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SEP 26 1978

Docket Files

50-346

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MEMORANDUM FOR: Victor Benaroya, Chief  
Auxiliary Systems Branch  
Division of Systems Safety

FROM: Philip R. Matthews, Section Leader  
Auxiliary Systems Branch  
Division of Systems Safety

SUBJECT: DAVIS BESSE NO. 1 FIRE PROTECTION SITE VISIT  
TRIP REPORT

On September 15, 1978, we visited the Davis Besse No. 1 site to reevaluate fire protection for specific plant areas discussed at a meeting between the staff and the licensee on August 1, 1978. Participants in the site visit are listed in the enclosure.

We reviewed specific plant areas as identified in the enclosed trip report. The numbers in parenthesis correspond to the items in the staff letter to the licensee dated July 6, 1978.

Original Signed by  
P. Matthews

Philip R. Matthews, Section Leader  
Auxiliary Systems Branch  
Division of Systems Safety

Enclosures:  
List of Attendees  
Trip Report

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MEETING DATE 9/7/78

APPLICANT: \_\_\_\_\_

FACILITY: Davis-Besse 1

TOPIC: Site Visit

MEETING ATTENDEES

NAME

AFFILIATION

<u>NAME</u>	<u>AFFILIATION</u>
R. C. Hay	Toledo Edison Co.
J. Behn	Gage-Babcock & Assoc., Inc.
B. Cohn	Gage-Babcock & Assoc., Inc.
P. Madden	Bechtel
J. Ray	Bechtel
L. Haigh	Toledo Edison Co.
S. M. Cantor	Bechtel
J. B. Semple	Bechtel
G. A. Stashik	Bechtel
S. P. Patangay	Bechtel
V. T. Leung P. R. Matthews	NRC
B. Green	Toledo Edison Co.

DAVIS BESSE NO. 1 FIRE PROTECTION SITE VISIT  
TRIP REPORT

1. Item 11 - Service Water Intake Structure - This area contains the three safety related plant service water pumps and two non-safety related cooling tower makeup pumps. The five pumps are in a single row about 5-7 feet apart with each of the three service water pumps separated from one another by a makeup pump. In addition, there are associated motor control centers along the wall, across the aisle from the pumps. The piping and conduit for each pump is routed away from each pump about 5-8 feet above the floor and exits through the wall away from the MCC's. We also noted a significant air velocity associated with the room ventilation which supplies air through outside inlets near the ceiling of one wall and discharges through a large ceiling grill at the end of the room.

The licensee had expressed concern over that part of our position on item 11 which required the safety related pump motor conduits to be enclosed in a one-half hour rated fire barrier and to provide one-half hour rated fire barriers between each pump train. The licensee's concern with the fire barrier for the conduit was that it might cause an ampacity problem for power conduit. Their concern with the barrier between each pump train was that it would prevent maintenance access to the pumps. The licensee previously verbally proposed the concept of an electrically actuated quick acting

*[Handwritten signature]*

area sprinkler system fed from redundant headers and control valves but deletion of barriers for the conduit and between pumps.

Since the licensee has not submitted any details on the redundant sprinkler concept, we did not establish a new position for this area. We stated that our fundamental concern was an exposure fire on the floor for which the heat could move laterally due to the room air flow and damage the pump conduits before the sprinklers activate. We indicated that any concept without barriers should be a wet pipe system and provide assurance, with supporting test data, that the sprinkler system will activate well before damage to the pump conduit circuits. We would also require test data to establish a conservative minimum fire exposure time before bare conduits would suffer circuit failure. We also requested the licensee to continue to consider the feasibility of heat barriers for the conduits since the cable for these pumps is rated for 200A but carries 80A at full load. We informed the licensee that complete barriers between each pump train would not be required because of the alternate spacing of the safety related pumps. However, partial heat barriers to protect the safety related pump motors from an exposure should be used. Also, a curb or ridge, approximately 2 inches high from the MCC's to the opposite wall between pump trains should be installed to prevent spreading of a flammable liquid to more than one train.

2. Item 13 - Fire Zone A-3, Clean Waste Receiver Tank Room 124, Auxiliary Building - We reviewed this area to determine if the safety related cable trays at the ceiling required both sprinklers and 1/2-hour fire barriers to protect against a possible exposure fire on the floor. Since the redundant trays are over 30 feet above the floor and 30 feet apart laterally with the waste receiver tank between the trays occupying virtually the entire room area and height, it is our position that automatic sprinklers should be installed to cover the area under each tray and the open floor area in each corner of the room. Fire barriers for the separated cable trays will not be required. Activation of the sprinkler system should alarm and annunciate in the main control room.
  
3. Item 21 - Fire Area G-11 Passage 227, Auxiliary Building, Elevation 565 - This area contains mostly conduit and a few cable trays located about 8-9 feet above the floor and are connected to different switchgear panels in the area. The licensee indicated that only three control and instrument conduits were necessary for safe shut-down. Damage to the one conduit which runs all along the corridor wall immediately above electric panels against the wall, could cause loss of auxiliary feedwater train no. 2. Damage to either of the other two conduits which are above the main passage way and above the lateral aisleway between electric panels could cause loss of auxiliary feedwater train no. 1 due to spurious valve closure.

In order to protect against an exposure fire, it is our position that area automatic sprinkler protection be provided in this passage way and the lateral aisleway (but not directly over the electrical panels) and that (1) a one-half hour rated fire barrier (mineral wool blanket or equivalent) be provided for the two conduits associated with auxiliary feedwater train no. 1 throughout the entire passageway, or (2) a noncombustible false ceiling fire barrier (marinite board or mineral wool board) be installed under the lowest conduit cable trays above the main passage way and lateral aisle, or (3) the false ceiling fire barrier be installed at the intermediate level above the lowest overhead conduits (which are not safe shutdown related) but below the remaining conduit-cable trays.

4. Item 23 - Fire Zone H-2, Corridor 209 - Auxiliary Building - This area contained mostly overhead conduit and one cable tray. The licensee indicated that there were a total of six conduits necessary for safe shutdown. Two conduits contained redundant control and instrument cable which, if damaged, could cause loss of both trains of makeup to the primary system. Damage to the other four conduits could cause closure to the HPCI suction valves due to a spurious low level signal in the BWST. Consequently, damage to all six conduits could cause loss of primary system makeup and/or boron injection capability.

It is our position that:

- (1) Additional fire detectors be added in this area as stated originally in item 13.a.
  - (2) Automatic sprinklers be provided to protect against an exposure fire in the main corridor and lateral corridor at the end of the main corridor. The sprinkler system should alarm and annunciate in the main control room, and
  - (3) A one-half hour rated fire barrier (mineral wool blanket or equivalent) be provided for the four conduits associated with BWST level signal for the entire horizontal run of these conduits above the main conduit and for at least one conduit controlling one train of makeup throughout its entire run within the room.
5. Item 26 - Fire Zone T-1, CCW Pump and Heat Exchanger Room 328, Auxiliary Building - This area contains all three CCW pumps for the plant at one end of the room; the HX's occupy the middle of the room; there are two CCW valves above a mezzanine grating at the opposite end of the room. During our visit, one of the three pumps was dismantled for maintenance. Fire damage to more than one CCW pump or valve train could disable the plant CCW system.

It is our position that:

- (1) Automatic sprinklers be provided in the area of the three CCW pumps and under the mezzanine floor grating under the CCW valves to protect them from a possible exposure fire. Activation of the sprinkler system should alarm and annunciate in the control room.
  - (2) A one-half hour rated fire barrier be provided for the conduit associated with each CCW pump and CCW valve and at least for the underside of the valve motors.
  - (3) The hydrogen line in this area or other areas containing safety related equipment be relocated or demonstrate that a hydrogen leak can be safely vented.
6. Item 27 - Fire Zone U-1, Passage and Hatch Area 310 and 313, Auxiliary Building - This area is the boric acid mixing room. At one end of the room, there are conduits about 15 feet above the floor. The licensee informed us that damage to two of the conduits could stop CCW flow to the reactor coolant pumps which supply seal injection water to the RC pumps. We also noted a considerable quantity of transient combustibles (i.e., cartons of documents and used boric acid cardboard containers) underneath the conduit.

Since fire damage to the two conduits could result in degradation of RC pump seals and a possible nonisolable leak in the primary system,



it is our position that:

- (1) Transient combustibles be removed and no longer be stored in this room,
  - (2) Automatic sprinklers be installed under the overhead conduits to protect against an exposure fire under the conduit. Activation of the sprinkler system should alarm and annunciate in the main control room,
  - (3) A one-half hour rated fire barrier (mineral wool blanket or equivalent) be provided for the two overhead safety related conduits,
  - (4) As an alternate to (2) and (3) above, relocating one of the two conduits completely outside this area would be acceptable, and
  - (5) As stated in our original position on item 27, the automatic sprinkler system proposed for passage 310 should be extended to cover hatch area room 313 at the same elevation.
7. Item 29 - Fire Zone V-6, Corridor 304, Auxiliary Building - This area contains electrical panels which include two electrically insulated redundant circuits which if damaged could spuriously

close one of two containment isolation valves in series that control the RC pump CCW and seal return flow. The licensee plans to install sprinklers to protect the aisleway in front of the panels. This is acceptable. It is our position that the licensee establish a procedure to enable local or remote manual opening of these valves to restore flow to the pumps unless a true containment isolation condition exists.