



Merrick & Company was contracted by Total Petroleum to facilitate and scribe a PHA for their Arkansas City Refinery in Kansas. The HAZOP was conducted on the Fluid Catalytic Cracking Unit (FCC) and included the two-stage regeneration section, and attendant support utilities.

A total of 68 drawings with an associated 300 nodes were reviewed in the analysis. During the review of each node, the review team discussed previous incidents which had led to accidents or near misses. Human factors such as the operator errors were also discussed as part of the determination of causes, consequences, and recommendations for each process parameter deviation and node throughout the HAZOP study. The team evaluated engineering and administrative controls and the consequences of losing these controls. The team ranked the probability, safety, and economic impact of the deviations using qualitative terms such as low, medium, and high. These rankings helped management prioritize the recommendations. The PHA documentation also listed recommended changes to P&IDs and operating procedures.

Merrick's experience in conducting process hazard analyses provided the focus and control to obtain a hazard analysis on the FCC Unit consistent with OSHA requirements. Merrick consistently demonstrated innovative methods for decreasing the PHA review time. Consequently, the refinery's operations were minimally impacted by the OSHA requirement to perform process hazards analyses. The resultant recommendations list provided Total with value-added changes for the facility.