Applying Risk Assessment To Overpressure Protection System Concerns

James Woodard, PHA Facilitator
Nancy Faulk, Process Engineer
Aubry Shackelford, P.E., Technology Manager
Lloyd’s Register Celerity3, Inc.
10575 Katy Freeway, Suite 350
Houston, TX 77024
713.464.3300
j.woodard@celerity3.com
n.faulk@celerity3.com
ae.shackelford@celerity3.com

Abstract

Process hazard analyses (PHAs), management of change (MOC) procedures, and mechanical integrity reviews often result in concerns regarding existing overpressure protection systems. Once a credible hazard has been identified, e.g. potential for system overpressure or loss of containment, a risk evaluation and recommendation for the hazard must be outlined. If many such concerns exist, the task of prioritizing them to utilize time and resources most effectively can be daunting; guidance is needed for the qualitative prioritization of concerns with respect to the design of the overpressure protection system.

The authors have developed and refined a methodology, termed a Risk Assessment System Plan for Relief Systems, to perform this risk assessment and ranking. An established risk framework, which may include both HSE impact as well as business impact, is employed as the basis for preliminary risk assessment. An experienced PHA facilitator along with a team then determines if standard resolution is possible or if a layer of protection analysis (LOPA) can/should be applied or if some other type of formal Risk Assessment Method can mitigate the concern. The recommendations proposed can range from resolution per work practices (for low-risk issues) up to approval of action items acceptable for short-term or long-term operation (for high or very high severity issues), and are subsequently presented to operations, maintenance, and technical authorities for their consideration.