LOPA Misapplied: Common Errors Can Lead To Incorrect Conclusions

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Abstract

Layer of Protection Analysis (LOPA) is a powerful tool for quantitative risk assessments. If applied correctly, it can provide quick and efficient guidance on what additional safeguards are needed, if any, to protect against a given scenario. If misapplied, an overly conservative calculation of risk may result in over-instrumentation, additional life-cycle costs and spurious trips. Even worse, a non-conservative calculation of risk could result in an under-protected system and unacceptable risk of an undesired consequence occurring.

This paper describes several categories of common errors, some overly conservative and some non-conservative. Case studies of actual plant scenarios are used to illustrate.

Keywords: Layer of Protection Analysis, Risk, Quantitative, LOPA, Case Studies