ABSTRACT

Overfills have resulted in significant process safety incidents. Longford (Australia, 1998), Texas City (United States, 2005), and Buncefield (United Kingdom, 2005) can be traced to loss of level control leading to high level and ultimately to loss of containment. A tower at Longford and a fractionating column at Texas City were overfilled, allowing liquid to pass to downstream equipment that was not designed to receive it. The Buncefield incident occurred when a terminal tank was overfilled releasing hydrocarbons through its conservation vents.

The causes of overfill are easy to identify; however, the risk analysis is complicated by the combination of manual and automated actions often necessary to control level and to respond to abnormal level events. This paper provides a summary of the Longford, Texas City, and Buncefield incidents from an overfill perspective and highlights 5 common factors that contributed to making these incidents possible. Fortunately, while overfill can be a complex problem, the risk reduction strategy is surprisingly simple.