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## **Question 6: Do LTOs contain higher concentrations of nitrogen? If so, how has this higher concentration effected gasoline processing units?**

**PATEL** (Valero Energy Corporation)

The LTOs generally do not contain a higher concentration of nitrogen. LTOs are typically characterized as light, sweet, low-sulfur, low-nitrogen crudes. For example, the Eagle Ford and the Bakken nitrogen typically contains less than 2 ppm. Nonetheless, the gasoline processing units are impacted when refineries process higher percentage of the LTOs because of the crudes. The LTOs have lighter and heavier naphthalenes, which causes an increase in the feed rate to the naphtha hydrotreater and to the isomerization and reformer units, producing higher barrels of the isomerate and reformate in the refinery gasoline pool. LTOs can also cause challenges for blending the light straight-run naphtha and its handling because of the higher rate and vapor pressure. Also, LTO crudes are higher in paraffins, so the reformer feed will be leaner with the lower end, which that could result in requiring more severity and lower product octane. Also, the higher naphtha yield could result in a directionally lower rate to the FCC and alkylation unit, and that could cause underutilization of those units and reduced contribution to the refinery gasoline pool.

**GINGER KEADY** (Technip)

It is not easy to get ahold of some of these assays. People keep them very close. I have seen one between the initial point and 390°F. In that case, there was no reported nitrogen. And in between 390°F and 480°F, the reported nitrogen was around less than 20 ppm total nitrogen.

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