Risk Benchmarking for Onshore and Offshore LNG Developments

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With the continuing growth in the global LNG trade and an increased activity of liquefaction projects proposed within North America, safety risk management is gaining more focus both from regulators and public. Multiple Stakeholders, new technologies, tighter deadlines, cost efficiency and an increased focus on safety are some of the key factors driving these projects. As the industry is moving towards adopting principles of inherent safety, earlier in the projects, complex design decisions are being made with relatively less design data or input. This poses an endless challenge to both the project management making investment decisions and the design team making design decisions. Hence, the aim of this paper is to draw examples from previous LNG projects worldwide and provide best practice guidance on risk assessment processes.

The first part of the paper will focus on differences in regional regulatory requirements within North America and an understanding of the risk criteria being used. The uncertainties to be considered in an LNG QRA are covered in this section, which forms the key to early design decisions. The second part of the paper will summarize the risk results and discuss the top risk contributors from LNG projects worldwide including the band of likelihood data used within the industry. Since likelihood of failure events usually plays a major role in the evaluation of risks, it is important to align these with the risk criteria used to ensure risk reduction decisions (ALARP decisions) are effectively made in the right order of priority i.e. focus on the top events first. Overall, this paper will serve as a risk benchmarking tool for both onshore and offshore LNG (FLNG) developments in arriving at key decisions earlier in the design.