

# Quantitative Risk Assessment

## 2 Day Course



### Overview

Quantitative Risk Assessment (QRA) is a means of identifying potential hazards to an asset, its plant, process and personnel and assessing their likelihood of occurrence and the subsequent consequences.

QRA is a fundamental part of overall risk management strategy within the oil and gas industry providing a cornerstone of safety case development, the appropriate management of risk and application of safety measures.

QRA techniques are used to quantify safety-related risk across industries including nuclear, oil and gas, chemical and transportation. QRA and risk quantification form the basis of effective risk management through the identification and implementation of cost-effective risk reduction measures as well as assessing risk tolerability.

This practical course introduces participants to the fundamental concepts and techniques used in QRA and demonstrates how QRA supports effective through-life management of a large-scale asset from concept design to decommissioning.

### Course Objectives

At the end of this course participants will:

- Understand QRA methodology and how it is applied in the Offshore Oil and Gas industry
- Understand the role of QRA within the safety and risk management framework
- Understand the theory, terminology and best practices for performing QRA analysis
- Understand how QRA is used to assess risk tolerability and support safety-related decision making

### Target Audience

This course is ideal preparation for anyone involved in conducting Bow Tie risk analysis including:

- Safety Advisors and HSE professionals
- Operations supervisors and staff with safety risk management responsibilities

### Software

During this practical course we will demonstrate the use of *Data and Decision Management Tool (DDMT)* to facilitate QRA analysis and *e-Safety Case* to communicate the output of the QRA.

### Course Outline

#### Session 1: Introduction to risk management

- Incidents and drivers for safety regulations.
- Regulatory framework and application within the oil and gas industry
- Fundamental concepts of risk and risk management
- Role of QRA in overall risk management
- Risk measures and decision criteria

#### Session 2: Methodology and terminology

- Introduction to safety-related QRA
- Using event trees to identify accident scenarios
- Assessing frequencies
- Consequence analysis including physical consequence and fatality assessment
- QRA data sources
- Using data to perform risk analysis (frequency and fatality)
- Uncertainty and sensitivity studies

#### Session 3: ALARP demonstration, risk reduction and cost benefit analysis

- Key concepts including risk criteria and risk tolerability
- ALARP principle and the concept of gross disproportionality
- ALARP demonstration including cost benefit analysis
- Corporate standards and target levels of safety
- Applying QRA to demonstrate tolerability and select cost-effective risk reduction measures

#### Session 4: Communication of QRA

- Using QRA results beyond the safety case regime as an input to safety related and other projects decisions
- How to effectively communicate QRA and safety case to improve understanding of risks and application of risk measures

### Further information

If you would like to more information about our QRA courses including dates and prices or alternative training we provide, please call Simon Bygrave on 01224 560 892 or email at [sbygrave@rmri.co.uk](mailto:sbygrave@rmri.co.uk).

Alternatively, for further information about our consulting, software and training solutions, please visit [www.rmri.co.uk](http://www.rmri.co.uk).

