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DOCKET NO: 50-346

APPLICANT: Toledo Edison Company (TECO)

FACILITY: Davis Besse, Unit 1 (DB-1)

SUMMARY OF NRC SITE VISIT TO THE DAVIS BESSE NUCLEAR POWER STATION, UNIT 1

NRC staff from the Office of Nuclear Reactor Regulation conducted a site visit to the Davis Besse Nuclear Power Station, Unit 1 (DB-1) on October 15 and 16, 1975. Also present were NRC staff from the Office of Inspection and Enforcement (Region 3), and the Toledo Edison Company (TECO) and the Bechtel Corporation had representatives available for the site visit and ensuing discussions. An attendance list is attached.

The purpose of the two day visit was to supplement our present review of the Final Safety Analysis Report (FSAR) in the areas of Electrical Control and Instrumentation Systems. In addition, the facility design as installed at the site was observed for ECCS related items.

Areas inspected by the NRC staff included the control room, cable runs and cable spreading areas, switchgear rooms, battery installations, diesel generators, instrument piping, transformers, switchyards, reactor building, turbine building, steam lines and the recirculation water systems. Also inspected were the lowest part of hot-leg piping, the DH motor-operated isolation valves, the watertight ECCS pump rooms, LPI and HPI piping vents, location of 24" manual gate valve on the EAST (DH 79), LPI-to-LPI and LPI-to-HPI crossover valves and the ECCS pump.

As a result of the above inspections, the following discussions were held and where mutual agreement with the NRC staff and TECO was obtained, it is so noted below.

1. The NRC staff stated that a violation of GDC 17 was noted in the switchyard. The 2 offsite power circuits were not physically independent, i.e., they had a common support structure. TECO indicated their interpretation of GDC 17 allowed a commonality within the boundaries of the switchyard and stated this item would be appealed.

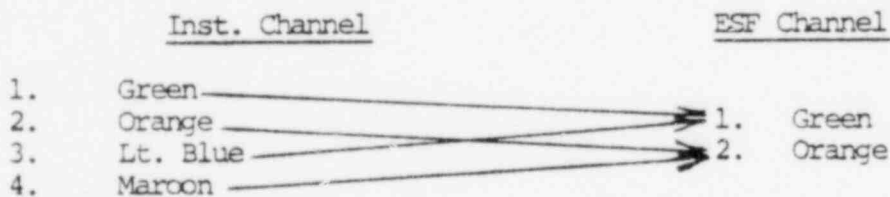
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Note: Subsequent to the site visit, the NRC staff investigated past interpretations of GDC-17 for other facilities and concluded the DB-1 switchyard was not in violation of GDC-17. TECO was so notified by telephone on October 17, 1975.

2. The cable installation in the control room and in the adjacent electrical equipment area was less than 50% complete. No final evaluation could be made in this area, and another site visit may be necessary for this purpose.
3. The diesel generator (DG) electrical installation was not complete. However, the DG's are in separate and independent Class I rooms and no apparent violation of separation requirements was noted. It is intended to further verify that applicable requirements regarding DG controls are met during a subsequent detailed drawing review.
4. It was observed that the electrical design included some mechanically interlocked breakers (or switches) that can energize a component or bus from either of two redundant power sources. In these cases, TECO stated that the single failure criterion is met by administratively opening the circuit not in use at its other terminal. The staff requested that the applicant identify all such administratively controlled circuit opening devices in the FSAR by component number and location.
5. The applicant provided the following cable color code information:

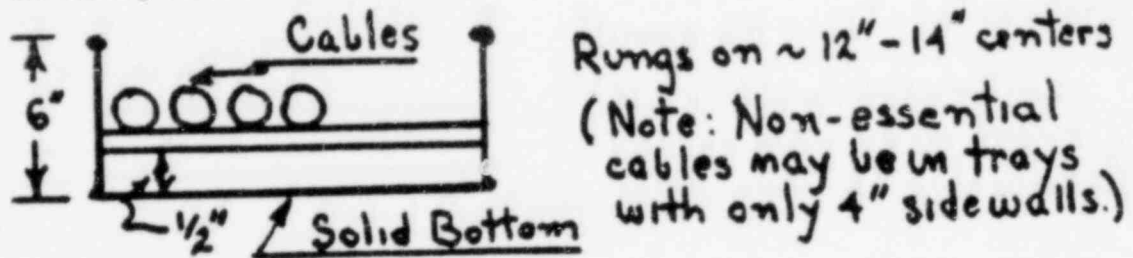


Non Essential Cables run in Essential Raceways (none presently installed)

- (1. Raceway) Non Essential Channel A - Dark Blue
- (2. Raceway) Non Essential Channel B - Tan
- (3. Raceway) Non Essential Channel C - Silver Fleck

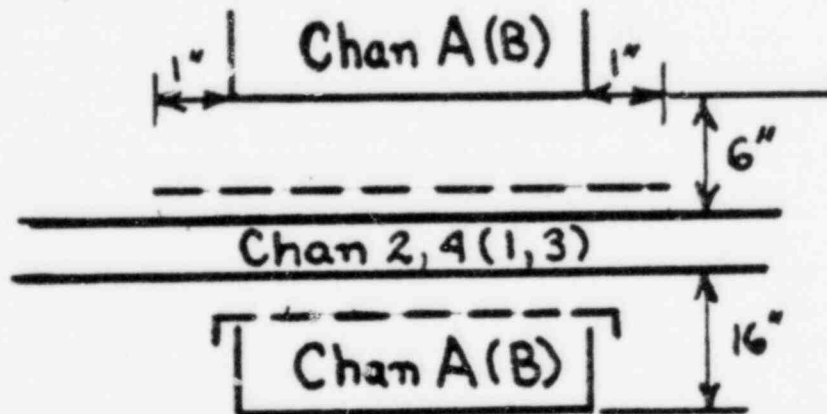
Non Essential cable not run in essential raceways are not color coded. The staff concluded that this was acceptable and requested the above information be documented in the FSAR.

6. Cable tray cross sections as observed for DB-1 are shown in the following sketch.



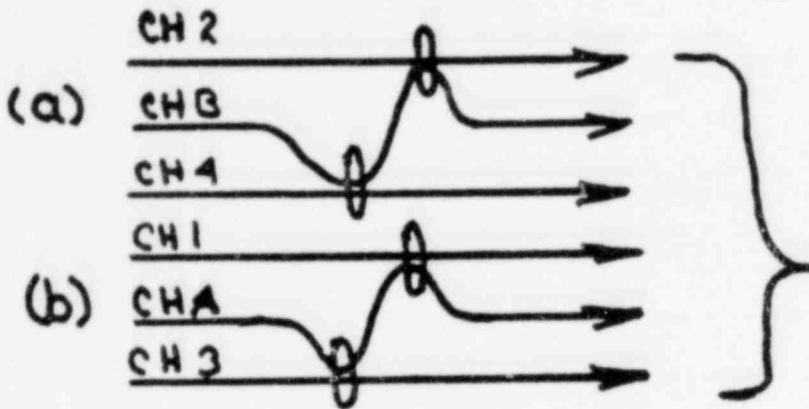
The staff indicated that the cable tray design as indicated above was a good design.

7. TECO stated that the minimum separation distance between redundant cable trays was 4 feet vertical and 18 inches horizontal (bottom to bottom). Less separation would require installation of a barrier. The staff indicated the above provisions were acceptable.
8. Non essential cable trays (Channels A, B, or C) are permitted between redundant essential cable trays. The staff concluded that this was acceptable provided the following minimum separations were maintained. Less separation would require fire barriers as shown by dotted lines.

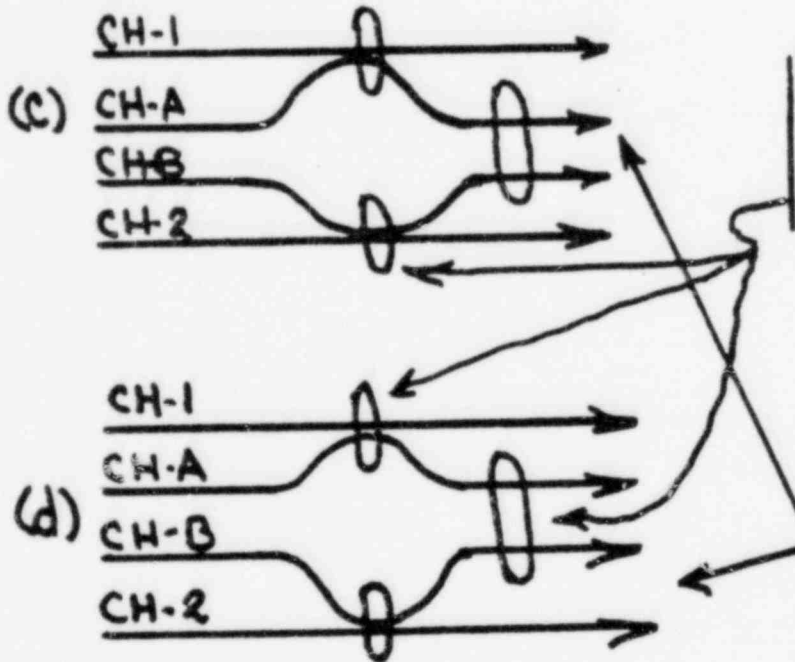


TECO stated that the above criteria was acceptable to them.

9. The applicant provided a draft of the separation criteria for cable routing inside enclosures, (Control boards, instrument cabinets, distribution panels, motor control centers, etc). The following diagrams reflect the staff positions regarding cable bundling.

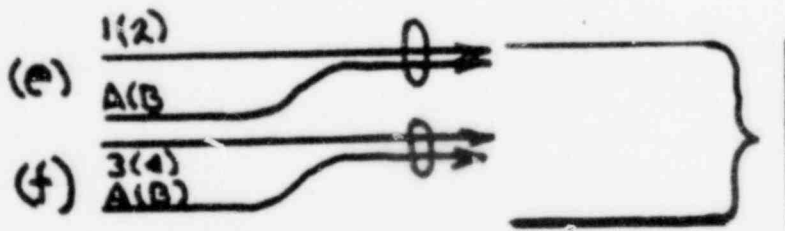


Unacceptable

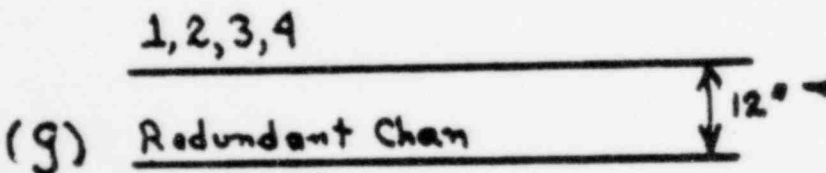


Areas where cables are bundled together (with no separation or barriers provided)

Unacceptable unless it can be demonstrated by test that flame propagation from one safety channel to a redundant safety channel will not occur for these configurations.



Acceptable provided verification that cable A(B) is not also bundled, routed, or formed with any cable at another essential channel.



Acceptable (Minimum 12 inches or barrier)

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An acceptable barrier may be a rigid or flexible metal conduit.

TECO stated that flame test data would be documented to substantiate the acceptability of arrangements 9-c) and 9-d) above.

10. TECO was requested to justify their exceptions for periodic testing of the following values (Ref. FSAR 7.3.2.6), HV106, HV106A, HV107, HV107A, or modify their design to provide periodic testing, i.e., monthly. TECO stated that this item appears to be an oversight and will be checked and reported to staff.
 11. TECO was advised that valves DN1A and DN1B, as presently designed, were subject to inadvertent closure and did not justify the single failure criteria in the event of a pipe break in one of the two low pressure injection (LPI) loops. The staff indicated that the design of these valves be modified to conform with the staff position for manually controlled electrically-operated valves. (Stated in P 7.1.1-1 of the FSAR).
 12. The staff identified redundant cables 2CAD106L (orange) and 4PD21DS (maroon) in cubicle 13 of 4160 V bus D1 as being bunched together. TECO checked their inspection records (item 2237 on 8/2/75) and found that this had already been found and corrective action scheduled. The corrective action would be to enclose one cable in a flexible metal conduit. The staff found these corrective provisions acceptable.

TECO stated that information pertaining to fire stops and barriers, cable flammability and fire detection and protection system would be forthcoming in response to the specific request for information transmitted by A. Schwencer of NRC to L. Roe of TECO on July 22, 1975.
 13. The scram breakers and the cabling for the rod control system were not yet installed. No evaluation of adequacy for the interconnections of this equipment was possible.
 15. It was noted that only one of the two required manual scram switches (PB assemblies) was observed unmounted underneath the control console. TECO stated that a redundant independently wired assembly would be provided as documented in the FSAR.
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16. It was observed that means for manual initiation of systems level inoperable status or bypass indication was not installed in the control room. TECO stated that this could be provided in accordance with documentation in the FSAR.
 17. The Main Steam Line Isolation and Rupture Control System Cabinets (including the Auxiliary Feedwater Control System) were not yet installed. An evaluation of the adequacy of this installation was therefore not possible.
 18. The DH drop line connection to the hot leg was found acceptable at the lowest part of the hot leg piping.
 19. The DH motor-operated isolation valves inside containment would be under water in post-LOCA but are enclosed in a watertight compartment with a watertight access hatch. Manual bypass valves will not be located in this compartment.
 20. A wall about ten feet high with no ceiling was observed in the watertight ECCS pump rooms. Wall penetrations were not watertight and the guide indicated the penetrations were not yet completed. Access is by stairs from top of rooms.

Leak detection was noted from a level alarm in a small sump in the pump rooms.

ECCS coolers for both trains are located in the same room.
 21. Typical LPI and HPI piping venting provisions were not accessible in the examples observed. The guide indicated that reach rods were to be installed.
 22. The ECCS pump casing venting provisions were found acceptable.
 23. The location of the 24 inch gate valve (DH 79) on the HWT was observed to be as close as practicable to the HWT.
 24. If manual valves for the LPI to HPI crossover are accepted by NRC through DB-1 appeal, handwheels would have to be lowered or reach rods incorporated.
 25. The LPI to LPI crossover valves are acceptable provided this design is accepted by NRC after appeal by TECO.
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26. The ECCS single sump was observed to be too small to conduct a full flow test (~ 3500 gal). Sump construction was not complete, piping was not covered, and the anti-vortex devices were not installed. Cofferdam possibilities for meeting preoperational testing provisions for Regulatory Guide 1.79 are limited by the larger adjacent in-core guide tubes pit and the ECCS sump is dwarfed by this pit. It was observed that although the initial few feet of suction piping from the sump are horizontal, the piping slopes slightly upward after sump valves (So verified by guide).
27. For the boron dilution instrumentation, the flow rate readout from the control room was not available for all dilution modes. Available temperature readout is proposed to provide operator of the presence of dilution flow.

TECO was most cooperative in providing plant and engineering staff for the observations and discussions conducted at this site visit.

Original Signed by
L. Engle

Leon Engle, Project Manager
Light Water Reactors Branch 2-3
Division of Reactor Licensing

Attachment:
Attendance List

cc w/attachment:
Mr. Lowell E. Roe
Donald H. Kauser, Esq.
Gerald Charnoff, Esq.
Leslie Henry, Esq.

OFFICE →	RL:LWR 2-3				
SURNAME →	LEngle BE				
DATE →	11/5/75				

NOV. 05 1975

ATTACHMENT

ATTENDANCE LIST

OCTOBER 15, 1975

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ATTACHMENT

ATTENDANCE LIST

TOLEDO EDISON COMPANY

OCTOBER 16, 1975

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