Risk Inform Emergency Action Levels
RES/DRA

Objectives
The primary objective of the SUPPORT PROJECT TO RISK INFORM EMERGENCY ACTION LEVELS is to explore the feasibility of creating and using a technical basis to risk inform emergency response protective actions taken related to emergency action levels (EALs). The effort will involve the use a probabilistic risk analysis (PRA) approach to evaluate the consistency of the initiating conditions of a given EAL for a given Emergency Classification Level to a potential reactor core damage state.

Applications
The PRA to EALs will be used by the NSIR staff to evaluate the current EAL scheme (NEI 99-01, endorsed by NRC in RG 1.101). The analysis would determine if the potential reactor core damage state, represented by the initiating conditions for a given emergency classification level (ECL), is consistent for the entire spectrum of EALs (i.e. does a Site Area Emergency (SAE) for a loss of offsite power represent the similar level of potential core damage as a SAE for Loss or Potential Loss of any two fission product barriers). The results of the analysis will potentially become a technical basis for determining if the current EALs are generally risk consistent. Any noted outlying EAL could then be increased, reduced or deleted from the associated emergency classification scheme.

Approach
The initial analysis is based on Peach Bottom and Surry as surrogates for BWR and PWR plants. Current SPAR models are used to analyze the potential reactor core damage state for a given set of initiating conditions that described an EAL for a given ECL. The analysis is akin to that performed in the Accident Precursor Program to determine the risk significance of an event. However, the study would focus on identifying any inconsistencies between EALs for the same ECL.

The resulting potential reactor core damage state for that ECL would then be compared to other similar scenarios in different EALs. Once the analysis of Peach Bottom and Surry is completed, the staff will determine if there is inconsistency in any of the ECLs for a given EAL.
Based on the risk insights from the two surrogate plants, the staff will perform further analysis for other plants to verify the results and to gain more useful risk-informed insights for future emergency planning.

Progress
Task 1. Review EAL Documents
Completion Date: Completed

Task 2. Analyze Suite of EALs (12 EALs for 2 plants)
Completion Date: Completed

Task 3. Identify Other EALs Suitable for Analysis (and perform analysis)
Completion Date: January 14, 2011

Task 4. Document Work (NUREG/CR)
Completion Date: July 15, 2011