

No Room for Error Operational Excellence at Nexen's Balzac Gas Plant

In May of 2003, Senior Foreman Field Operations Ray Rowland gathered his team of a dozen field operators in the workroom of Nexen Inc.'s Balzac gas plant, 10 miles north east of Calgary, Alberta Canada.

He asked them to gather all the data and forms they used in the field, including past spreadsheets for compressor readings, well site checks and ESD function testing logs.

When they were finished, a 12" deep stack of hand written readings covered two conference tables.



The Challenge

Not only was the amount of information overwhelming, but some of the files were missing names and dates, the accuracy of information could not be readily validated, data was captured in a variety of formats and there was no integration of data to allow for the searching and tracking of trends. Ray knew that too much time was being spent finding and organizing their data. He concluded they had to find a smarter way to manage their information and become more efficient in complying with the two dozen or so internal and external audits of their operations they faced each year.

Ray manages the Balzac Complex Field, a facility that typically processes 58 million cubic feet of sour gas each day. This gas is farmed from 126 well sites and is transported via pipelines over 300 kilometers of Right-of-Way. The gathering systems border the northern and eastern city limits of Calgary, a city of one million people.

Nexen dedicates significant management time and resources to safety and operations issues, in part because of the dangers posed by sour gas. The gas processed by the Balzac plant comes out of the ground in concentrations that can exceed 40%. At this level, sour gas is corrosive, and in material concentrations causes rapid degradation of pipes, valves and pumps. Approximately one third of the natural gas produced Canada's two most westerly provinces (Alberta and British Columbia), is sour gas.

Shifting Responsibilities

The Balzac gas plant operates under the jurisdiction of the Alberta Energy and Utility Board (EUB), the agency responsible for regulating the production and transmission of oil and natural gas in the province. In 2002, the EUB moved the industry to self-monitor their operations and shifted their regulatory focus to the systematic auditing of operations and safety compliance across the industry.

In addition, Nexen's Balzac Complex undertook a Canadian Chemical Producers initiative entitled "Responsible Care" and became the only oil and gas company in Canada to be verified as Responsible Care compliant, a rigorous three year verification program. Given this shift to self-monitoring and the corporate commitment to the highest standards of operations, Nexen investigated how it could efficiently and deliberately optimize the management of their field so as to comply with safety guidelines and meet the metrics for operational performance.



A Decision to Think “Beyond Compliance”

After a careful investigation of options, Ray Rowland decided to initiate a pilot project using FieldTRAK® from Beyond Compliance. FieldTRAK employs handheld devices (with user directed connectivity), which allows operators to gather field data using standard checklists for a complete range of relevant metrics such as well site inspections, tracking of vehicle use, storage tank inspections and management of pipelines. The team found that the use of the handheld devices and its integration with Compliance Manager™:

- reduced data collection time
- minimized errors
- allowed for immediate identification of non-compliant items
- significantly improved productivity of the field team.

Three field operators were given handheld devices for the field trial and within two weeks, all 10 team members were asking for them. As Ray observed, “Two weeks after our initial pilot project, the entire field was able to jump on board and productively use the system ... The reporting program is excellent. Its flexibility provides for a greater level of reporting information and the data presented is a direct reflection of the work that is being done.”

From Collaboration to Cost Savings

Based on a successful pilot, the Balzac team decided to fully deploy FieldTRAK® for all field personnel. After the first year, Ray Rowland noted that, “The automated field audits and inspection generated all sorts of new ideas from the field force. The system created an environment of collaboration and helped the worker organize his day, which ultimately improved his overall performance. ... This has resulted in overall cost savings to the company and improved worker moral.”

The Balzac Field Unit evaluated the cost-benefits of the FieldTRAK implementation after the first year. The use of one module alone, the Pipeline Integrity Management System (PIMS®), allowed Nexen to show payback for implementation and support in less than six months of deployment.

PIMS® (a function of FieldTRAK), enables the precise management of the concentration of chemicals that are added to the pipeline to control corrosion caused by H₂S. According to Mr. Rowland, PIMS provided for more precise chemical management which saved Nexen \$8,000 - \$10,000 per month in chemicals that were previously being over-injected into the feeder pipelines.

Nexen concluded that the use of FieldTRAK® had significantly enhanced the productivity of field operators, had reduced supervisor time required to prepare for audits, improved their capacity to prepare and present data on operations and safety compliance to senior management, and provided a greater level of confidence that all processes were being monitored and systems were performing according to expectations.

Ray estimated that prior to the use of FieldTRAK it typically took him more than seven days to prepare for most external audits. Once FieldTRAK had been implemented, this preparation time was cut in half, and the data presented was far more accurate and more easily validated.

In addition, the Balzac management team found that new field operators could learn the intricacies of operations management more quickly when they could rely on the automation of on-site data collection of FieldTRAK®. Automated checklists, scheduled prompting of tasks, and highlighting of non-compliant results to expedite follow-up enabled operators to work independently twice as quickly as had been the case before the introduction of the system. This is important because explosive growth in the Alberta oil and gas industry has caused higher levels of staff turnover – in the range of 20% to 30% per year. Training of staff typically consumes 10 to 20 workdays per employee per year. With FieldTRAK, ongoing training of staff is facilitated by the rapid and automated updating of revisions in regulatory standards represented in the automated checklists.

In 2002, Nexen’s Balzac Complex became the first oil and gas production facility in the world to fulfill the requirements of all 151 elements and achieve the Responsible Care designation. Ray Rowland observed that, “The systematic use of FieldTRAK, and its framework for information collection and workflow, gave us the foundation for field data management that we needed.”

Nexen has a reputation for diligence and professionalism in managing its facilities safely and efficiently and the Balzac Complex has earned a reputation for leadership and operational excellence in the Western Canadian petroleum industry. The high standards established by the management team and staff led them to choose tools like FieldTRAK® that enable them to do their work and reinforce their discipline and focus on details in an environment where there is no room for error.