

■ ENGINEERING ■ ARCHITECTURE ■ DESIGN-BUILD ■ GEOSPATIAL SOLUTIONS ■ SURVEYING

Merrick & Company provided on-site engineering and design services to supplement Sinclair's staff in their efforts to identify and design all the required interconnections and utilities for Sinclair's new 11,000 bpd gasoil Hydrocracker and new 26 MMscfd Hydrogen plant.

Boiler Feedwater and Steam System Design

Merrick started by establishing a water and steam material balance for the entire refinery. Then the expected future requirements for water and steam of all new and expanded units were incorporated. Several options for boiler feedwater, multiple boiler operation, and condensate return were designed, estimated, and evaluated. Sinclair selected and installed one of the design options.

Interconnecting Piping Design

Approximately 37,000 linear feet of interconnecting piping between both crude units, the FCC, the gas plants, blending systems, tank farms, each hydrotreater, and the hydrocracker and hydrogen plant were designed and routed. The process design, mechanical design, piping drawings, and construction supervision were each a part of this task.

Flare System Design

Several options were provided to handle the new flare loading of the new units and expanded units for the refinery. The emergency dumping requirements from the hydrocracker were included, and many emergency scenarios were evaluated to provide a worst-case flare-loading situation from which a new flare system was designed.

Other Utility Systems Design

The instrument air, utility air, and various pressure and quality levels of a new fuel system were designed for the new and expanded units at the refinery. The cooling water system including the existing towers, supply and return lines, and circulating pumps were all evaluated and redesigned as necessary for the expanded refinery cases.

