Oxy standardizes well surveillance and forecasting with Spotfire

Occidental Petroleum (Oxy) is one of the largest oil and gas producers in the U.S., operating thousands of wells across major onshore basins. In a highly dynamic and data-intensive industry, the company's engineers and analysts rely on high-quality insights to support critical decisions around production forecasting, asset planning, and operational strategy.

Challenge

100,000+

WELLS ANALYZED IN CST

Upstream energy teams face a persistent challenge: how to efficiently process and standardize massive volumes of well data across regions, systems, and functions. At Oxy, individual teams had developed their own forecasting tools and processes, making it difficult to align outputs, ensure transparency, and maintain performance. Meanwhile, engineers and managers needed to quickly interpret outlooks, benchmark wells, and respond to production variances without losing time to slow-loading dashboards or spreadsheet workarounds.

Oxy sought to replace this fragmented ecosystem with a single, scalable solution that would streamline monthly forecasting cycles, simplify surveillance across 100,000+ wells, and serve cross-functional teams with diverse technical requirements.

Solution

To meet these demands, Oxy's internal data science team turned to the Spotfire® visual data science platform to build two powerful analytic applications:

- **Production Outlook Tool (POT)**: Standardizes the company's monthly production forecasting process across more than 5,000 internal wells. The tool captures and consolidates forecasts, flags variances, integrates well test data, and provides real-time transparency into how forecast numbers are derived.
- **Comparator Surveillance Tool (CST)**: Supports performance benchmarking across tens of thousands of wells, integrating internal and third-party datasets (including IHS and Enverus) across multiple basins. With pre-aggregated forecasting and geometry processing via Databricks and SQL, CST delivers fast-loading, dynamic comparisons across thousands of parameters.

Spotfire's flexibility enabled Oxy to leverage a full tech stack that includes:

- Databricks for distributed computing and auto-forecasting over 100,000 wells
- SQL Server and Azure for storage, procedures, and secure data access
- Python, R, JavaScript, and IronPython for custom visualizations, user input dialogs, and notifications
- Built-in Spotfire Mods for interactive dashboards and spatial analyses

Access controls enable joint venture partners and internal users to view only the data relevant to their respective assets. Built-in logging, commenting, and version control ensure traceability and auditability.

> "We're not just building reports; we're building robust tools that people rely on to do their jobs better and faster."
>
> —Mario Ortiz-Torres, Oxy

Benefits

Spotfire has helped Oxy achieve a new level of efficiency, transparency, and performance. The standardization of monthly production outlooks has streamlined collaboration across regions and asset teams, eliminating redundancy and ensuring consistency in the forecasting process. Teams now operate from a single, trusted version of the data. This empowers everyone from production engineers to finance analysts to make decisions with greater confidence.

Priyank Dwivedi, Oxy Sr. Staff Reservoir Engineer, says, "Spotfire is really amazing. A lot of native functionality already exists, and we can leverage JavaScript, IronPython, and TERR to really create a user interface that looks beautiful. The user is basically happy to use it, get their work done fast, and get out of the tool."

+500

SPOTFIRE USERS

LOAD TIME IMPROVEMENT:

15 minutes → <9 seconds

Equally important, Spotfire visual data science capabilities have enhanced transparency across the forecasting lifecycle. With built-in audit trails, real-time variance tracking, and intuitive visual workflows, asset managers and executives can easily see what the outlook is and how each number was generated. This improved visibility has made it easier to answer tough questions quickly and defend planning assumptions when needed.

Perhaps the most dramatic transformation has been in performance. As Mario Ortiz-Torres, an Oxy production engineer, explains, "We go from an initial load time of 15 minutes to less than nine seconds—and sometimes a lot better than that." By pre-processing large datasets and leveraging the Spotfire integration with Databricks, the CST dashboard now enables engineers to run comparisons and generate insights almost instantly. What used to be a bottleneck is now a competitive advantage.

With adoption growing across engineering, asset management, and joint venture partners, Spotfire has become a foundational platform for data-driven decision-making at scale.

Headquartered in Texas, Occidental Petroleum (Oxy) is an international energy company engaged in the exploration, development, and production of oil and natural gas, as well as the manufacturing and marketing of chemicals. It seeks to boldly innovate new technologies for a low-carbon future.

Future

Both POT and CST continue to evolve, with new enhancements driven by an agile DevOps workflow and user feedback integrated through Microsoft Lists.

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Today, more than 500 users rely on these tools across disciplines, and the team continues to expand performance monitoring, forecasting, and decision-support capabilities.

Ready to get smarter with Spotfire visual data science? Talk to an expert today at spotfire.com/contact-us.

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