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SUMMARY OF MEETING WITH ANO

- Relied on defn's from RG 1.189
  - associated circuits
  - emergency control station
  - free of fire damage
- July 2, 1982 Mattson memo
  - allowable repairs to achieve safe shutdown
- July 1, 1982 Appendix R compliance review
  - manual actions to comply with IIIG1
  - 143 fire zones
  - 100 comply with Appendix R
  - 14 of the 100 relied on manual actions to meet IIIG1
  - alternate shutdown zones (IIIG3) were identified in Appendices A & B
- August 31, 1982 meeting on alternate safe shutdown
  - questioned the 14 zones that relied on manual actions
- Meeting summary issued September 1982
  - staff asked for written discussion of the methodology being employed
- October 5, 1982 response
  - methodology discussion provided
  - treated safe shutdown for IIIG1 and alternate IIIG3 compliance
  - the component to be operated is not in affected fire zone
  - sufficient time to perform the required action is available
  - personnel beyond fire brigade are available
  - examples of the various fire zones were provided
    - one that required an exemption (43)
    - one that met Appendix R (100)
    - one that relied on manual actions (14/100)
- Nuclear Utility Fire Protection Group Meeting March 16, 1983
  - summary dated March 28, 1983
  - Summarized Jim Taylor's answers on the inspection process
  - Leon Whitney was also in attendance
  - accepted the ASB position on manual actions for associated circuits
- I&E Manual 2515/62, Rev 1 Inspection of SSD requirements section IIIG
  - looked at both alternative and redundant safe shutdown areas
- SECY 83-269 dated July 5, 1983
  - allowable repairs to achieve safe shutdown referenced Mattson memo
  - allowed manual actions to comply with IIIG1
- discussion of fire zones and fire areas pursuant to GL 83-33
- regional workshops held in spring of 1984
- CEB guidance (free of fire damage) for IIIG1 compliance
- April 27, 1984 meeting with ANO summary dated June 5, 1984
  - methodology appeared to be consistent with staff positions
- reanalysis against IIIG, J, & O
  - credit taken for manual operation of valves not in vicinity of fire

Total CDF 1.4E-5

(a) Severity Factors, S_f - A fire severity factor is a fractional value (between 0 and 1) that is used to adjust fire frequency estimates to reflect some specific mitigating pattern of behavior of the fire event. The severity factor is applied to reflect a split in large versus small fires. In the absence of plant-specific information, the severity factors for the electrical cabinets, ventilation systems, and fire protection panels were based on the EPRI Fire PRA Implementation Guide (FPRAIG), December 1995 (Section D.3). The FPRAIG severity factors ranged from 0.08 to 0.2 and engineering judgment was used to determine these severity factors.

In the case of the electrical cabinets and battery chargers in fire zone 98-J, the EPRI FPRAIG did not provide specific severity factor values for electrical cabinets and battery chargers in the Auxiliary building. Therefore, a severity factor of 0.75 was assumed in this analysis [redacted]

(b) Probability of automatic suppression system being unavailable, P1 - As discussed in Section 3(b), the probability of pre-action sprinkler system in fire zone 98-J being unavailable is assumed to be 0.05 for the normal operating state based on the EPRI database (EPRI FIVE report, page 10.3-7). This unavailability value include the consideration for failure of the system to operate on demand and the system being out of service at the time of a fire (due to shut control valve, etc.). In fire zone 99-M, no automatic fire suppression system is provided. Therefore, the P1 value was assumed to be 1.0.

(c) Manual Suppression by Fire Brigade, P2 - Recent fire drills performed on fire zone 100-N, which is adjacent to fire zone 99-M, indicated that the response times of the entire fire brigade arriving at the fire zone averaged less than 10 minutes. There are two access points to the fire zones, which are easily accessible by the fire brigade response team.

Based on these considerations, it was assumed that any fire scenario requiring greater than 20 minutes to sustain cable damage may be suppressed by the fire brigade. However, the SPLB fire modeling analyses indicate that severe fires with HRR greater than 400 kW in fire zones 98-J and 99-M could cause damage to the overhead cables in approximately 19 minutes and 10 minutes, respectively. Therefore, the failure probability of manual suppression by the fire brigade associated with severe fires was estimated to be 0.5 in this risk analysis.

(d) Conditional Core Damage Probability, P3 - For the fire scenarios in fire zone 98-J involving ignition of the electrical cabinets, battery chargers, ventilation systems, and fire protection panels, it is assumed that one equipment train would be available to perform mitigating functions because a one-hour rated barrier surrounds the Red train AC instrumentation power supply cables. Although other Red train power cables in fire zone 98-J are unprotected, the estimated time of 19 minutes to cable damage allows the arrival of the fire brigade in 10 minutes to control the fire. It is not likely that a fire from these sources would damage both equipment trains at the same time. Therefore, the CCDP

associated circuits defined consistent with GL 81-12 clarification
- inspection 87-14 report dated Sep 30, 1987 (D. Kubicki, et. al.)
  found manual component operation for fire induced maloperation acceptable
  manual operation of redundant components evaluated to be satisfactory
- emergency lighting required to support manual operation of equipment
  references made to SOC for IIIJ and inspection guidance
- FPFI report dated May 13, 1998 for Susquehanna
  protection for fire-induced spurious failures found acceptable
  recognized the use of symptom-based procedures for post-fire safe shutdown
  URI identified regarding adequacy of symptom-based procedures
- Susquehanna response dated July 20, 1998
  pre-fire plans describe symptoms that lead to required manual actions
- NRC Special Inspection Report dated September 4, 1998
  closed FPFI URI based on procedural clarifications and improvements
- ANO interprets the Susquehanna inspection results as confirming their use of symptom-based procedures for post-fire safe shutdown
- ANO recommends that symptom-based procedures be used to guide manual actions in any future rulemaking by NRC
- ANO firmly believes that their use of manual actions for IIIG2 redundant safe shutdown areas is consistent with NRC regulations and guidance
- ANO believes that the b/f panel finding was flawed because we did not adequately consider the licensing basis for their facility
- they attempted to lay out their understanding of their licensing basis at this information exchange meeting
- they asserted that their survey of other pre-79 plants indicated they were not outliers; there are at least 5 other facilities who have similar manual action methodology without prior NRC approval
- the meeting was adjourned - NRC will consider the licensee's perspective as we determine how to process the finding in the ROP

John Hannon
October 3, 2002