LOPA Lessons from Past Process Plant Incidents

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Abstract

The Layer Of Protection Analysis (LOPA) technique is used by the process industries as a semi-quantitative assessment tool for making risk based decisions. While the primary purpose is to determine if there are sufficient layers of protection or defense against high risk scenarios, continued maintenance of the protective layers is crucial.

This paper presents a review of selected process plant incidents and comparison of failed layers of protection or layers of defense for each incident in order to investigate commonality and any emerging patterns that may be used to predict future incidents and/or bolster LOPA techniques. Incidents do not represent a statistically sound sampling and selection was based primarily on incident severity and availability of information. Identification of layers of protection that should have prevented the incidents and events/conditions associated with failure of the layer(s) is also presented.