



# STATE-OF-THE-ART REACTOR CONSEQUENCE ANALYSES

Advisory Committee on Nuclear Waste and Materials Briefing  
November 15, 2007



# Agenda

- Overview
- Reporting Latent Cancer Fatalities



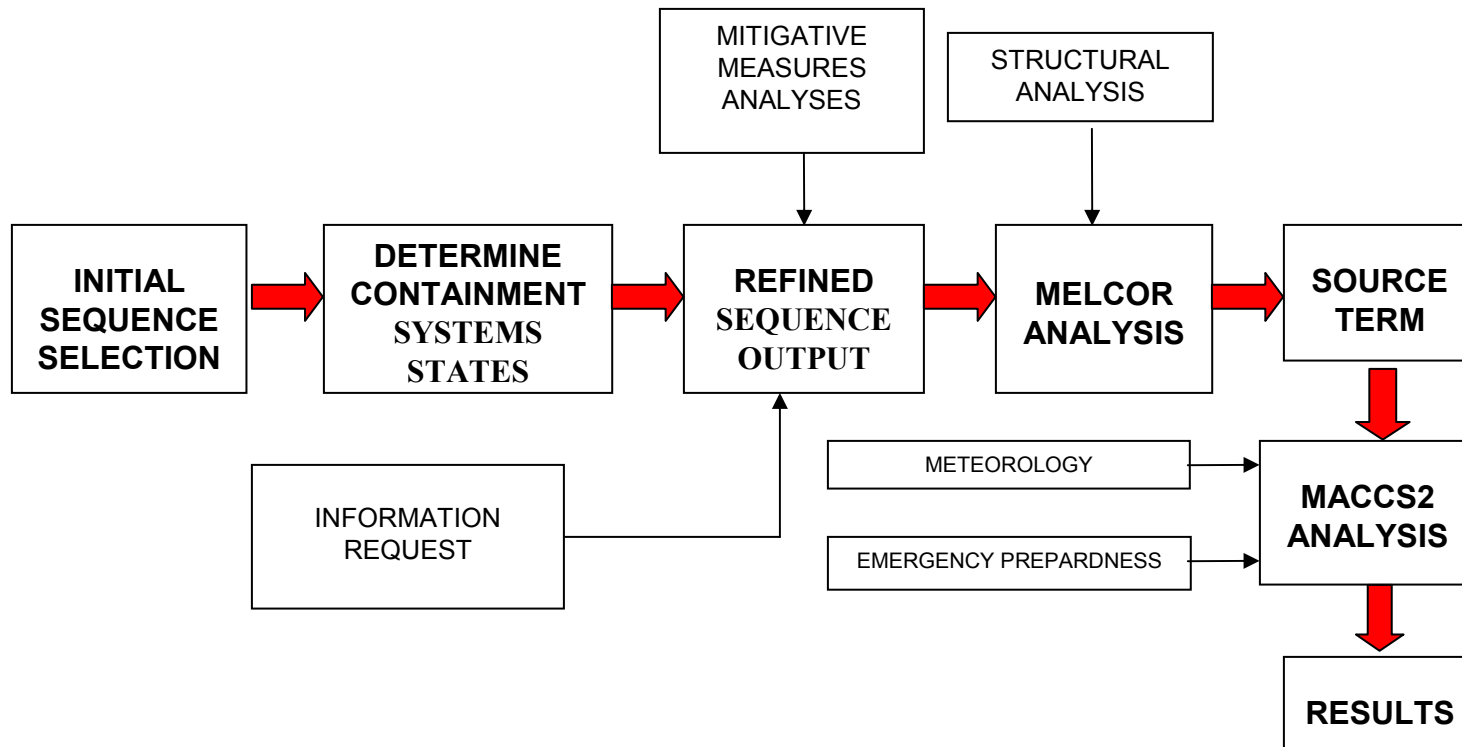
# SOARCA Goal

Develop a state-of-the-art, more realistic evaluation of severe accident progression, radiological releases and offsite consequences for dominant accident sequences and replace analyses such as NUREG/CR-2239, “Technical Guidance for Siting Criteria Development,” issued November 1982.

- SR-COMSECY-06-0064
- SR-SECY-05-0233



# SOARCA PROCESS





# Project Plan

- Initial scope, not more than eight plants that represent the different reactor and containment design combinations operating in the United States
- Initial scope with staff recommendations to the Commission, TBD



# SOARCA Approach

- Full power operation
- Plant-specific sequences including external events (CDF  $\geq 10^{-6}$ , CDF  $\geq 10^{-7}$  for bypass events)
- Plant improvements: design, operations, emergency response
- Sensitivity analyses to assess effectiveness of safety measures
- State-of-the-art accident progression modeling based on 25 years of research to provide a best-estimate for accident progression, containment performance, time of release, fission product behavior
- More realistic offsite dispersion modeling
- Site-specific evaluation of public evacuation based on updated site-specific Emergency Plans



# Reporting Latent Cancer Fatalities Background

- Commission emphasized the use of Risk Communication
- Steering Committee directed the SOARCA team to assess options
- SOARCA team developed options



# Reporting Latent Cancer Fatalities

- Commission Paper
- Options
  - Range of thresholds (0 – 5 rem)
  - Linear no threshold (LNT)
  - Estimate point value from Health Physics Society
    - 5 rem in one year, 10 rem in a life time
- Commission paper in staff review