Identifying True Safety Critical Equipment by Evaluating an Asset’s Major Hazard Potential

Jennifer Morgan
Technical Safety Engineer
Shell Technical Safety Focal Point

Abstract
This presentation details the process used at a current Onshore Unconventionals Asset to determine an accurate number of Safety Elements. This particular asset previously had a count of over 7000 pieces of equipment that were deemed Safety Elements. The process used to understand and to evaluate that equipment for its current use as associated with Safety or Integrity began with understanding the potential Process Safety events for the asset. These potential events were evaluated for each piece of kit at either the wellpad or the liquids gathering facility. Once the equipment-specific events were evaluated for potential risk, the individual elements associated with the equipment pertaining to those events meeting our Major Hazard criteria were further evaluated. This evaluation was done in a group setting involving operations, safety, and mechanical integrity. Each element currently marked Safety was discussed and re-evaluated based on the potential events associated. If the element (e.g. PSV, pump motor, ESD logic) was capable of mitigating or preventing the potential Major Hazard event, it remained as a Safety Element; however, if that element was not associated with mitigation or prevention it was reduced to an Integrity Element. The initial workshop resulted in de-rating of about 50% of the elements associated the multi-well facility, and about 40% for the LGS. It should be noted that some elements received an increase from Integrity to Safety based on the understanding of the potential events. The results of the workshop performed to evaluate both a multi-well facility and a liquids gathering facility will be tested at other assets to determine the applicability of similar results.