Production Improvement Through Real Time Automation & Digitalization Solutions

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Introduction:
This report presents the implementation of a new Live Production Management solution, and automated visual management board VMB referred to as the Live Production Tool, which signifies a fundamental jump forward in optimizing live production operations and HSE performance related to process safety. This tool has been designed to enhance production and minimize production loss by enabling real-time monitoring of the operating limits across all production stations.

Traditionally, the monitoring of daily oil and gas production has been a heavy and time-consuming endeavor, relying on multiple software applications. To address these challenges, a pioneering solution was developed - the first PDO Live Production Tool. It leveraged the power of 6 Sigma deep data analysis, ensuring the safe operation of business processes. The primary objectives were to optimize operational control systems, eliminate personal and process safety exposures, enhance system stability, reduce operational disruptions and human interventions, and maintain the assets within approved operating envelopes.

This report aims to carefully explore the development, implementation, and outcomes of the Live Production Tool, shedding light on the transformative potential it holds for the oil and gas industry. It is a testament to the power of innovation and data-driven decision-making in transforming critical operations, with far-reaching implications for safety, efficiency, and profitability in the sector.
Methods:
The development of the PDO Live Production Tool involved a strategic approach to address the challenges associated with oil and gas production monitoring. Utilizing principles of 6 Sigma deep data analysis, our methodology focused on ensuring the safety and efficiency of business processes.

Analysis Proposed Solutions to Improve Data Accuracy

Optimizing Operational Control Systems:

Our first step was a comprehensive repair of operational control systems. This aimed at not only eliminating personal and process safety exposure but also enhancing overall system stability. Reduction of trips and human interventions became a primary objective to minimize disruptions and streamline production processes. Fig-1 showing main proposed solutions during data analysis phase.

Operating Within Approved Operating Envelope (OE):

Maintaining assets within the approved Operating Envelope was vital to the success of the Live Production Tool. This involved a detailed calibration process and continuous monitoring to ensure that all stations operated within defined limits, contributing to increased operational efficiency and reduced deferment.
Automated Visual Management Board (VMB):

![Automated Visual Management Board](image)

**Fig.2- Automated Visual Management Board**

The automated visual management board serves as a critical tool in enhancing production performance. With a focus on updating and maintaining production quality, its user-friendly interface ensures ease of operation and management. This innovative system enables efficient tracking and maintenance of quality standards, streamlining processes and contributing to an overall improvement in production efficiency. The flawless integration of these functionalities empowers our team to steadily uphold and elevate the standards of production, aligning with our commitment to excellence.

Below fig-3 showing the primary features of live production tool as strategic solution and part of VMB.

**Development of Strategic Solutions**

**Live Production Tool Developed as Web Based application**

- Live Production Data for all stations
- Oil Nodes Trends
- Pressure Trends for all stations and Export lines
- Facility Overview/schematics with gross/BSW live readings
- Actual Allocated production trends
- Faster, More friendly use

**Fig.3- Potential Benefits of Proposed Solutions**
Results:

The implementation of the PDO Live Production Tool has generated substantial results, making a deep impact on various facets of oil and gas production. The following outcomes stand as a proof to the effectiveness of this innovative solution:

Enhanced Production Reporting and Data Confidence: The overall process enhancement in production reporting has significantly increased confidence in production data. By streamlining the monitoring process, the Live Production Tool which is part of VMB has become an important asset in ensuring accurate and reliable reporting, contributing to improved decision-making.

Oil Gain and Deferment Reduction:

The Live Production Tool has delivered a 1% gain in oil production and a substantial 1.5% reduction in deferment. These proven improvements highlight the tool's effectiveness in maximizing production output and minimizing losses.
Fig. 5 showing the improvement in data discrepancy after implementation of live tool. A remarkable achievement includes saving of workforce sources, which was previously allocated to various parts of the old methodology. This has allowed for a more focused approach, directing attention to low-performing fields, identifying surface and subsurface opportunities, and addressing bottlenecks.

Operational Standardization and High-Risk Activity Elimination: The implementation of the Live Production Tool has introduced a quick, simple, and effective solution for operational standard procedures. Fig. 6 showing main trends and performance of all stations in term of pressure and production rate, also set limit (Low/Hi) to monitor the overall performance. The limits used to track individual station performance and as trigger for alarms.
Conclusions:

In conclusion, the Live Production Tool has not only met but exceeded expectations in developing live production management. The involved improvements in flare reduction, production reporting, oil gain, and deferment reduction collectively highlight its transformative impact on oil and gas operations. Fig-7 showing key features of the live production tool and utilization.

The tool is very useful in complicated areas in term of allocation structure:

- It calculate actual live reconciliation factor
- Tool uses actual production data to predict allocated production figures for all the streams

The tool has feature of checking all the streams and send notification in case of trip (production drop)

Easy production analysis by:

Combining all the pressure, oil, gross nodes trends in one application

Timely identification of communication failure

Fig.6- Main Features of the Production Tool

This tool stands as a pioneering example of how innovative solutions, grounded in data analysis and operational efficiency, can redefine industry standards and flag the way for a more sustainable and optimized future.