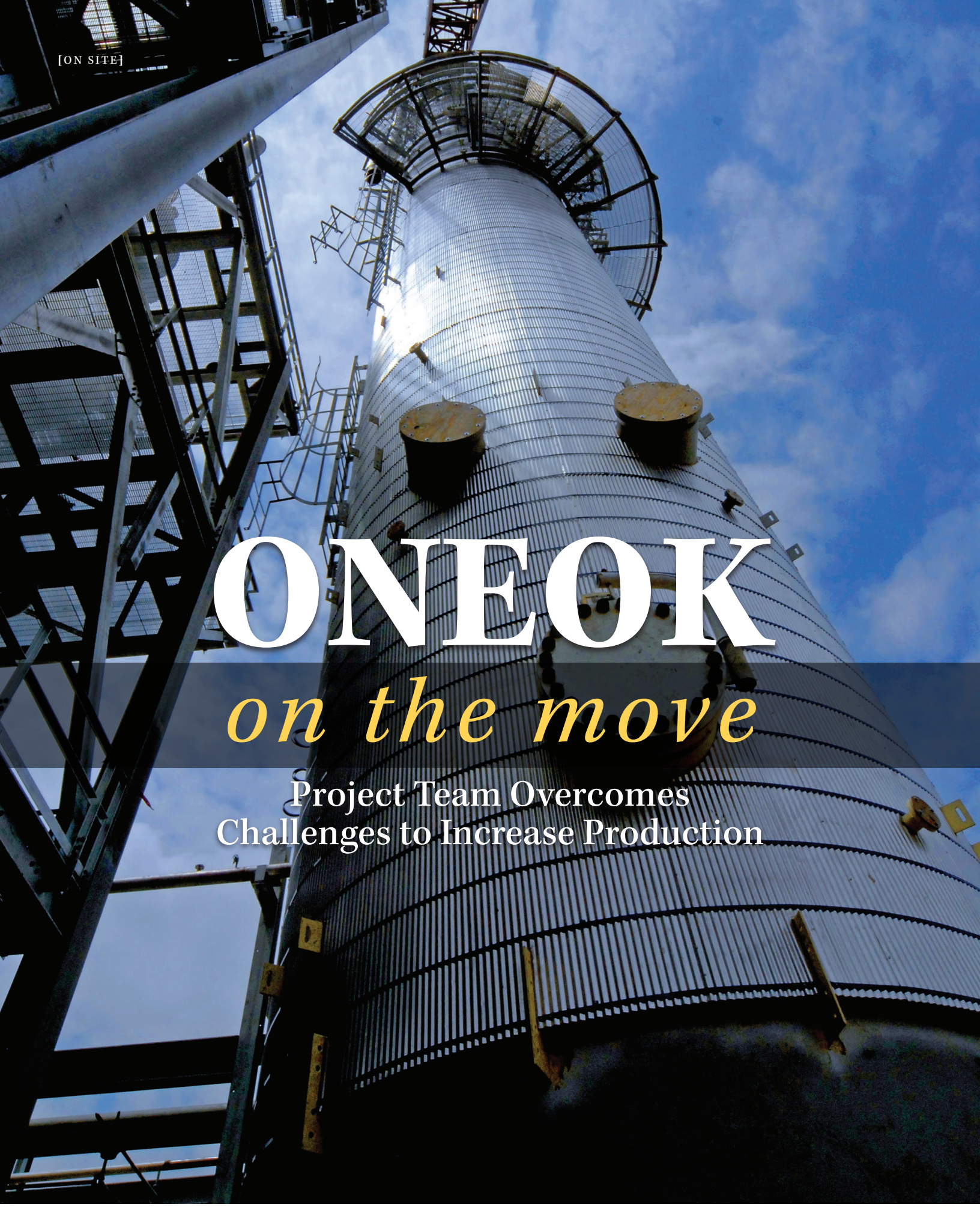

ONEOK
on the move

Project Team Overcomes Challenges to Increase Production

Background

ONEOK Inc., one of the largest distributors of natural gas in the United States, wanted to take advantage of a booming market for products derived from natural gas liquids. It planned to build a 760-mile natural gas liquids pipeline from wells in Opal, Wyo., to its central Kansas market center, and purchased an existing pipeline to reach markets in the Northeast. For the processing capacity to keep those pipelines flowing, ONEOK turned to Burns & McDonnell.

One fractionation train, the stand-alone fractionator, once used to produce ethane, propane and butanes from natural gas liquids, was completely shut down. A second train, the integrated fractionator, was still operational — but at a much lower capacity than desired.

Reusing major components of the mothballed fractionator presented opportunity for substantial cost and schedule savings. Major equipment, such as the compressors, can take up to three years for delivery. But modernizing the unit to maximize capacity also required major improvements. These improvements had to be designed and constructed around the portions of the existing plant that would remain after the renovation.

Torrential summer rains and a very cold winter threatened to slow things down. The average high temperature from December 2007 through February 2008 was 12 degrees lower than the 10-year average, with more than double the average snowfall.

Solutions

Burns & McDonnell had developed a definitive, appropriation-grade estimate to secure funding and completed front-end planning and conceptual design for the plant upgrade in August 2006. By January 2007, the detailed design was under way, and in April 2007, Burns & McDonnell began the modifications.

"We went through the system to find the pinch points, or bottlenecks," says project manager Wayne Kuska. "We were also able to maximize capacity by changing out the trays inside the towers to a more efficient, higher capacity tray. A key challenge was to optimize the new deethanizer overhead condensing system due to limited refrigeration capacity."

The renovation included a new piping layout, a new amine product treating system, molecular sieve product drying system and a perco natural gasoline treatment unit.

Site engineers, construction managers and crews toughed out the weather conditions. When days were lost due to weather, site personnel worked extended hours and weekends to make up time. Careful planning and oversight helped keep the worksite safe and the schedule moving.

Outcome

In spite of the challenges the weather posed, Burns & McDonnell turned over the stand-alone fractionator to ONEOK for commissioning and startup on April 28, 2008 — just 12 months after construction began.

For more information, contact Wayne Kuska, (816) 822-3385.

"Thanks a bunch for the hard work and effort put forth by your team. We are starting to see the light at the end of a long tunnel."
Terry Spencer, executive vice president, ONEOK

A key element of ONEOK's plan was to increase production of "light" hydrocarbons, such as ethane and propane, at a plant just east of Bushton, Kan.

Challenges

A large portion of the Bushton plant had been decommissioned for six years.

In the face of rising demand and historically favorable profit margins for processing of natural gas liquids, time was of the essence.

The ONEOK senior management team watches as the Burns & McDonnell construction team lifts a 400-ton, 120-foot tall deethanizer tower for the integrated fractionator and sets it precisely in place. The project milestone was reached in May 2008. Work began concurrently with work on the stand-alone fractionator and is on schedule for completion Sept. 15, 2008. The completed project will increase the Bushton plant's ability to fractionate the natural gas liquids (NGL) feed to 140,000 barrels a day — double its existing capacity.