**OVERVIEW**
Talisman Energy, a medium-sized global independent operator headquartered in Calgary, is active in more than a dozen countries. A few years ago, Talisman began expanding international drilling operations, which led to increasingly complex and costly wells. To reduce non-productive time (NPT) caused by unexpected drilling hazards, the company began monitoring international operations in real-time. Working with Global Drilling and outside consultants, Talisman’s IT department built a state-of-the-art Real-Time Operations Center (RTOC) at the company’s headquarters. The RTOC employs a number of Landmark technologies for remote computing, operations data capture and storage. To improve collaboration between geoscience and engineering disciplines, Talisman also adopted DecisionSpace® Well Planning software. Thanks to the expertise of in-country asset teams, the RTOC and Landmark technology, Talisman is slashing NPT and saving millions of dollars.

**A CASE STUDY: Integrated Landmark systems improve multidiscipline collaboration**

**Talisman Energy implements state-of-the-art Real-Time Operations Center, saves $30-40 million in one year**

**Collaborative DecisionSpace® Well Planning software supports high-profile international drilling operations**

![Real-Time Operations Center (RTOC) at Talisman Energy’s headquarters in Calgary.](image)

<table>
<thead>
<tr>
<th>CHALLENGE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduce costly NPT in complex wells</strong></td>
<td><strong>Implemented real-time well monitoring</strong></td>
</tr>
<tr>
<td>Facing the start-up of 5 complex new drilling operations in remote parts of the world, Talisman needed to minimize drilling-related non-productive time (NPT). In challenging exploratory operations, NPT often accounts for up to 40% of total well costs.</td>
<td>Talisman worked with Landmark to implement a Real-Time Operations Center (RTOC) that accesses and visualizes real-time rig data from anywhere in the world. Monitoring wells in the RTOC saved Talisman $30-40 million in the first year alone.</td>
</tr>
<tr>
<td><strong>Improve collaboration between the geoscience and engineering domains</strong></td>
<td><strong>Adopted collaborative software tools linking G&amp;G and engineering databases</strong></td>
</tr>
<tr>
<td>To overcome increasingly complicated technical risks and uncertainties, Talisman recognized the need to more effectively bridge the geoscience and engineering disciplines both in the well planning phase and during real-time operations.</td>
<td>Collaborative DecisionSpace® Well Planning software seamlessly integrates subsurface data from the OpenWorks® database with drilling/engineering data from the EDM™ database in a common 3D visualization and optimization environment.</td>
</tr>
<tr>
<td><strong>Predict drilling hazards ahead of the bit</strong></td>
<td><strong>Correlated NPT events with geology</strong></td>
</tr>
<tr>
<td>Prior to implementation of the RTOC, one particularly challenging exploration well in a remote region of Peru had come in 100% overspent due to numerous wellbore stability and sidetrack issues. Talisman needed a better way to predict drilling hazards in advance.</td>
<td>Leveraging the in-country asset team’s expertise, Talisman created a workflow correlating NPT events from offset wells with geological formations to create a 3-day hazard forecast. A follow-up well in Peru came in 50 days early, and $20 million ahead of budget.</td>
</tr>
</tbody>
</table>
Well 1 had numerous wellbore stability issues, sidetracked five times, and was then ABANDONED halfway to TD.

Well 2 terminated at twice the depth of the offset well, came in 50 days ahead of plan and $20 million under budget.

Talisman RTOC: 1st Year Impact

- **Well 1 without RTOC**
- **Well 2 with RTOC**

2 km apart

Talisman implemented Landmark’s vSpace® environment in the RTOC, adopted collaborative DecisionSpace Well Planning technology, and standardized on Landmark’s drilling and completions software, as well as the EDM and OpenWorks databases.

**Savings**
- $30–$40 million

**ROI**
- $\geq 10$X

**60%**

**60%**

**50%**

**3D visualization and optimization environment**

**DecisionSpace® Well Planning Technology**

**Landmark Engineering Applications**

**Third Party G&G Applications**

**EDM**

**OpenWorks**

vSpace® cloud computing and remote hosting environment

**Talisman RTOC: 1st Year Impact**

- **Benefits**
  - **$30–$40 million savings**
  - **$20 million under budget**
  - **50%** reduction in injuries
  - **$\geq 10$X** ROI

**DecisionSpace®**

**Solving challenges.™**
Collaborative DecisionSpace® Well Planning software supports high-profile international drilling operations

**Tackling complex drilling challenges in high-profile wells**

Several years ago, Talisman Energy’s international team began planning the start up of five complex, high-profile exploratory drilling operations in remote parts of the world, including its first well in water deeper than 400 m. Drilling in remote locations and harsh environments can expose operators to huge technical and financial risks. Failure to detect and respond swiftly to changes in a well’s operating conditions can lead to serious safety and environmental challenges. With drilling costs over a million dollars a day in some regions, non-productive time (NPT) due to drilling hazards can prove extremely expensive—up to 40% of total well costs.

“While drilling an exploration well in a remote area of Peru,” recalls Kevin Lacy, Senior Vice President of Global Drilling & Completions, “we encountered numerous wellbore stability and sidetrack issues. By the time we finished, the well was 100% overspent.” Conditions were so tough, another operator drilling nearby got stuck repeatedly, drilled five sidetracks, and had to abandon the hole halfway to TD.

To overcome drilling challenges in complex wells like these, Talisman decided to build a state-of-the-art Real-Time Operations Center (RTOC) at its headquarters in Calgary. The vision is to enable multidisciplinary teams from anywhere in the world to collaborate efficiently during real-time drilling operations. “The ability for geologists and drilling engineers to collaborate both on the planning and execution of wells is critical to success,” says Lacy. “Historically, each group did its part and handed off to the next, like passing a baton in a relay race. But the world doesn’t work that way anymore, if it ever did.”

As part of the RTOC initiative, Talisman worked with Landmark to implement a number of Landmark solutions including the vSpace® cloud computing and remote hosting environment; and OpenWells® a comprehensive well operations reporting tool, which relies on the Engineer’s Data Model™ (EDM™) database. Around that same time, the company standardized on Landmark’s suite of drilling and completions engineering applications. It also adopted the OpenWorks® database to manage data from third-party geological and geophysical applications. Finally, Talisman obtained collaborative DecisionSpace® Well Planning software, providing a unique bridge between the drilling and geoscience domains.

**Pilot testing new collaborative workflows**

Since the RTOC went live, Talisman asset teams have incrementally pilot tested more of these technologies on each new exploration well. Part way through the pilots, for example, Talisman developed a unique DecisionSpace Well Planning workflow that generates a three-day drilling hazard forecast to support teams monitoring real-time operations.

“We begin by scanning daily drilling reports from offset wells for NPT events—hole stability issues, influx, stuck pipe,” explains Peter Phillips, a geologist working with the RTOC team. “These are captured in OpenWells database, stored in EDM database. After classifying drilling issues, we assign them a depth, and display them as ‘knowledge nuggets’ along each well path in DecisionSpace software. Then we bring the geologic framework into the same 3D visualization environment, and correlate NPT events with formations that could impact drilling. DecisionSpace looks at two databases at once — EDM and OpenWorks — effectively unifying the disciplines to help predict problems.”
As drilling continues, asset teams can revise the geologic model whenever a formation comes in deeper or shallower than expected. By moving knowledge nuggets up or down the wellbores accordingly, they can update the three-day forecast to stay informed of potential drilling hazards well ahead of the bit.

That, of course, is just one application of collaborative well planning technology. Another is actually planning complex well trajectories prior to drilling. The DecisionSpace scenario planning and optimization engine automatically generates multiple wellbore geometries, connects potential subsurface targets with surface locations, and optimizes the well design based on specified drilling and geological parameters. The output is a validated high-level plan ready for detailed analysis and finalization in Landmark’s drilling engineering software.

According to Lacy, Talisman also plans to extend collaborative workflows from subsurface interpretation and drilling all the way through completion and stimulation of the well.

**Saving time and costs, improving safety, boosting return on investment**

Talisman has only recently begun using DecisionSpace Well Planning technology to plan and support its international exploration wells.

“Not long ago, we drilled another well just two kilometers away from the hole that had been sidetracked five times and abandoned,” says Phillips. “The asset team developed a process in-country of analyzing offset drilling events and correlating those with the geology. Based on their analysis, the drilling engineers decided to switch to oil-based mud.” That well terminated at twice the depth of the offset well, came in 50 days ahead of plan and $20 million under budget. “The process was so successful, we decided to mirror it using DecisionSpace software to create these three-day hazard forecasts, which will become an RTOC best practice.”

Since getting the RTOC up and running, Talisman experienced its safest year ever in drilling operations—reducing injuries by 60%. “Due to better well planning, look-ahead, and real-time monitoring processes,” says Lacy, “our last three big wells—in offshore Indonesia, Kurdistan and Peru—significantly lowered NPT and improved performance.” In the first year alone, he notes, the RTOC saved a whopping $30-40 million, representing a 10X or greater return on investment.

“Going forward,” he adds, “collaborative workflows using DecisionSpace Well Planning software will become more standard. We’re right at the tipping point.”