Enhanced Process Safety Through IPL Management

F. Broussard  
Chevron Phillips Chemical Company  
1400 Jefferson Road  
Pasadena, TX 77501, USA  
Phone: (713) 475-3410  
e-mail: fmbrous@ppco.com

A.E. Summers  
SIS-TECH Solutions  
PMB 295  
2323 Clear Lake City Blvd.  
Houston, TX 77062-8032, USA  
Phone: (281) 922-8324  
e-mail: asummers@sis-tech.com

ABSTRACT

The failure of a butadiene tank served as a catalyst for taking a new approach to process safety management (PSM) at the Houston Chemical Complex (HCC) of Chevron Phillips Chemical Company. This incident led HCC personnel to take a hard look at the existing risk management program and determine what could be done to prevent a chain of events such as those that led to the incident. The examination revealed that risk management had to evolve from its existing state into a more comprehensive, tightly managed program. This was accomplished by the following:

1. PHAs were performed on every process unit. This was not a revalidation of previous PHAs, but starting with a blank sheet of paper.
2. Human factors studies were performed to ferret out where procedures and equipment did not match human expectations and capabilities.
3. Alarm management studies were conducted to reduce and prioritize alarms, minimizing the potential for alarm flooding during process excursions.
4. Safety instrumented system upgrades were required to minimize the potential for loss of containment events. Management made the commitment to fully implement ANSI/ISA 84.01-1996.
5. Incident investigations were expanded to include additional root cause methods.
6. Improved recommendation tracking was necessary to ensure that no recommendation from the above studies was lost.

This paper will present an overview of the new risk management approach and how it has impacted process safety and plant operations at HCC. Finally, this paper will discuss a few lessons learned during the implementation of the new program at HCC.