ABSTRACT

ANSI/ISA-S84.01 and IEC-61511 include a Life Cycle Model, calling for establishing SIL levels between the HAZOP and the detail design. The benefits of this Life Cycle Model to the user are unstated. To determine the scope and magnitude of these benefits, a recent capital project was evaluated. The new plant was to be similar technology to an existing plant, so a preliminary design was available at the time of the SIL Assignment Meetings.

A QRA performed on the preliminary design determined that for 16 of 25 safety functions, the required SIL would not have been met. A project scope and estimate were generated to determine the cost (both capital expense and timing) to bring a plant, based on this preliminary design, up to standards.

It was found that failure to follow this Life Cycle Model would result in an inadequate instrumentation scope for the project. Start-up would be delayed several months while a project was designed, funded, and built, to remedy the shortcomings in the preliminary design.