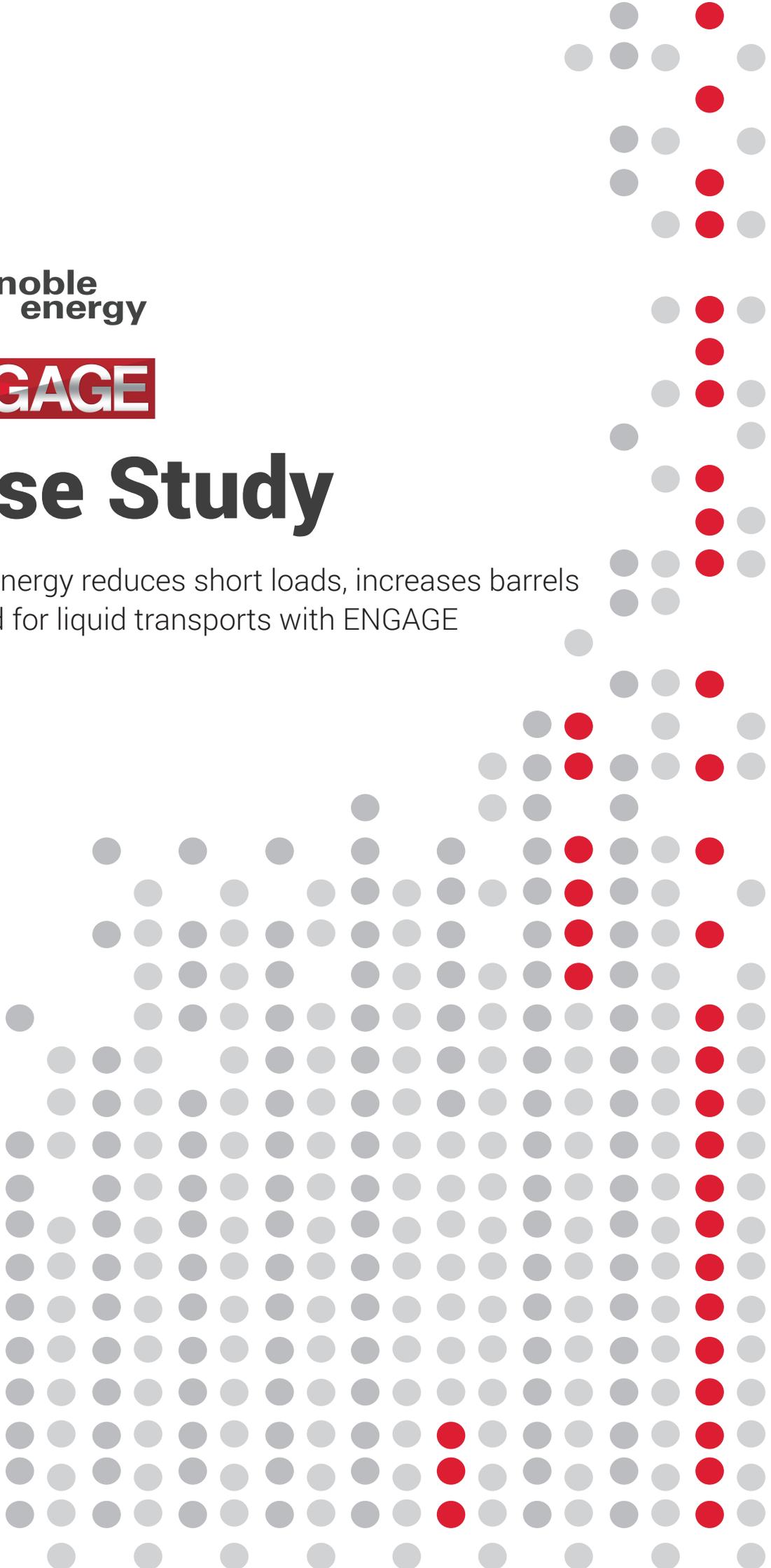




Case Study

Noble Energy reduces short loads, increases barrels per load for liquid transports with ENGAGE



Opening Summary:

As volatile as the O&G industry can be, it has never been more important for E&P's to safely and responsibly improve efficiency and reduce impacts in their operations. In the fall of 2019, Noble Energy began using ENGAGE's cloud-based digital field-management platform to transport their crude oil and production water in the Denver-Julesburg (DJ) Basin. Using ENGAGE, Noble is now able to digitally schedule, track and approve their liquid transfer jobs, with limited manual inputs. Additionally, Noble service providers were equipped with an ENGAGE interface that allows them to access real-time job information, streamlining the field ticketing process for both sides.

By integrating with Noble SCADA systems, jobs are predictively scheduled down to the minute, allowing haulers to pull crude and water at the optimal time to maximize loads. This study analyzes Noble's water and crude jobs over the course of ten months. The first four months reflects data prior to Noble using ENGAGE's software, and the last six months highlights after ENGAGE was fully implemented. This analysis shows operational improvements by increasing the average barrels per load, reducing short loads and reducing the number of trucks required to provide the same level of service.



ENGAGE is a cloud-based field management platform that digitalizes workflows end to end. Streamlining operator and vendor communications and processes allows more accurate accounting, reporting and planning and improves visibility into operations for all parties. ENGAGE is the leading solution for the oilfield, managing over 100 different service types.

Challenges:

All operators face similar challenges when it comes to their liquid transports. For Noble, at the top of the list was safely and responsibly maximizing efficiency, minimizing short loads and streamlining their field ticketing process. Additionally, there was a lack of visibility into their operations that made it challenging to make data driven, timely decisions. Noble did not have a way of tracking the exact time one of their haulers left a yard, entered a wellsite or dropped their liquids off at a terminal or disposal facility. There were also issues with administrative burden and ensuring ticket accuracy, which would cost them time and money. Noble set off to find a solution that would integrate with their current systems, automate their scheduling and field ticket process and provide much needed transparency. Their objective was to implement a new dynamic software that would reduce costs, increase productivity, and save their people time.

Solution:

Implementation

ENGAGE's order to cash middleware was identified as a platform that provided the functionality to address Noble's challenges. Noble's DJ Business Unit leadership approved the launch of ENGAGE's software in the DJ basin, beginning with crude and water haul services. To implement, information such as locations, cost centers and flowrate data were all entered into the ENGAGE system, so jobs could be automatically scheduled with the correct information in near to real-time.

After the infrastructure was set, ENGAGE's local implementation specialists provided training at the Noble Energy Operations Control Center (NOCC), to ensure their dispatch coordinators and other field employees were comfortable with the software. The specialists then trained Noble's two primary crude haulers and four primary production water haulers. ENGAGE can typically train new service providers in a week or less. In the fall of 2019, Noble was officially ready to go live on the ENGAGE platform.



How It Works

Noble pushes their SCADA data and other production information into ENGAGE's predictive algorithms and, based on predetermined parameters set by Noble, jobs are automatically scheduled for production water and crude pick up and sent to haulers in near to real-time. Both Noble's NOCC and the hauler's dispatch teams are able to view scheduled orders, current jobs and pending tickets, allowing for optimal planning and management. Since all orders are scheduled in near to real-time, Noble knows exactly when to push jobs to haulers for pickup, regardless of shut-ins or production coming back online.

The haulers use ENGAGE's mobile (native) application, which works online and offline to manage their jobs from yard to wellsite to terminal. The haulers digitally input required field ticket information. However, most data such as timestamps and GPS information are collected automatically, which minimizes the need for manual input and ensures data accuracy. Tickets are then digitally signed off and approved by both the service provider and Noble staff before being sent to invoicing, streamlining the entire field ticket process. ENGAGE's analytics dashboards and reporting tools provide new insight to Noble's field operations that they previously did not have.

Current Rollout & Expansion

Currently Noble is running more than 1,000 crude tickets and 1,500 water tickets per month on ENGAGE's platform, meaning more than 30,000 tickets annually are dispatched, tracked and approved through the platform. ENGAGE also provides ongoing customer support when additional training is necessary or as new functionality is introduced in the software. After seeing positive results, Noble is now looking at additional basins and service types to rollout the ENGAGE solution.

Results:

This study analyzes Noble's crude and water tickets for their six service providers from May 2019 through February 2020 in the DJ Basin. The results were measured over a 10-month period, four months with historical data prior to ENGAGE, and the next six months with ENGAGE. The goal was to identify the impact of using ENGAGE's digital field management platform compared to their previous dispatch and manual ticketing process. For the purpose of this study, data points for three different areas of Noble's operation were examined: average barrels per haul, number of crude short loads (defined as hauls with less than 180 barrels per load) and projected number of trucks needed to haul the same amount of liquid if Noble did not implement ENGAGE.

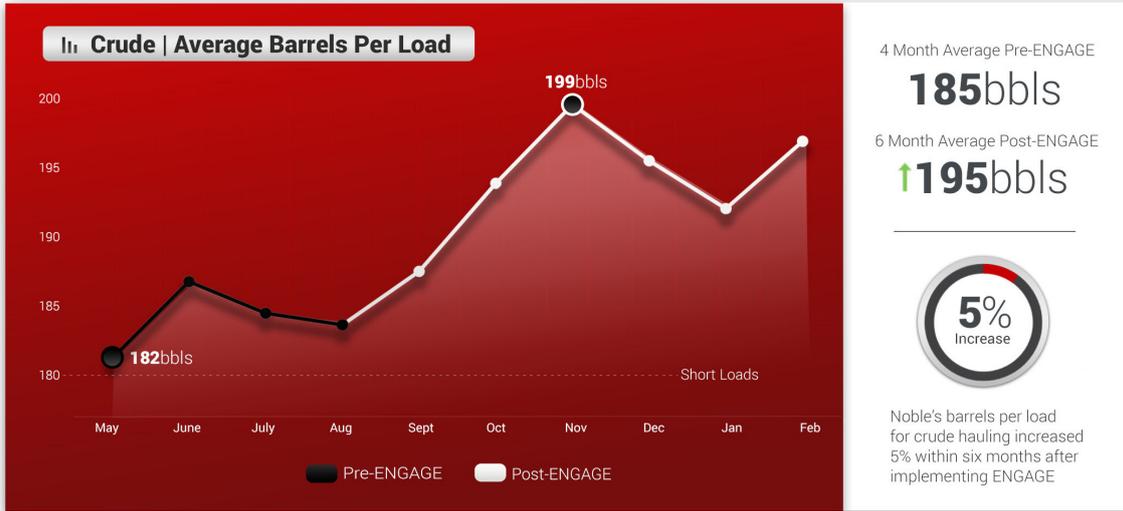


Noble Energy is an independent oil and natural gas exploration and production company committed to meeting the world's growing energy needs and delivering leading returns to shareholders. The Company operates a high-quality portfolio of assets onshore in the United States and offshore in the Eastern Mediterranean and off the west coast of Africa. Founded more than 85 years ago, Noble Energy is guided by its values, its commitment to safety, and respect for stakeholders, communities and the environment. For more information on how the Company fulfills its purpose: *Energizing the World, Bettering People's Lives®*, visit www.nbleenergy.com

Increased Barrels per Load

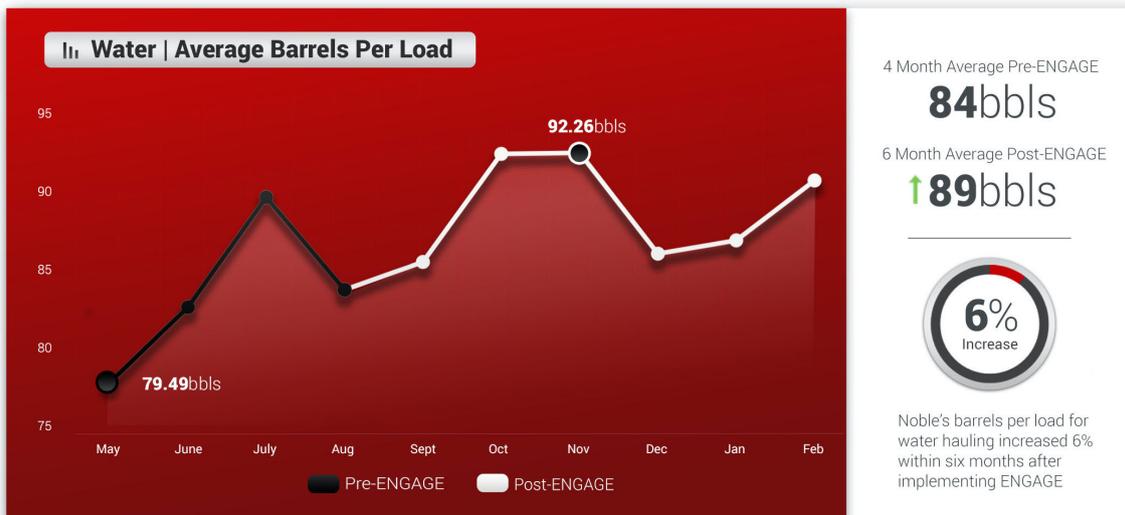
Crude Hauls

Using data from over 10,000 tickets, **the average barrels per load increased from 185 barrels to 195 barrels after switching to the ENGAGE platform**, which is a 5% improvement. Among the many improvements from an efficiency standpoint, there are benefits to having fewer barrels sitting in tanks. This allows Noble to bring their oil to market more quickly, boosting revenue.



Water Hauls

For their water hauls, the data was analyzed for both pits and trucks, so while the size of a max load will vary, the benefit to increasing their barrels per load remains constant. Using data from over 15,000 tickets, **the average barrels per load increased from 84 barrels to 89 barrels after switching to the ENGAGE platform**, which is a 6% improvement.



ENGAGE's Impact

The efficiency improvements to Noble's water and crude hauls is a direct impact of ENGAGE's predictive scheduling, which ensures tanks are pulled at the optimal times. Additionally, the barrel amounts recorded per haul can now be validated through ENGAGE by comparing ticket information to their internal production data and tank heights to ensure the accuracy of each ticket.

Decreased Short Loads

Crude Hauls

Short loads have always been a pain point for operators. A less than full load not only limits productivity, but fees are often added by haulers for short loads, which increases the cost of these jobs. Because of this, a close eye is always kept on the percentage of short loads for liquid transport. **In the four months prior to ENGAGE, 32% of all crude hauls resulted in a short load (loads under 180 barrels). This number decreased to 21% by using ENGAGE.** As a result, the cost savings for Noble on their crude hauls has been significant.

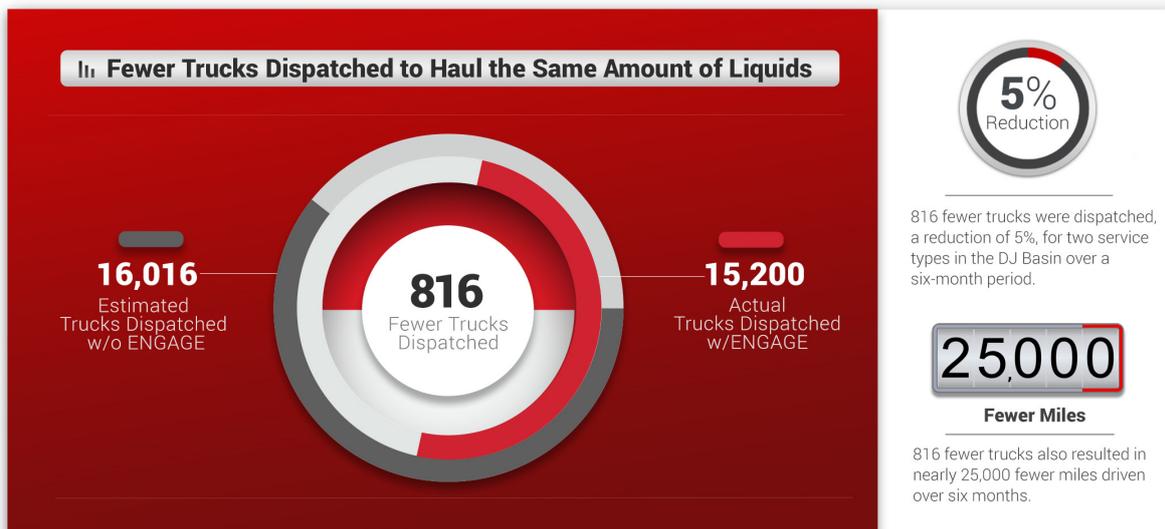


Noble's crude haul short loads reduced by 11% after implementing ENGAGE.

Fewer Trucks on the Road

With a sizeable increase in barrels per load, Noble now needs fewer jobs to haul the same amount of crude and water. In fact, 325 fewer crude trucks and 491 fewer water trucks were required to move the same amount of fluid during the six-month period using ENGAGE. Overall, 816 fewer trucks were dispatched, a reduction of 5%, for two service types in the DJ Basin over a six-month period. **816 fewer trucks also resulted in nearly 25,000 fewer miles driven over six months, which reduces traffic and wear on local roads.**

Additionally, Noble lease operators check each wellsite after a job is completed, which means countless hours have been saved for Noble's field employees since there are fewer jobs. This also means fewer tickets, fewer invoices and most importantly, less risk. There is an additional environmental benefit of reduced emissions and truck traffic with fewer trucks driving on the road. These improvements, especially if extrapolated out to other basins and service types, are game changing.





Service Provider Benefits

Benefits to a digital field management platform, such as ENGAGE, are not limited to just the operators. Noble's service providers see measurable impacts as well:

- Liquid haulers earn more revenue per load because of the increased barrels per load
- Service providers have less maintenance on their assets due to fewer hauls
- Reduced administrative burden and ticket errors for vendors speeds up their order to cash
- Service providers are now able to track their trucks in real-time
- Streamlines the approval and accounting process, including direct invoice submittal through ENGAGE

Conclusion:

Noble Energy has become a leader for deploying innovative technology in the oil and natural gas industry. This study is an industry-leading example of how infusing digital solutions into their workflows safely and responsibly increases productivity, reduces emissions and costs, and saves their employees time.