

"Sullivan, Kenneth" <ks@bnl.gov>
"Rebecca Nease" <RLN1@nrc.gov>
6/27/01 1:58PM

Subject: RE: What's in 99M and 98J?

I don't have a list of ALL SSD cables that may be affected by fire in these areas - Besides it's probably too extensive to e-mail! During the inspection I selected a "sample" of redundant components of hot-shutdown systems determined to have fire-risk significance. Specifically: EFW, Makeup, and Service Water. From this list of components I then reviewed ANO data (PDMS cable database output) depicting the routing of power and control cables associated with each of the selected components. Based on this review I determined that many redundant components associated with a number (all) selected systems could be affected by a fire in Zones 98J and 99M. Although I do not have a list of ALL affected cables, I can provide a summary of "Affected Components" for each zone:

1. In Zone 98J - A sample of potentially affected components include:

- Redundant EDGs (K4A and K4B) - Control Cables
- EDG lockout relay (actuation would not totally prevent a manual start of the EDG but would prevent a normal local start at the EDG control panel and require additional operator actions to bypass)
- EDG Output breakers (both trains) - loss of both EDG power supply trains
- SW to EDG Jacket Cooler valve (CV 3806 and CV 3807) - control cable damage could prevent normally closed valves to automatically open upon EDG start - may require operators to trip EDGs and enter a SBO condition to prevent mechanical damage to EDG
- Redundant EFW pumps P7A and P7B - Control Cables
- Redundant EFW flow valves - control cable damage may result in a loss of EFW flow to either SG
- EFW Pump P7B Suction Valves (CV2800, 2803, 3850) - susceptible to spurious closure - closure could lead to pump damage
- Redundant Steam Supply valves - Susceptible to closure resulting in a loss of steam to TDEFW Pump
- Redundant Makeup Pumps P36A, B and C - Control cables
- Redundant Steam Generator Dump Valves and Block Valves - Control Cables
- Pressurizer ERV and ERV Block valves (PSV-1000 and CV-1000) - May cause loss of controlled pressure relieve - Note: PSV 1000 is normally closed and affected cables will NOT cause spurious opening
- Redundant Service Water Pumps, P4A, B and C - Control Cables
- DC control power to SWGR A3, A4, B5 and B6 coupled with damage to control cables of individual breakers - may cause loss of all vital AC power

98J
DC control power
to ac buses?
is SBO working?

What about
mechanistic
damage to
MOV's that
spuriously
actuate?

→ Very hard to
manually
reset the
breakers

99-1

2. Fire Zone 99M

- Redundant Service Water Pumps, P4A, B and C - loss of operability due to P4A control cable damage and Power and Control cable damage to P4B and C. May require trip of EDG to prevent mechanical damage. Off-site power assumed by ANO to be unavailable for all fire zones [REDACTED]
- Tripping EDGs because of failure to ensure SW cooling path [REDACTED]
- EDG Output breakers (both trains) - loss of both EDG power supply trains
- Redundant EFW pumps P7A and P7B - Instrument and Control Cables - [REDACTED]
- Redundant EFW flow valves - control cable damage [REDACTED]
- EFW Pump P7B Suction Valves (CV2800, 2803, 3850) - susceptible to spurious closure [REDACTED]
- Redundant Makeup Pumps P36A, B and C - Control cables
- Redundant Steam Generator Dump Valves and Block Valves - Control Cables

As you are aware ANO credits manual operator actions as a means of mitigating the effects of fire in these areas. However, due to the extent of fire damage that may occur, or the order in which potentially affected equipment may fail, it is difficult [REDACTED] to determine the synergistic impact of all potential failures and if they can be adequately mitigated. For example, the pre-fire plans for the above fire zones credit a manual start of the EDGs but fail to mention that an EDG lockout could occur -- Assuming the operator would recognize this condition after repeated failed attempts to restart the EDG at the local panel -- the operators would need to enter a different procedure (EDG start on loss of all DC) that requires the implementation of many more actions to restart the EDG.

Hope this helps your training -- by the way -- give me a call 631-344-7915

-----Original Message-----

From: Rebecca Nease [mailto:RLN1@nrc.gov]
Sent: Wednesday, June 27, 2001 11:51 AM
To: Sullivan, Kenneth
Subject: What's in 99M and 98J?

At noon, I've talked the FP training folks into reviewing the 99M and 98J issues. Could you e-mail to me exactly the SSD cables that are potentially lost to a fire. Were there any indication cables?

Thanks,
Rebecca