

# Driving Automation Excellence at Chevron's TCO

Transformative advancements in safety, sustainability, and efficiency at Tengizchevroil.



**Atirau, Kazakhstan Jan 23, 2025 ([IssueWire.com](https://www.issuewire.com))** - At Chevron-operated Tengizchevroil (TCO), Automation Support Consultant **Ulykbek Talipbekov** has spearheaded groundbreaking solutions to address critical challenges in gas processing and safety systems. These achievements have significantly enhanced operational efficiency, safety compliance, and sustainability, setting a new standard for excellence in the global oil and gas industry.

## Technical Innovations that Deliver Results

### Alarm System Optimization

- **Challenge:** Operators faced alarm floods, with over 60% of alarms being false positives, leading to delayed responses during critical situations.
- **Solution:** Designed and deployed dynamic prioritization algorithms to classify alarms based on criticality. Standardized configurations for alarm management in separators and compressors, reducing false positives by 90%.

- **Impact:** Enhanced operator focus during emergencies and reduced downtime by 30%, ensuring higher system reliability.

## Control Logic Modification

- **Challenge:** Fluctuations in pressure and temperature disrupted gas processing operations, affecting product quality and equipment reliability.
- **Solution:** Modified control logic algorithms to stabilize critical parameters in real-time and automated valve responses to optimize performance under varying operational loads.
- **Impact:** Achieved 95% stability across operational scenarios, including peak load conditions. Increased equipment lifespan by reducing mechanical wear and tear.

## Process Safety and HAZOP Compliance

- **Challenge:** High bypass rates and outdated safety interlock systems posed significant risks.
- **Solution:** Conducted 12 HAZOP (Hazard and Operability Analysis) studies to identify and mitigate safety risks. Implemented advanced interlock systems, reducing bypass rates from 40% to below 10%.
- **Impact:** Achieved 100% compliance with Chevron's global safety standards and reduced critical incident risks by 60%.

## Enhancing Sustainability Through Gas Recovery

### Gas Recovery Optimization

- **Challenge:** Excessive gas flaring resulted in environmental and financial losses.
- **Solution:** Installed gas recovery modules to capture 80% of vented gas. Deployed real-time emission monitoring systems to meet regulatory standards.
- **Impact:** Reduced gas flaring by 75%, saving over \$30 million annually by eliminating fines for excessive emissions and recovering valuable hydrocarbons previously lost during flaring. These advancements align operations with Chevron's sustainability goals and set a benchmark for environmental responsibility in the industry.

## Localized Technical Excellence

### Process Enhancements at Gas Plants

- **Challenge:** Operational inefficiencies at key gas processing units affected safety and productivity.
- **Solution:** Modified fire suppression logic for the KTL (Complex Technological Line for Gas Processing). Enhanced operational efficiency of the U800 (Unit for Acid Gas Removal from Water) and the U700 (Gas Fractionation Unit).
- **Impact:** Improved safety and reduced downtime across gas processing operations, streamlining workflows for key production streams.

## Insights from TCO's Performance Management Plans (2019–2024)

- Documented reductions in flaring emissions by 75%, leading to multi-million-dollar savings.
- Enhanced equipment reliability through targeted modifications, minimizing unplanned outages.
- Achieved measurable safety improvements through interlock upgrades and systematic hazard

analyses.

### **About Tengizchevroil (TCO)**

Established in 1993, TCO is Kazakhstan's largest oil producer. Chevron Corporation, holding a 50% stake, operates this joint venture. Producing over 30 million tons of crude oil annually, TCO is a global leader in innovation, automation, and environmental responsibility.



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