TWC Singapore completes first CC 8800-1 with Boom Booster lifting for Singapore Refinery Company Pte Ltd.

01st September 2019

Background

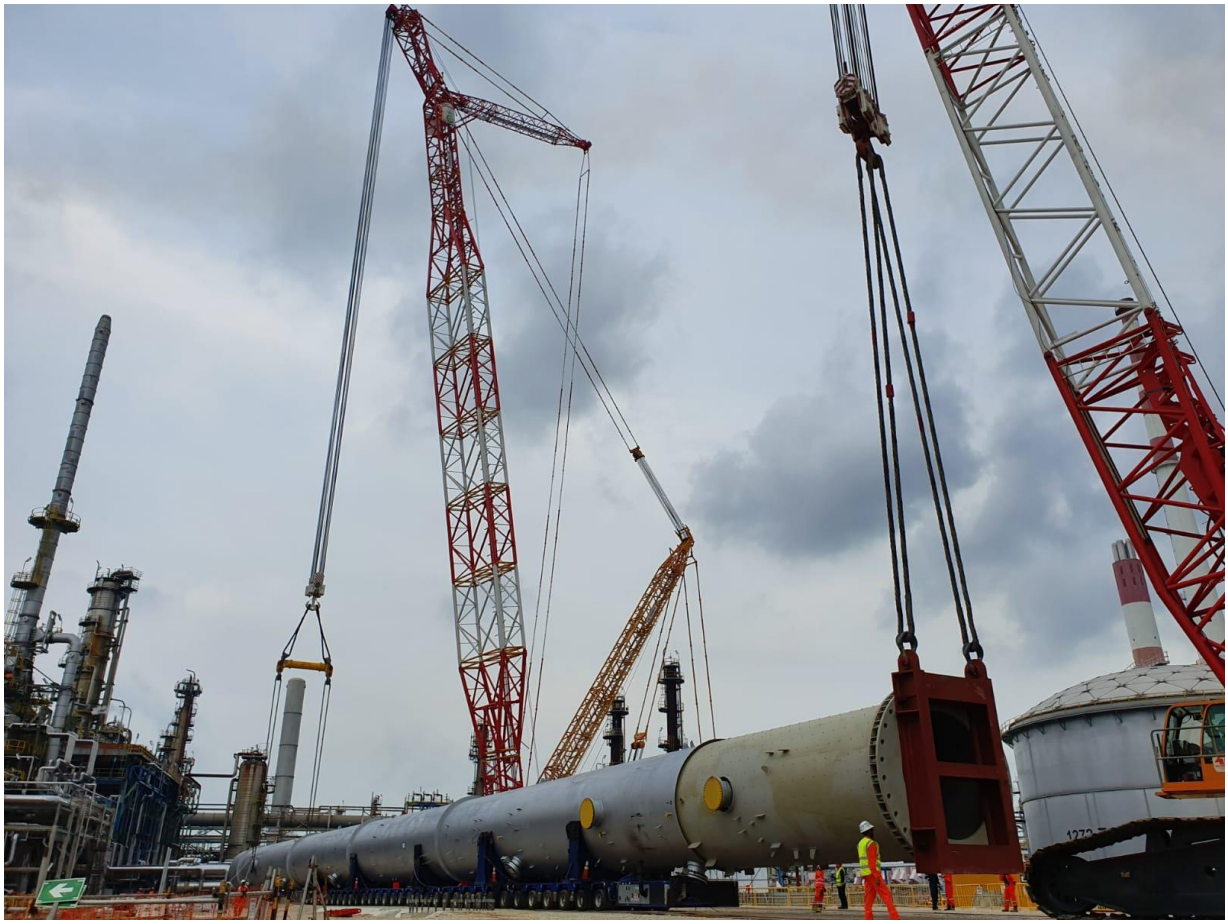
Tiong Woon Project & Contracting Singapore completed its first ever CC 8800-1 with Boom Booster lifting for Singapore Refinery Company (SRC) in Jurong Island.

Singapore Refinery Company was founded in 11th January 1979 and it is a joint venture between Singapore Petroleum Company (SPC) and both Chevron Singapore Pte Ltd & Chevron Trading Pte Ltd located in Jurong Island.

Two of our Demag crawler cranes, a CC 8800-1 with Boom Booster and CC 2800-1 were deployed to do tandem lift for a C3 Splitter Tower column at the Propylene Manufacturing Plant. Measuring 4.8 metres in diameter by 100 metres in Length and weighing 510 Tons, it was the longest column ever lifted by us in Singapore using a Crawler Crane.

Transportation Challenges

Our transportation team met with a few challenges during the transportation planning of the column to Jurong Island given that the Piperack heights were lower than the total height of the combined length of the column and Trailer. To overcome the transportation challenge, several trees, lamp posts and traffic lights had to be shifted temporarily along the transportation route. Road kerbs had to be reconfigured temporarily to accommodate the turns at road junctions for the Trailer. Removal of more than 100m of the road surface had to cleared to accommodate the passing through of the column under the pipe racks. Proper planning, including precise calculations were all done prior to the transportation to ensure that only the bare minimum obstruction removal processes were carried out.



Test lift & Assembly of Crawler Cranes & Boom Booster

To ensure that our lifting team can carry out this tandem lift, a test lift had to be setup at a different location with both cranes being assembled and in the presence of the ordering party consisting of SRC's project team. Once the test lift was concluded successfully, our cranes were disassembled and sent to the project site to be reassembled.

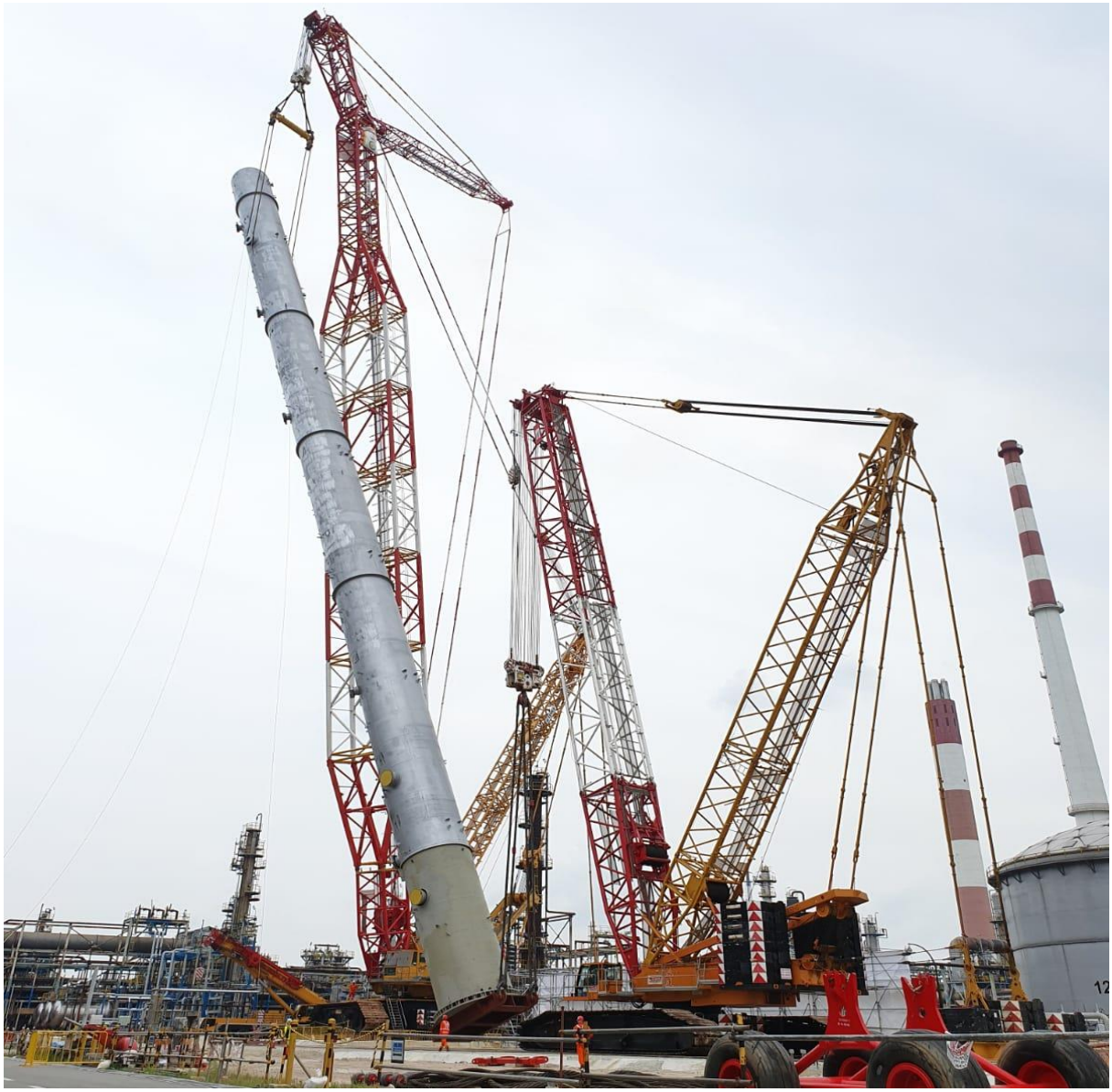
Our assembly team consisting of six assembly technicians, six signallers and two supervisors were split into two teams, one covering the assembly of the crawler cranes while the other focused on setting up the Boom Booster for the CC 8800-1. This arrangement coupled with our team's experience, skills and outstanding training allowed them to only take a total of 5 days to reassemble the two crawler cranes and the seven-part Boom Booster which was a day earlier than the usual six days required for this assembly.

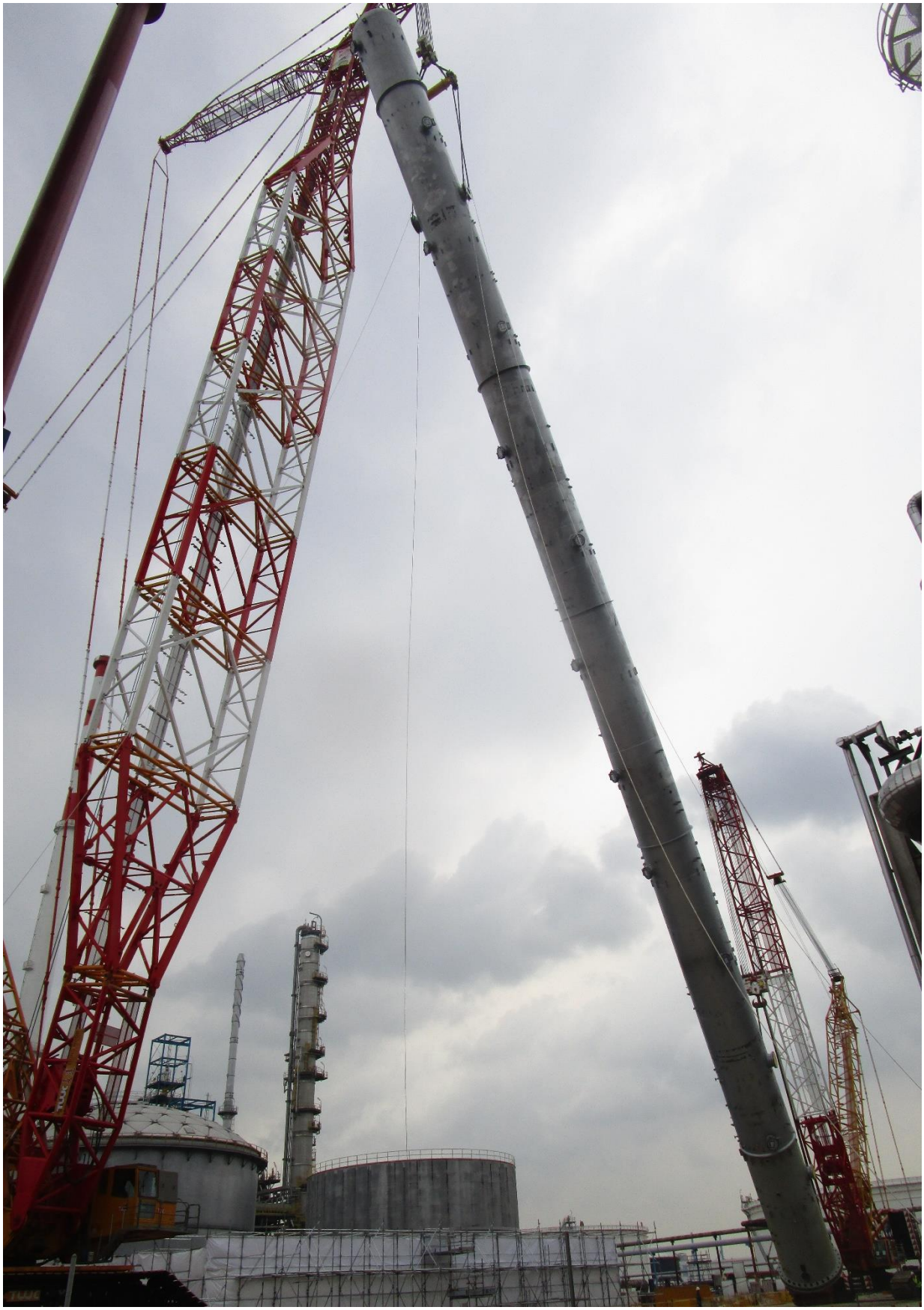
Lifting

The objective of the heavy lift was to bring the massive column from a horizontal position to a vertical position and to position it to set down at the foundation.

Our main crane for the lift, Demag CC 8800-1 equipped with our Boom Booster Kit was configured in BSFVL with a main boom length of 102 metres with a fly jib of 12 metres mounted at an angle of 15 degrees and used a 400 Tons of superlift counterweight. Our support crane for the lift, Demag CC 2800-1 used an SSL configuration with a main boom length of 42 metres and a superlift counterweight of 100 Tons.

Once both crawler cranes were setup with each crane holding one end of the column, our CC2800-1 began the tandem lift by picking up the column and lifting it to a height of 0.5 metres while the CC 8800-1 lifted the load on its end.





Teamwork and meticulous planning are the key.

A 3D animation presentation was presented to SRC to illustrate how the entire lifting operation will be carried out. Transportation plans with the obstruction removal processes and drawings to show the removal of the 100m of road surface were also prepared.

A total of 69 days with an average of 25 personnel, were utilized for this project which was a few days shy of the scheduled end date. The Demag crawler crane's wonderful performance also played a crucial role for completing this project in a safe and smooth manner. The support given by the Demag team during the test setup also served as a valuable experience for the project team.

A job well done to our team in Singapore!