A serious fire broke out at TPC’s Port Neches, Texas, 425,000 t/yr butadiene (BD) facility on 27 November, prompting shifts in the entire supply chain. The reaction involved cracker operators with crude C4 that is typically shipped to TPC’s Port Neches or Houston facilities; BD contract customers; other BD producers who worked to fill the void; companies who stored material in TPC’s onsite tanks; and finally, those who were dependent on an industrial gas facility that was also onsite at Port Neches.

TPC customers reported that the supplier declared force majeure later that day. Twelve tanks were impacted. There were no fatalities, but on 2 December four of the plant’s towers had been compromised or fallen. The fire was extinguished the next day. By 5 December, the company said its chemical plant and onsite storage were unstable and indefinitely shut. Then on 6 December, four days after extinguishing the fire, small fires at the site broke out and continued to burn on 9 December. The company is planning to safely transfer remaining materials from the site, depending on tank integrity inspections. Investigations will commence once the site is deemed safe.

TPC’s Port Neches facility can produce up to 17pc of US BD capacity. The company also has 415,000 t/yr of BD capacity in Houston.

On the day of the incident, spot discussions jumped to about a 15pc premium to the December contract price (CP) of 34.5¢/lb ($761/t). Heading into this week, the market was more relaxed about supply and demand balances. While spot material is available domestically, sellers waited to hear December allocation levels prior to offering any volumes. A bid emerged on 4 December on the Accord Brokerage platform at 31¢/lb ($683/t), but drew no offers. Current spot discussions were centered around the December CP at 34.5¢/lb since consumers were nearly fully covered for the month. There is also anticipation that additional BD volumes could be available with the restart of a Houston area extraction unit in the first quarter.

At this point, no one has purchased imported volumes outside of normal or contractual volumes. Assuming demand is as weak as industry participants have projected, little or no BD imports outside of the norm are expected.

Some consumers were given allocation levels for December, but this varied greatly on historical demand and many swaps and exchanges. Most consumers said the level was better than they anticipated. Starting this week, TPC is expected to roll out its plan for 2020 and beyond.

Port Neches is home to a cluster of industrial complexes. Phillips 66 operates a crude oil and refined products tank farm, marine facilities and connections to several crude and refined product pipelines. Motiva has marine capabilities in the vicinity. Huntsman operates propylene oxide (PO) and methyl tertiary butyl ether (MTBE) units, and Lion Elastomers produces synthetic rubber nearby. There are also three crackers with no BD extraction capacity.

Three key themes emerged from the TPC fire: the logistics of moving crude C4 and BD; acetylene content; and hydraulic constraints.

**Logistics**

Consumers and producers quickly worked after the blaze to resolve logistics and meet BD volume obligations, laboring through the US Thanksgiving holiday weekend. The US BD market in 2019 has coped with two other major incidents. These were a 17 March fire at Intercontinental Terminals (ITC) in Deer Park, Texas, and a 31 July fire at ExxonMobil’s Bay-
town, Texas, complex. Throughout this period, the market remained flexible to cover needs.

The major difference with the 27 November event is the movement of crude C4. Prior to the incident, TPC processed excess crude C4 from North American crackers, particularly from those without BD extraction. The company has also imported crude C4, about 200,000t in 2019. Nearly half of this volume came from Turkey. But prior to the incident, a majority of the Turkish crude C4 volume was earmarked for western Europe in 2020. The remainder of the Turkish volume was expected to go to Asia-Pacific.

US cracker operators without extraction capability are now forced to find not only a new extraction source, but also a way to move the material. In the past, crackers either shipped crude C4 by barge or pipeline to TPC’s Houston or Port Neches facilities. But the BD pipeline and part of the dock facilities in Port Neches are now inaccessible because of the safety, insurance and environmental investigations. No timeline is available for accessibility. As a reference, participants with tanks at ITC said they regained access within two months to as long as seven months following that event. That timeline at least gives market participants a baseline for assumptions.

Three Port Neches area crackers previously piped crude C4 to TPC’s nearby plant. Now those operators will have to find a new means to ship crude C4. One option is to restart an idled crude C4 pipeline between Deer Park, Texas, and Port Arthur, Texas. Deer Park in principal could accept crude C4 by barge and then pipe crude C4 to underutilized extraction capacity at Port Arthur. But so far, there has been no discussion by pipeline owners to reopen the connection. Unless this happens, crude C4 logistics will remain a hurdle to extract BD. At least one of the cracker operators on Thursday said it had logistical flexibility to work through the shutdown. The company did not anticipate a reduction in plant operations because of the BD shutdown.

**Acetylene content**

Participants agreed that the BD utilization rate was low, so extra capacity, in theory, is available. A production problem for some is the high acetylene content in ethane derived crude C4s. Some facilities can remove the acetylenes by hydrogenation, use as a fuel gas, or by burning C4 vapors in a flare system. Those lacking the removal system are constrained in the kinds of crude C4 that their extraction units could tolerate.

**Hydraulic constraints**

Participants expected TPC to run its Houston BD asset at higher operating rates. This resulted in greater flow along the west side of the pipeline. Some are concerned about pipeline capacity, but no problems have been reported.

The market was generally optimistic that they can work through the challenges, very likely in absence of imported spot BD. Domestic demand remained in the doldrums. There was a strong belief, outside of the three main issues outlined, that the US market would simply move from long to balanced moving into the first quarter of 2020.

**Timeline of events**

27 November – At about 1am local time, an explosion occurred at TPC’s Port Neches, Texas, butadiene facility in the south processing unit. Later that day, the company declared force majeure.

2 December – Four of the plant’s towers had been compromised or fallen. Twelve tanks were impacted. Neighboring Lion Elastomers said it sustained no process damage was restarting the finishing portion of its plant to process existing intermediate latex into rubber product.

3 December – The fire was extinguished more than a week after the incident, but an “all clear” has not yet been issued. More than 20 agencies at the federal, state and local level are part of the response team.

5 December – TPC said its chemical plant and onsite storage were unstable and indefinitely shut. Huntsman idled its MTBE production, which is adjacent to TPC. Huntsman’s MTBE production at Port Neches represents almost 30pc of US capacity.

6 December – Small fires break out and continued to burn on 9 December. The fires were anticipated and were being contained.
About TPC
TPC is a Houston based crude C₄ extractor. The company owns more than 30pc of US butadiene extraction capacity, according to Argus data.

The Port Neches site is 218 acres and produces BD and raffinate. Their infrastructure includes pipeline, barge, rail and tankcar. It also stores MTBE for its neighbor Huntsman. In Houston, the company manufactures BD, MTBE, raffinates and polyisobutylene. It operates a product terminal in Lake Charles, Louisiana.

The company’s customers are in the synthetic rubber, fuels, lubricant additives, plastics and surfactants segments.

In March, TPC said it planned to increase its crude C₄ volumes at more than 8pc per year through 2022.

The company has been in operation for more than 70 years.

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Angie leads the C₄, butadiene and derivatives consulting practice at Argus. She spearheads the creation and production of the butadiene newsletter, monthly outlook and annual, long-term supply and demand publication. Throughout her 15 years in the petrochemical industry, Angie has filled a variety of roles including analyst, broker, business development and communications. Her additional areas of expertise are styrenics, aromatics, olefins and methanol. Angie enjoys tapping her experience along the entire petrochemical value chain to piece together market information in a global context.