take into account the further benefit of reduced driving time by the pumpers, who become available for more productive work. Assuming that a pumper averages 50 miles an hour while on the road, each pumper now spends three additional hours a day working on value-adding tasks instead of driving between wells. The specific gains will depend on the geographical distribution of wells and the cost of field service staff, but the savings in this case more than offset the cost of remote monitoring.

Having an efficient production organization requires measurable metrics against which management and staff can track performance. Ultimately, the profitability of the organization is the critical metric, but intermediate measures are useful mechanisms for understanding and improving performance, and these same metrics can also be used in evaluating the need for and value of automation solutions like remote monitoring. Those considering remote monitoring solutions, however, need to begin collecting these data today so as to be able to make accurate comparisons about performance before and during any evaluation period.

By ensuring that they track information such as the examples provided for the four key value propositions of remote monitoring, producers can make informed decisions not only about remote monitoring, but also about implementing any new technology or business process that promises to improve oil field operations and profitability. ❐

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