Quantitative Risk Analysis (QRA)

For Onshore & Offshore Installations

QRA's provide numerical estimates allowing clients to understand risk exposure to people, business, the environment, markets or other areas of interest. QRA studies account for potential releases of hazardous material, their consequences (e.g., fire, toxic, explosion, etc.) and estimated frequency of occurrence. VELOSI works with clients to identify their risks from specific one-off questions to full safety case projects.

Quantitative Risk Analysis (QRA)

Knowing the hazard from the chemical process is only the first step in a comprehensive safety plan. Evaluating the safety risk is a proven way to manage these hazards in an objective manner. QRA evaluates both the likelihood and impact of an unplanned event and allows a business decision to be made on the most cost-effective risk reduction solutions, where necessary. Effectively managing risk results in cost savings by reducing business interruption, limiting injury to people and damage to equipment.

VELOSI's engineers have performed QRA studies World Wide, evaluating risks to business, people and to environment. Facilities evaluated include:

- Refineries
- Terminals
- Gas plants
- LNG & LPG operations
- Pipeline systems
- Offshore platforms

- FPSOs
- Oil & gas wells
- Chemical plants
- Petrochemical plants
- Pharmaceutical plants
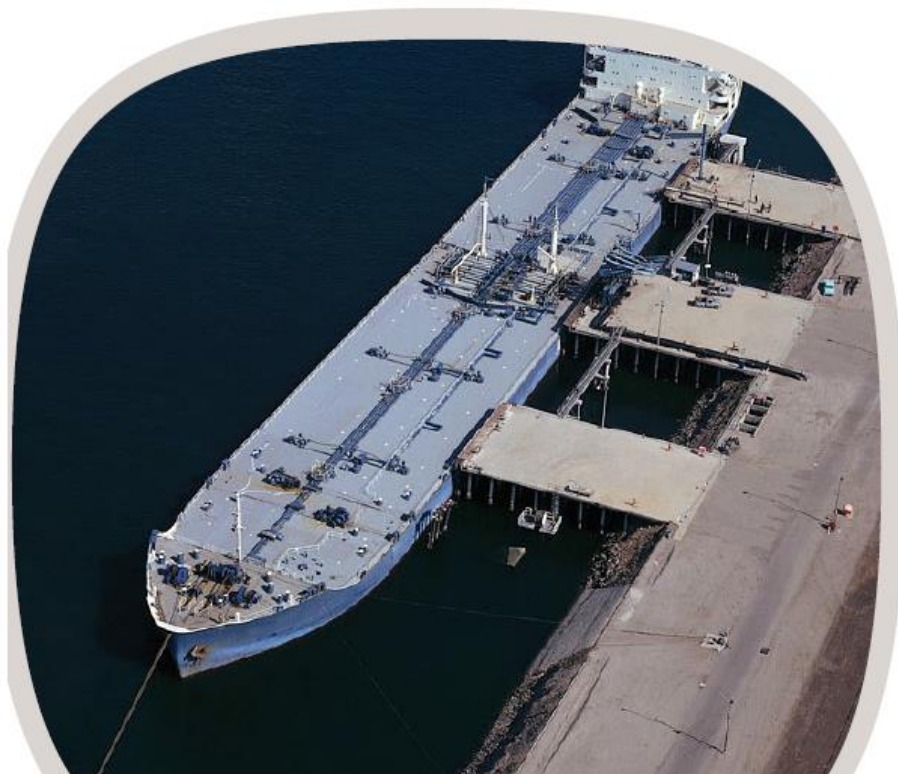
VELOSI uses the phased approach to QRA, which ensures hazards are identified, relevant consequences are modeled and those events with potential to cause harm or damage are analyzed to estimate their frequencies and associated risks. VELOSI divides the QRA study into two (2) main phases:

- **Preliminary phase**
  The main objective of this phase is to ensure that CLIENT personnel and relevant authorities fully understand and agree upon the detailed QRA methodology. The following activities will be undertaken - Familiarization, presentation of detailed QRA methodology and methodology report.

- **Detailed QRA phase**
  - o Safety management system
  - o Data collection
  - o Hazard identification
  - o Frequency estimation
  - o Generic data
  - o Event tree analysis
  - o Consequence modeling
  - o Risk ranking
  - o Risk reduction
  - o ALARP analysis
  - o Reporting

The Benefits

- Quantitative results, including uncertainty, for tasks and the total project
- Identification of the important contributors to uncertainty by task and total project
- Identification of potential risk reduction actions
- Identification of key boundary conditions
- Satisfaction of project risk management requirements

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