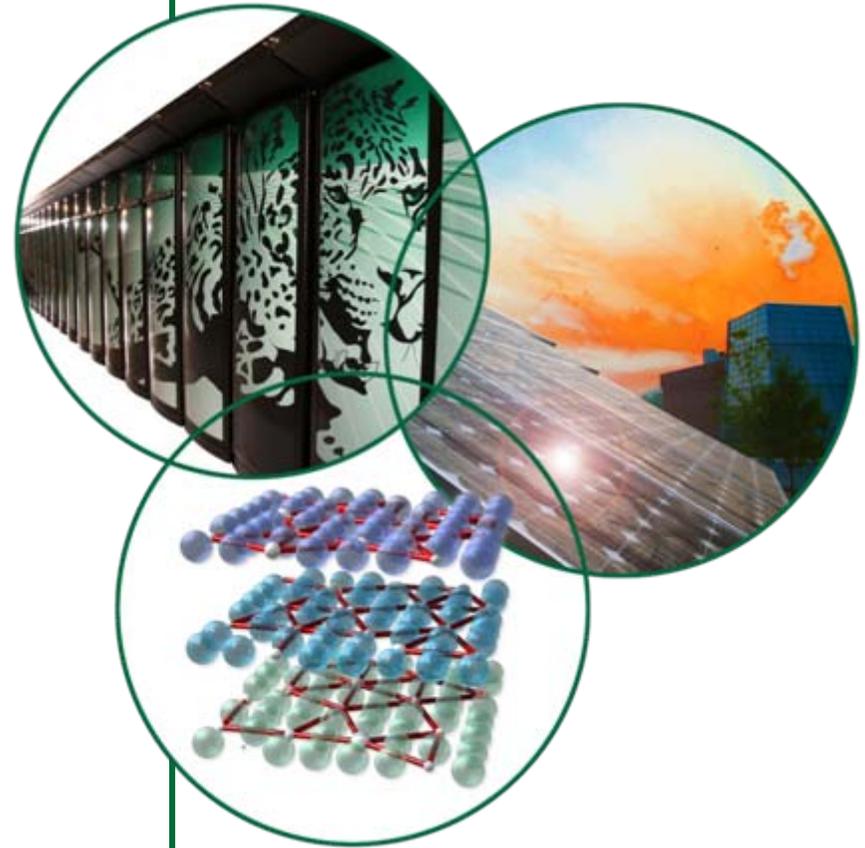


Risk Management: ORNL

Jack Stellern

Oak Ridge, Tennessee
November 4, 2009



Risk management overview

- ORNL Facilities Development Division (FDD) has an existing procedure for applying risk management to projects
- The procedure provides a comprehensive guide which is applied to all ORNL FDD projects
- Risk management approach is tailored specifically to projects depending on size and complexity
- More rigor is applied to larger projects such as a project-specific risk management plan and Monte Carlo analysis



Risk Management Team has to be experienced

- Project-specific Risk Management Team is established
- Members typically include ORNL and DOE personnel including design and technical representatives
- MLF Risk Management Team consists of 15 individuals
- Team members have broad and extensive experience that enhances quality of risk identification and evaluation process



Risk identification and evaluation

- Initial risks are identified through a team risk planning session
 - Identification of internal and external technical, performance, cost, and schedule risks and opportunities with potential impact on project
 - Risks are evaluated for probability of occurrence and impact on the project
- Risks are ranked to define most critical
- Response plan is developed with focus on the most significant risks
- All risk information is entered into the risk register and distributed to the team



Risk management: MLF Project

- More than 40 risks were initially identified
- Some risks were deemed insignificant or were managed early and removed from the active list
- Active risk items on current register: ~30
- Initial major risks:
 - Funding delays due to continuing resolution
 - Reduced funding due to rescission
 - High Bids
 - Late equipment/material deliveries
 - Errors and omissions in AE design
 - Delay in procurement approval process
 - Significant construction safety incident or injury



A continuous process

- Risks and control actions are reviewed and updated monthly in conjunction with monthly reporting
- Risks are retired as they are avoided, prevented, or managed to an insignificant level of probability or impact
- Risk register updated with current risk information
- Quarterly meetings of full team to review and reassess risks and control actions



Risk Performance Index (RPI)

- Calculated during each monthly reporting cycle
- Incorporates risk information into monthly reporting
- Compares amount of contingency reserves remaining to amount of risk remaining
- Provides an indication of whether contingency is adequate to address estimated project risks
- RPI of greater than 1 indicates favorable project contingency and less than 1 unfavorable



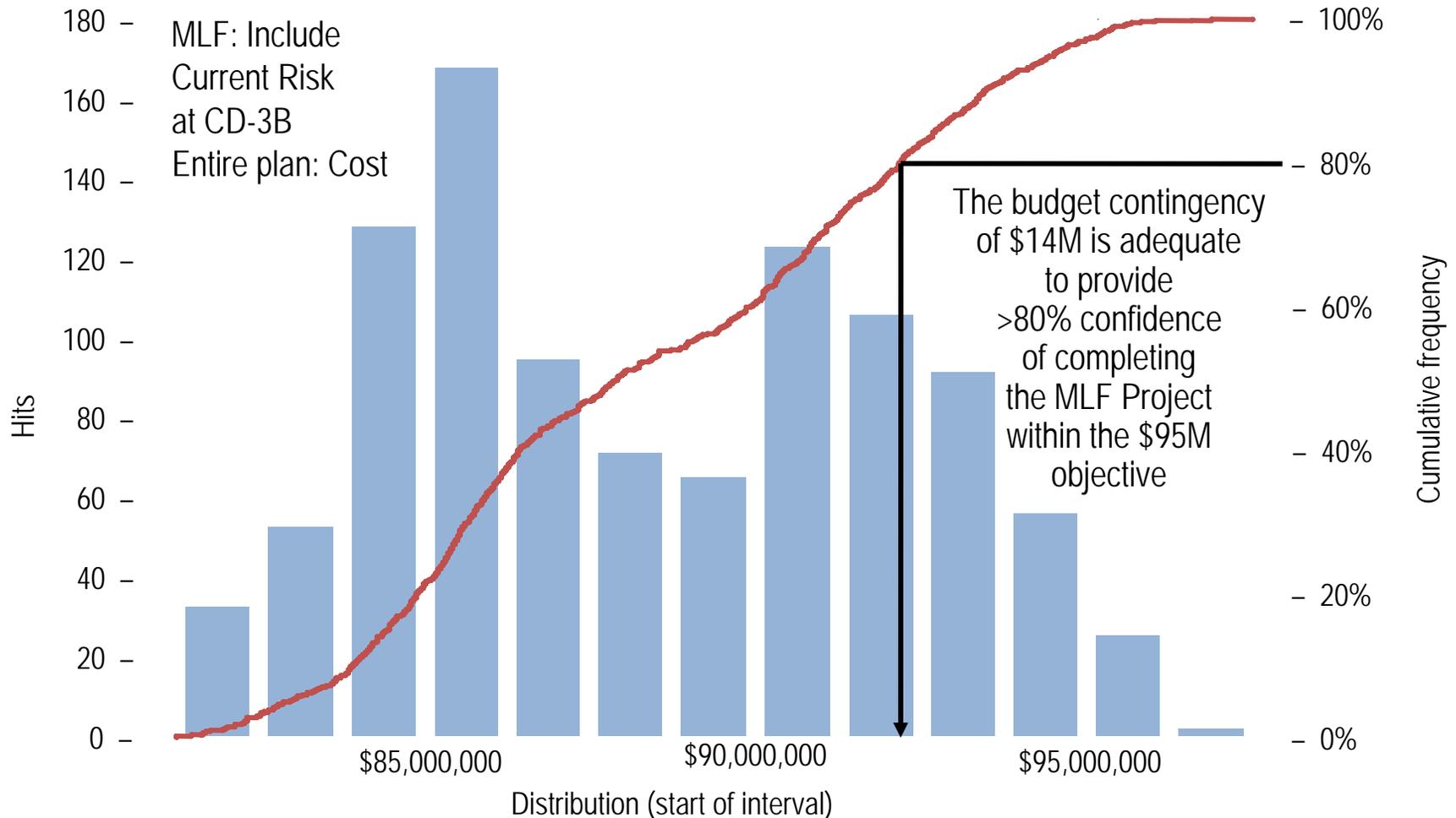
Monte Carlo Analysis Needed

- Modeling and simulation, such as Monte Carlo analysis can be used as a supplemental tool for risk impact assessment
- ORNL applies Monte Carlo analysis to large, complex projects
- PertMaster software used for Monte Carlo analysis to evaluate level of confidence in achieving cost and schedule objectives
 - Schedule and risk register information are entered
- 1000 simulation scenarios analyzed to:
 - Identify risks with greatest impact on project cost and schedule
 - Evaluate estimated cost and schedule contingency required to effectively manage the risks identified
 - Determine confidence levels for achieving desired completion date and total project cost

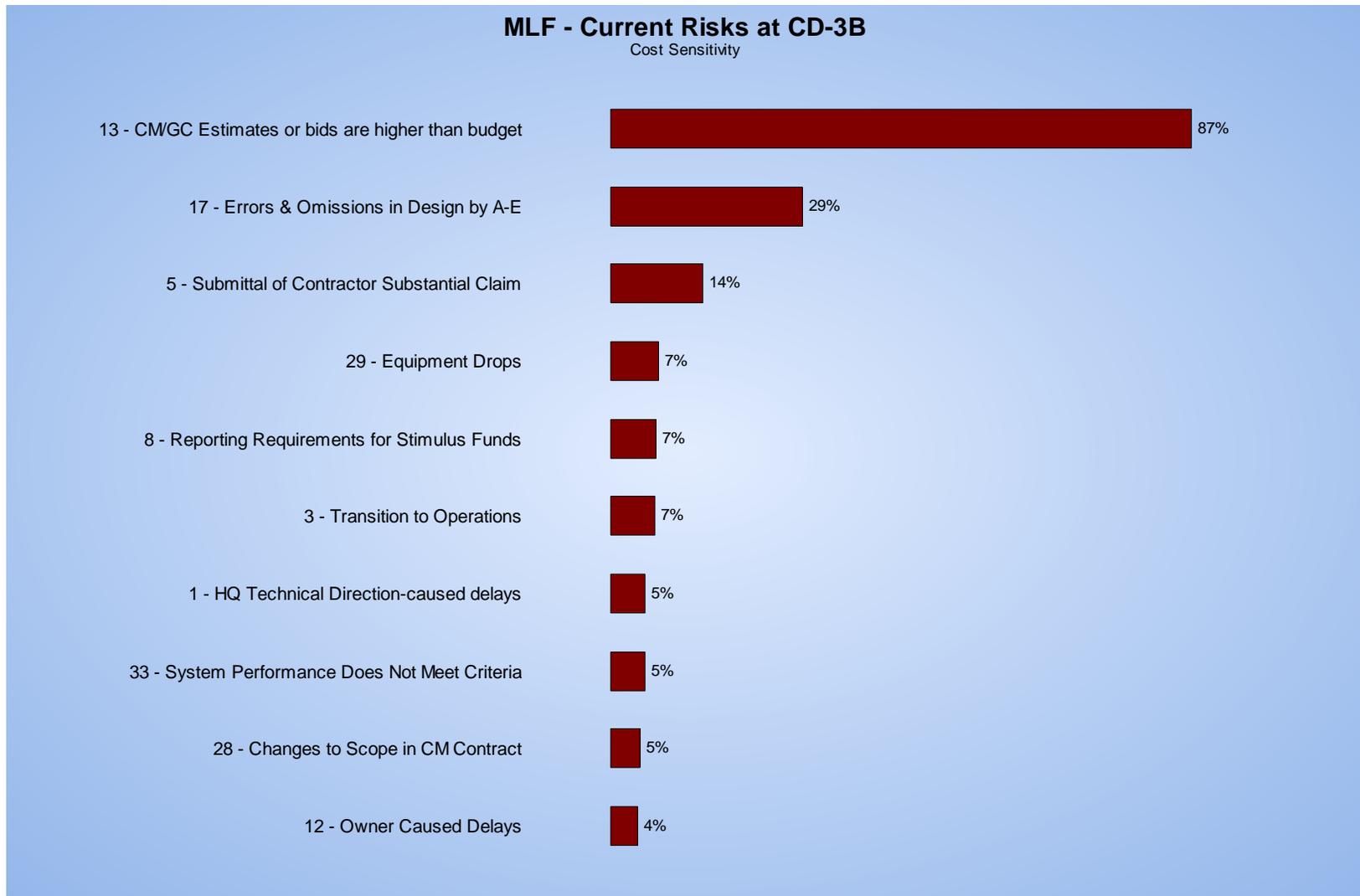


Analysis Predicts Success!

>80% confidence for completing the project within budget

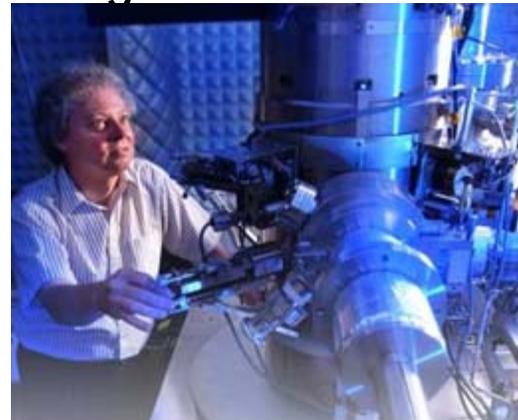


Modeling and simulation results: Ranking of most significant cost risks



Keys to successful risk management

- Comprehensive risk management procedure that is applied to all projects
- Project-specific risk management team is key to offer broad knowledge and experience in identifying and evaluating risks
- Conduct regular team meetings to assess risks, keep mitigation efforts on track and identify any new risks
- Incorporate risk information into monthly reporting with Risk Performance Index
- Keep risks to a reasonable number and focus on significant issues
- Don't over complicate the process – keep it effective and manageable



Questions?

