

Integrating Risk Management into Value Engineering Studies

SAVE Government Conference 2008

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Definition of Risk

- The likelihood of occurrence
- of an event or action
- which has
- serious negative consequences

Quantitative Risk

- Range Estimating for Cost
- Contingent Scheduling
- Monte Carlo Simulations
- GIGO Issues
- Illusion of Accuracy

Qualitative Risk

- Characterizations of Identified Risks in H, M, L terms by consensus of a qualified group as to:
 - Likelihood
 - Severity of Impact
- Focus on Mitigations of Subset of Risks

Adjustments to VE Job Plan

- Team: add Risk Analyst to normal A/E disciplines and subject matter experts
- Job Plan: expand Orientation Meeting to 2-3 days (Information Phase)
- Requires full-time client participation

Sequence of Activities

- Orientation Meeting:
 - Day 1: Project Overview by Designer and Owner and Visit to Site
 - Day 2: Record Observations/ Issues and Identify Functions and Risks. Categorize Risks into Logical Groups
 - Day 3 or Workshop Day 1: Assess likelihood, severity of impact of identified risks

Sequence of Activities

- Workshop:
 - Function Analysis includes risk-related functions
 - Creativity includes mitigations for H or M likelihood and H or M impact risks
 - Evaluation selects most effective mitigations
 - Development documents rationale
 - Presentation puts risks in context and proposes approach

Risk Categories

- Planning/Approval/Development Risks
- Technical Risks (including Construction and Technology)
- Operational Risks

Examples

- Zebra Mussels:
 - Planning: Biochemical Threshold
 - Operational: Chemical storage shelf-life
- Water Filtration Plant:
 - Planning: Site Opposition
 - Technical: Inappropriate technology
 - Operational: Hazardous substance

Examples

- Training Campus:
 - Planning: Environmental site constraints, limited usable area with ambitious program
 - Operational: Access to site and public vs. secure areas
- Laboratory:
 - Technical: Adequate floor plate size and dedicated systems
 - Operational: 24/7 Staff and delivery access