Project Cost Uncertainty: Contingency, Escalation and Reserves

At the time of project authorization decisions, cost uncertainty is generally expressed in funds allocated as contingency, escalation, and reserves. This course will clearly contrast these three types of cost allocations for uncertainty, and provide practical methods for determining their value to support the investment decision-making process. The objective of the course is for each participant in the capital project process to develop an understanding of the related project cost uncertainties of estimate contingency, escalation, and reserves.

Day 1

Day 1 begins with developing an understanding of fundamental statistics and probability theory required to effectively assess uncertainty. This leads to discussions on identifying the risks and uncertainties that affect project estimates; and developing models to quantify the contingency required to achieve a stated level of confidence in our project estimates.

- **Introduction to Assessing Uncertainty**
  - Concepts in Uncertainty
  - Probability and Statistics
  - Understanding Probability Distributions
  - Monte Carlo Simulations
- **Contingency Determination**
  - Risk Identification
    - Systemic Risks
    - Project Specific Risks
      - Root Cause Determination
    - Risk Correlations
  - Building Risk Analysis Models
    - Parametric Models
    - Range Estimating Using Monte Carlo Analysis
    - Expected Value Analysis Using Monte Carlo Analysis
  - Understanding Risk Model Results
  - Contingency Determination to Support Risk Management

Day 2

Day 2 starts with focusing on the related risk element in project estimates of potential price increases over time. The dual contributions of inflation and market conditions to escalation will be addressed. How to utilize economic price indices and knowledge of our capital projects to effectively assess the escalation values required in our estimates to address price increases over the project lifecycle will be discussed. The course concludes with a discussion of reserves as a separate account for discrete risk events that are not under the control of the project team.

- **Escalation**
  - Definitions
    - Inflation
    - Price Index
    - Market Conditions
  - The Limitations of Price Indices
  - Developing Composite Price Indices
  - Adjusting for Market Conditions
  - Determining Cash Flow
  - Calculating Escalation
  - Applying Probability Analysis to Escalation Models
- **Reserves**
  - Reserves versus Contingency
  - Discrete Risk Events
  - Reserve Determination to Support Risk Management
  - Project versus Portfolio Issues