RES

From: Don Marksberry
To: David Loveless
Date: 6/17/04 3:57PM
Subject: Input for LOOP analysis

Dave,

Here is a generic list of information needs that we typically obtain to perform an ASP analysis of a LOOP event. I pulled this list together based on lessons learned from about 10 LOOP analyses that we did during the past year.

Let us know if we can assist you (I'm assuming that you are involved) in performing the risk analysis of the Palo Verde event. We will be glad to review your analysis and get you our constructive comments back in short order. Gary DeMoss was involved with the August 14, 2003 grid LOOP analyses, so he knows the SPAR model and analysis methods for LOOPs.

Feel free to call me (301-415-6378) or Gary (301-415-6225).

CC: Art Howell; Gary Demoss; Michael Cheok; Mike Runyan; Russ Bywater

D/12

Information Needed for Risk Analysis of Loss of Offsite Power Events

June 17, 2004

1. Obtain copies of EOPs, AOPs, and SOP relating to the following events that were in effect at the time of the event

   a. Reactor trip and post trip
   b. LOOP
   c. Station blackout
   d. Recovery of power to the switchyard
   e. Recovery of power to the safety buses
   f. Battery life extension (load shedding)
   g. Operation of alternate power sources, including blackstart sources

2. Obtain electrical distribution drawings showing:

   a. Switchyard
   b. Safety buses and loads
   c. BOP buses and loads

3. List of operator actions (inside and outside the control room) and time estimates needed to recover:

   a. Offsite power to the safety buses
   b. Start alternate power sources
   c. Failed equipment
   d. Unavailable equipment in test and maintenance

4. Plant configuration prior to the initiating event:

   a. List of equipment out-of-service for test and maintenance
   b. Electrical power lineups
   c. Battery lifetimes with proceduralized life extension (load shedding)
   d. Reactor coolant pump seal type
   e. Backup/alternate power sources, including blackstart capability

5. Post trip conditions:

   a. Failed equipment
   b. Operator performance issues
   c. Equipment performance issues (degradations)
   d. Status of MFW and PCS (e.g., did the loss of power effect BOP buses?)
   e. Lifting of PORV/SRV(s)

6. Offsite power recovery

   a. Actual time when offsite power was stable (voltage and frequency) to carry loads to mitigate RCP seal and stuck open SRV LOCAs and to bring the plant to cold shutdown.

   b. How and when would the control room know at the earliest time that offsite power was stable to carry these loads.

   c. Actual time when offsite power was restored to the first safety bus.

   d. Estimate of the earliest time when offsite power could have been restored to the first safety bus given a postulated station blackout or core damage sequence, such as the loss of one bus and the failure of a key component powered from the remaining bus. NOTE: This time will be confirmed by electrical and human reliability experts based on information provided above.