

# Oceaneering Successfully Conducts Remote Inspection Scope Using LTE in GoM

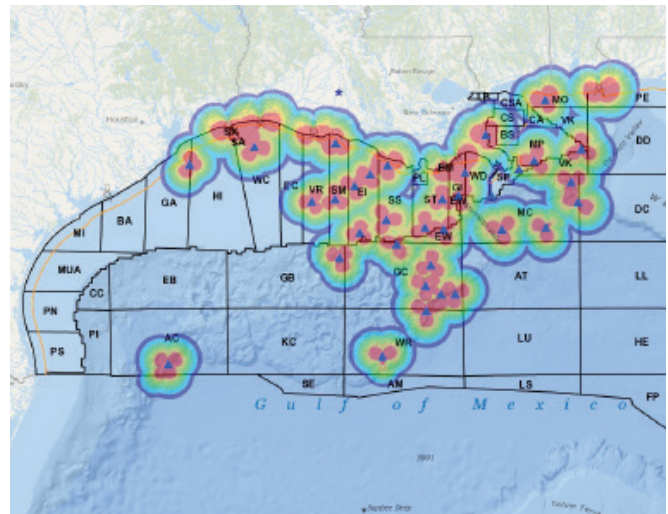
## Project Overview

In October 2022, Oceaneering leveraged the expanding and improved Long-Term Evolution (LTE) coverage available in the Gulf of Mexico (GoM) to complete a remote inspection campaign at Shell's Appomattox field.

## The Oceaneering Solution

Oceaneering has completed more than 95,000 hours of remote piloting in the North Sea, which equates to around 8,000 personnel days removed from offshore worksites. All but two percent of this activity has been executed using the LTE network, demonstrating the reliability of the coverage and encouraging forward-thinking customers in the GoM to adopt the same approach.

Oceaneering collaborated closely with Shell to develop a fully integrated inspection scope that included remotely collecting video and cathodic protection (CP) readings of their subsea assets at Appomattox. The project was executed from the *Brandon Bordelon* vessel, equipped with dual Millennium® Plus remotely operated vehicles (ROVs), piloted remotely from Oceaneering's Onshore Remote Operations Center (OROC) in Morgan City, Louisiana.



## Execution Plan

Shell was fully committed to using the expanding LTE network in the GoM to complete this scope of work via remote piloting. Projects such as this are typically managed by a Shell Project Lead located on the vessel offshore, but for the Appomattox project they took the unprecedented step to relocate this person to the OROC.

Shell and Oceaneering's Offshore Projects Group worked to develop a comprehensive project plan that integrated the pilots and Shell Project Lead located onshore in Morgan City with the offshore crew based on the *Brandon Bordelon*.

Upon arrival at the inspection sites, an ROV equipped with a manipulator-held CP reading tool was deployed and completed the full inspection scope successfully. Pilots utilized Oceaneering's Remote Piloting and Automated Control Technology (RPACT) to collect CP readings and conduct visual inspections of subsea assets identified by the client's inspection plan.

This specialized control software includes a handshaking system that is used to transfer ROV control between local (offshore) and remote (onshore) pilots. By combining RPACT with visual and audible indicators, we ensured all pilots were fully aware of who was in control of the ROV at any given moment. The RPACT software supports full and partial transfer of control. Partial transfer of control enables the local pilot to fly the ROV while the remote pilot operates manipulators, or vice versa. The software continuously monitors the quality of the connection and provides failsafe features that ensure control automatically defaults back to the local pilot if there is a failure in the communication link. These features were critical to ensuring the project's remote inspection scope was conducted safely and reliably from shore.

Video from the ROV was streamed to Oceaneering's Media Vault enabling Shell



representatives unable to travel to the OROC in person could watch operations live from any global location.

## Results

Video and CP readings gathered remotely during the operation provided Shell's Project Lead located at the OROC with the data needed to confirm the integrity of the inspected subsea assets. The project further confirmed the viability of using the LTE network to support remote operations in the GoM.

Oceaneering was able to use a fully integrated remote Inspection, Maintenance, and Repair (IMR) approach to help Shell meet their ambitious net zero goals by reducing the overall carbon footprint of the operations while simultaneously lowering risks associated with personnel mobilizations.



The flexibility provided by remote operations enables customers to better utilize remotely based subject matter experts across campaigns and as needed rather than deploying them offshore as default. This availability of resources supports improved collaboration and better decision making. As the LTE network continues to grow globally, we anticipate more operators adopting remote operations—from IMR and drill support to completions—as the norm.