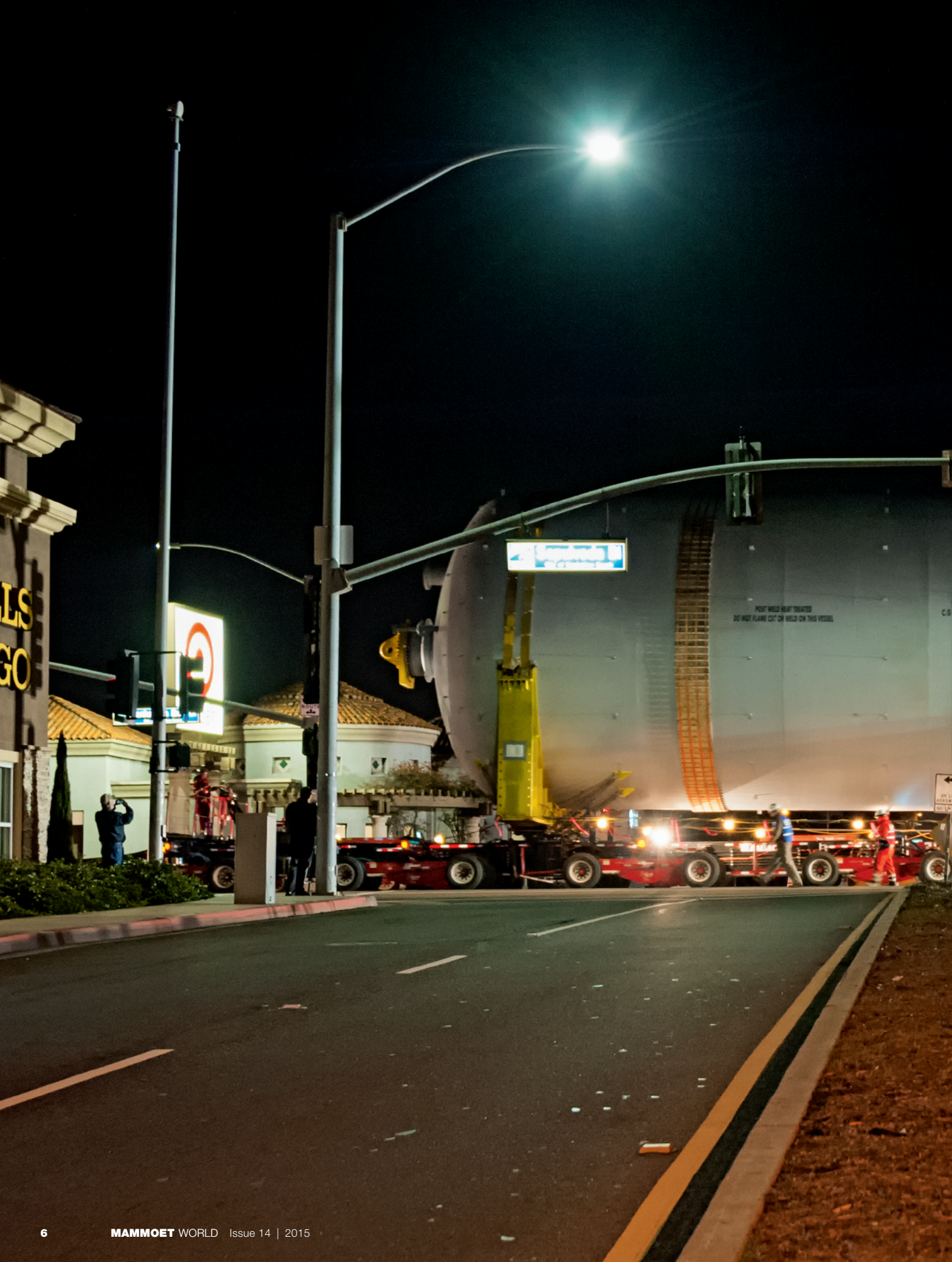
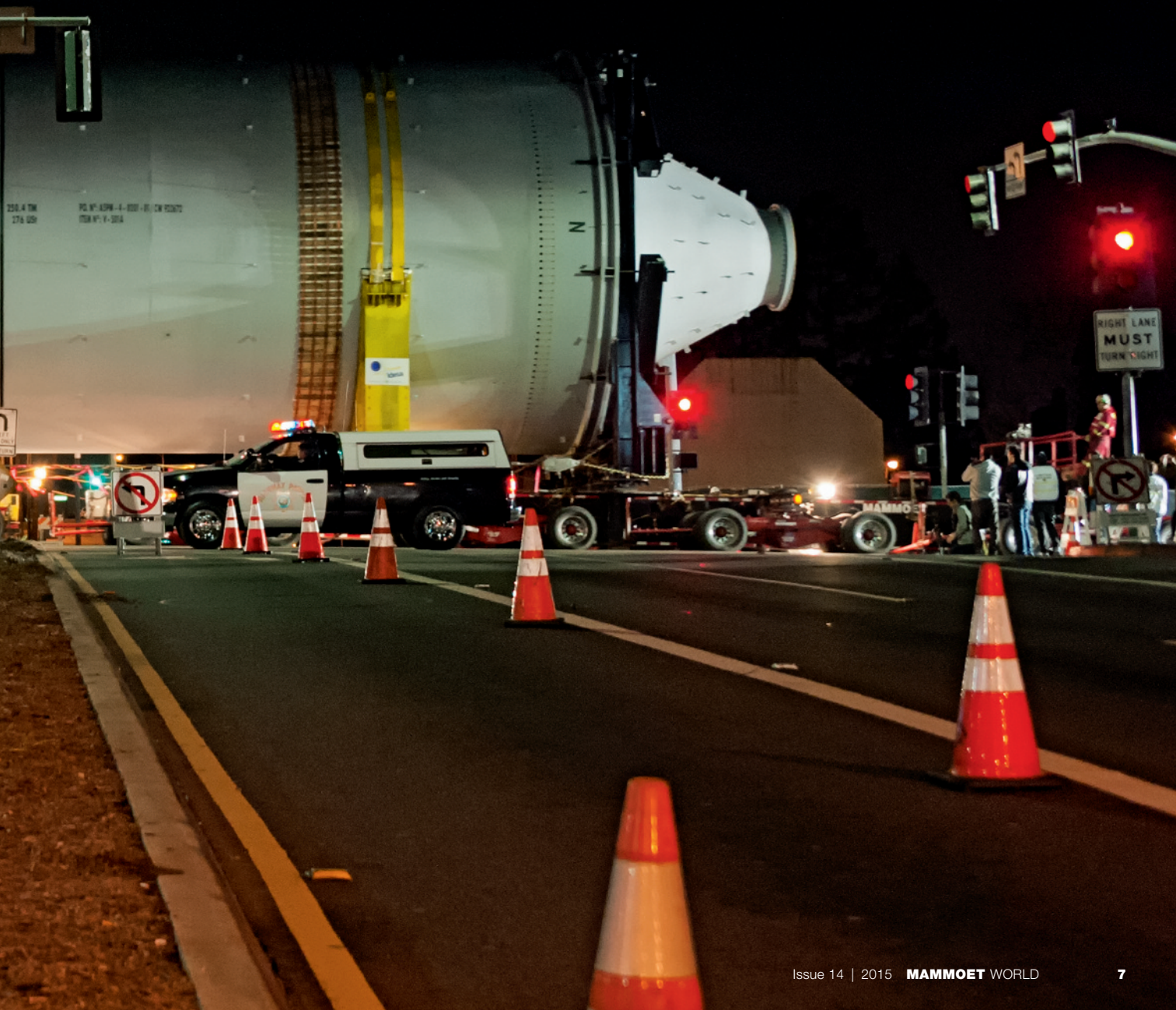
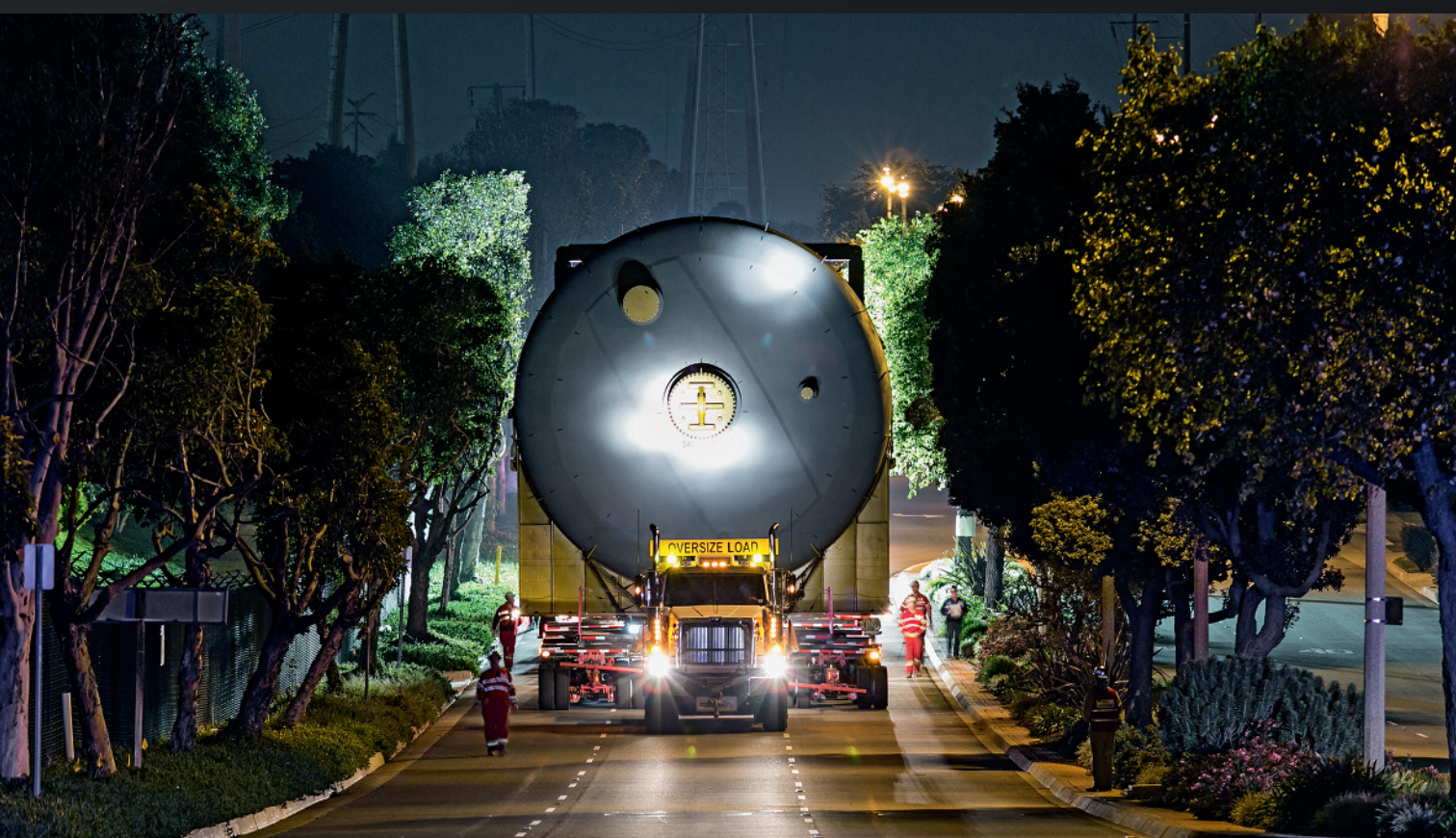


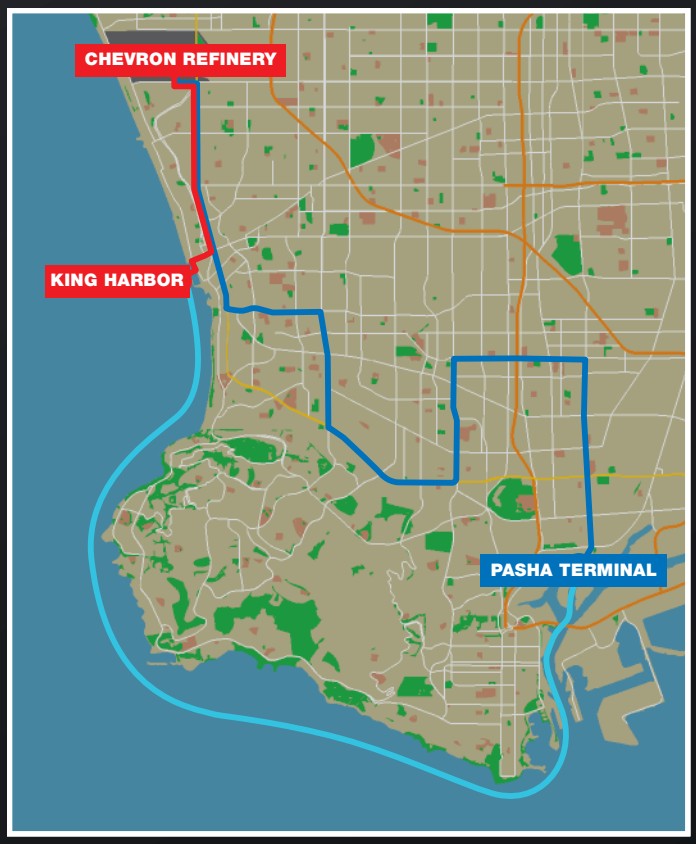
Rolling drums while California dreams

Chevron's El Segundo refinery forms the beating heart of Southern California's petrol production. It provides 20% of the region's motor vehicle fuel and over 40% of the jet fuel for Los Angeles International Airport. When six of the refinery's coke drums had reached the end of their life cycle after 45 years of service, Chevron needed a low-impact approach to replace them. The massive new drums had to be transported straight through a densely populated residential area, before being lifted into place in the heavily congested refinery. How do you move six objects the size of space shuttles across a metropolitan area, without completely disrupting everyday life in the process? By bringing in a partner with a plan and the tools to execute it swiftly, safely and silently.



Before arriving at the Pasha Terminal at the Port of Los Angeles, the drums had travelled 7,330 miles on a heavy lift ship from their manufacturing yard in Spain. Mammoet was brought in to handle the last and most treacherous 4.5 miles of the journey – from the harbor to the refinery. It was decided to partially transport the drums over water, as this meant avoiding taking a long route over land through several residential areas. Instead, the cargo was to be shipped on a barge from the port to a smaller marina closer to the refinery, reducing the distance of land travel from 18 to 4.5 miles.





The coke drums were transported 26 nautical miles, by barge, from Pasha Terminal to King Harbor. From there they were taken, in pairs, by road over the last 4.5 miles to the refinery. The alternative route was 18 miles by road. The Mammoet approach saved three weeks transportation time and reduced the disruption to residents along the alternative route.

We liaised with the Los Angeles Port authorities and the Pasha Terminal to make the necessary arrangements for picking up the load. A barge took the first two drums around the Palos Verdes Peninsula to King Harbor at Redondo Beach, a distance of 26 nautical miles. King Harbor is the largest privately owned marina from Marina del Rey to Newport Beach. Built in the fifties and sixties, today the exclusive marina boasts hundreds of boat slips, luxury apartments and oceanfront offices. But what it doesn't have is suitable facilities for roll-on/roll-off operations. Not letting existing infrastructure or lack thereof get in our way, we turned the busy marina into a RoRo terminal for the occasion, working closely together with the local community to keep disruption of daily activities to a minimum.

Riding quietly with giants

It was at King Harbor where the most challenging part of the operation began. We decided to transport the drums in pairs to reduce the number of runs we had to make. As a result, we cut down total transportation time from six to three weeks, which greatly reduced the potential impact on the neighborhood. A total of three complex road transports had to be carried out, all according to the same schedule. Due to restrictions at the marina, the first stage of the road transport had to be completed over the weekend. We loaded the first two drums on Friday and rolled off on Monday morning. On Monday night we closed the road and drove the drums on SPMTs to the staging location about a mile away. Here we loaded the drums from the SPMTs on to newly-

5 FACTS ABOUT EL SEGUNDO

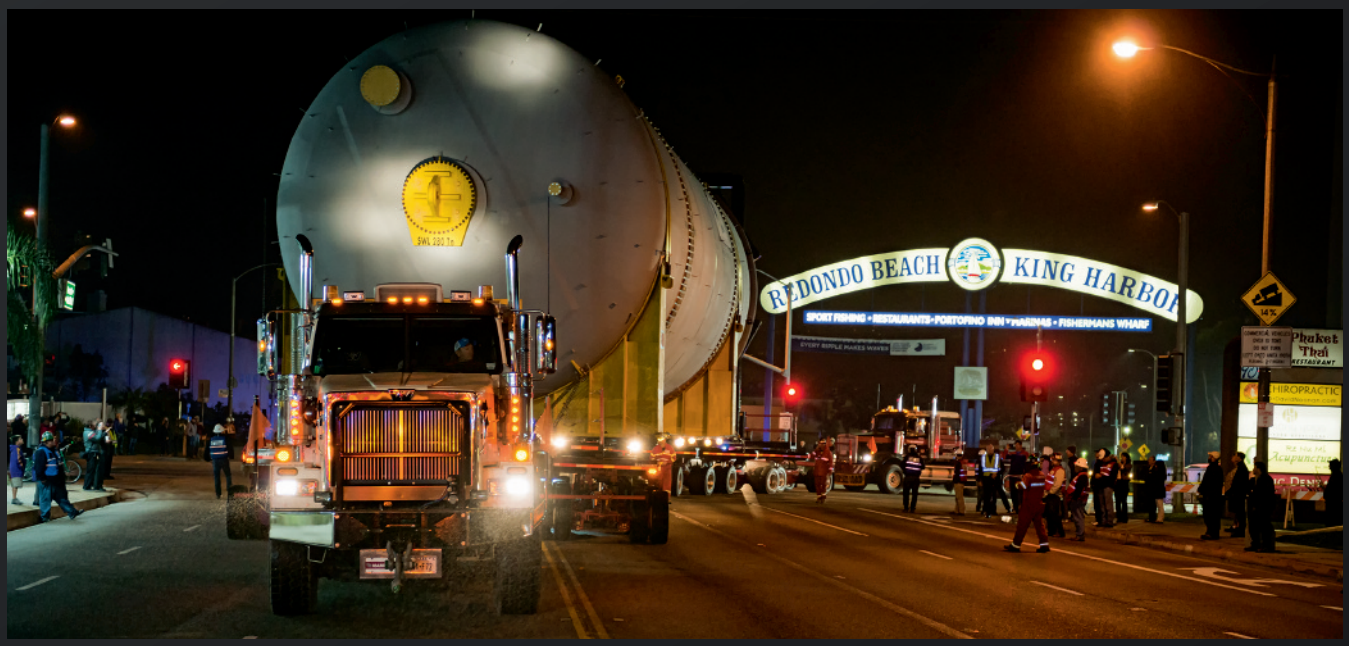
DRUMS TRAVELLED
7,330 miles by sea

INFRASTRUCTURE
57 street lights and 17 traffic poles needed to be repositioned

TRANSPORT TIME
3 weeks less

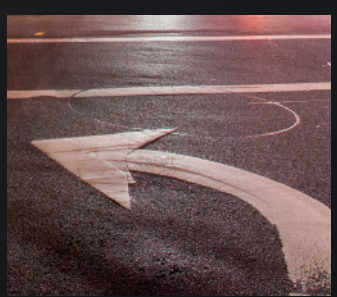
TRAVELLED
1/4 of the original planned distance over land

POPULATION
Transported through second most populated city in the US



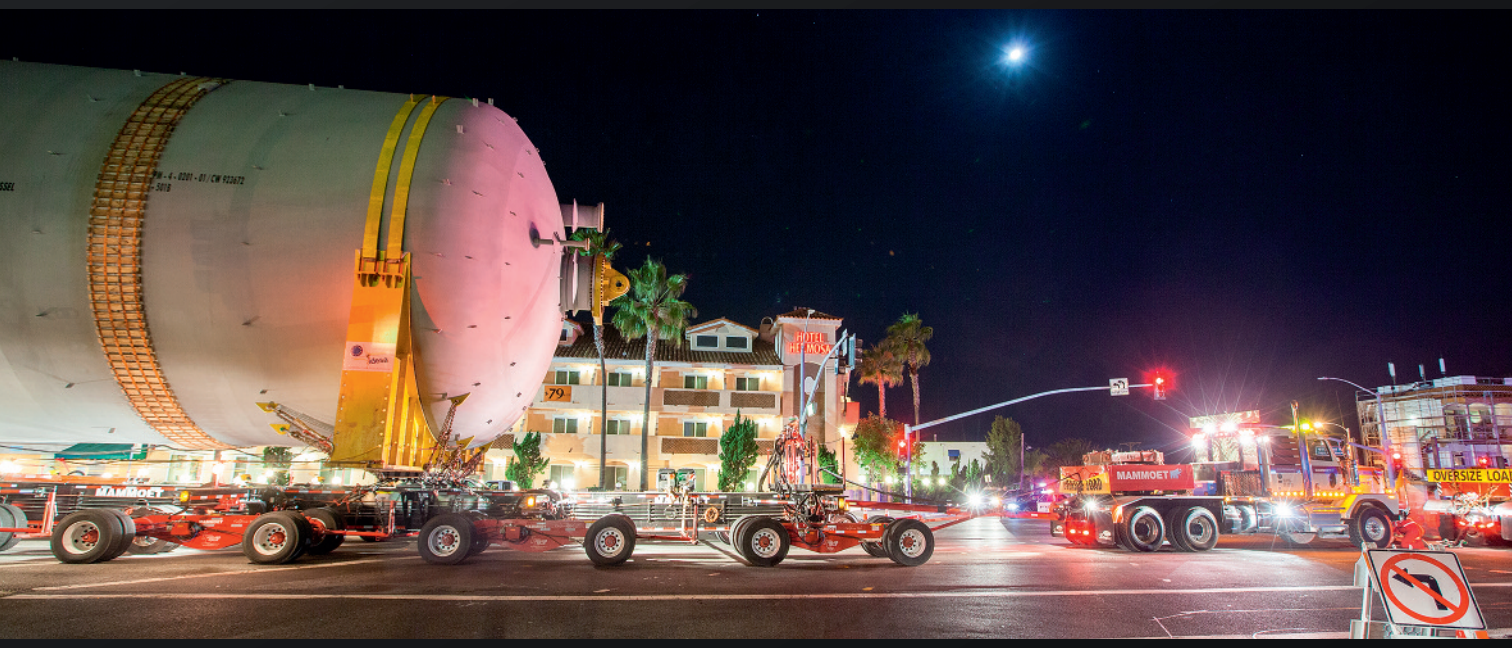
named California Dollies. These dollies got their name because they were built with specific axle spacing, compliant with Californian regulations. Once the coke drums were loaded on to the dollies, the SPMTs were transported back to the port to collect the second set a week later.

The cargo was shipped on a barge to a small marina close to the refinery, reducing the distance of land travel.



This sequence was repeated twice more, meaning we moved all six coke drums from King Harbor to the El Segundo facility in three weeks time.

When it came to the actual road transport, it was all about keeping things safe and being as non-intrusive as you could possibly be when moving six gigantic drums right through a residential area. We took every possible precaution to minimize impact on the neighborhood and the millions of daily commuters utilizing the route. In large part, that meant we carried out the transports at night. Furthermore, we had customized noise reduction covers designed for the SPMTs, cleared the route of all obstacles such as overhanging tree branches and concrete lane dividers, and repositioned 57 street lights and 17 traffic poles. To be in control at every stage of the transport, we had prepared a detailed plan for every 15 minutes of the route. Initially it looked like we would have to disconnect a number of power lines as well, which would have caused outages affecting up to 20,000 residents. In the end though, we managed to avoid power disruptions entirely by cooperating closely with Chevron and various local cities and utility companies. Throughout the entire operation, we only had one complaint. It occurred during the first move and was solved right there and then.



Finishing what we started

When it was time to lift the drums into position a year later, it was Chevron's idea to lift the entire derrick at once, instead of taking the derrick out in smaller sections. For this final part of the operation, we deployed a PTC 35 DS crane. The PTC 35 DS comes with the big advantage of being containerized. Despite its size and capacity of up to 1,600 tons, the entire crane fits in containers when disassembled. This in turn, results in complete freedom to choose the most appropriate mode of transport for the containers. So instead of bringing the crane parts in 170 truckloads exposing the El Segundo residents to another complex road transport operation, we transported them to the refinery by rail from its base in Ontario, Canada.

Relatively compact in size and with just the right capacity, the PTC 35 DS crane lent itself to the job perfectly. We designed the top 90-foot spreader bar and engineered our own rigging to meet the specs. The fact that we brought in the same crew that had done the transport added tremendous value, as the operators knew the coke drums like the back of their hand. As a result of careful planning, smart crew and equipment selection, we carried out the lifting without incident. When all was said and done, we had finished ahead of schedule and under budget for the total project. Chevron construction manager Michael Crosby: "We were very pleased with our partnership with Mammoet. The success and positive impact to the El Segundo Refinery and the surrounding communities will last for many years to come." ■