U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-346/77-22

Docket No. 50-346 License No. CPPR-80

Licensee: Toledo Edison Company
Edison Plaza
300 Madison Avenue
Toledo, OH 43652



Facility Name: Davis-Besse Unit 1

Investigation at: Davis-Besse Site, Oak Harbor, OH

Investigation Conducted: May 24-27, 1977

Inspectors: C. C. Williams 7/27/77

F. J. Jablonski 7/26/77

J. E. Kohler

Approved by: D. H. Hayes, Chief 7/27/77
Projects Section

Investigation Summary

Investigation on May 24-27, 1977 (Report No. 50-346/77-22)
Areas Investigated: (1) The alleger was interviewed by two NRC inspectors at his home in the Toledo area; (2) the NRC inspectors interviewed members of the Licensee's, Bechtel's, and Brand Industrial Services management, and QA/QC construction, and operations personnel; (3) the inspectors examined each of the specific allegations made by the alleger; (4) the inspectors randomly selected penetrations and blockouts for examination and observation; (5) the inspectors observed and examined penetration sealant activity in progress; (6) the inspectors examined, in detail, selected penetrations on the emergency ventilation boundary; (7) the inspector reviewed the turnover program for the emergency ventilation system and walk down the negative pressure boundaries to evaluate its status; (8) the inspectors reviewed the status of the control room preoperational test and the status of the ventilation system filter trains; and (9) the inspectors summarized the details of a forthcoming Immediate Action Letter for the licensee's management. This inspection involved a total of 43 inspector-hours by three NRC inspectors.
Results: Four of six general allegations, as understood by the NRC

inspectors, were substantiated and found to be significant. Two of the general allegations were substantiated, but determined to be insignificant. One item of noncompliance containing 4 elements of consideration was identified. (Paragraphs 1.a, 1.b, 1.e, and 1.f, Section I, Details and Paragraphs 1 and 4, Section II, Details) The corrective actions necessary to resolve the elements of this item of noncompliance were directed to the licensee under the auspices of an RIII Immediate Action Letter issued on May 31, 1977. The directives of this Immediate Action Letter were verbally delivered to the licensee during the investigation exit interview on April 27, 1977, and confirmed by telecon from RIII management to L. E. Rowe (Vice President, TECo) on the afternoon of April 27, 1977. One unresolved matter, relative to the availability of an adequately documented emergency ventilation system boundary, was identified. (Paragraph 1, Section II, Details)

DETAILS

Section 1

Prepared by C. C. Williams

Persons Contacted

Principal Licensee Employees

*L. E. Roe, Vice President
*J. D. Lenardson, Quality Assurance Manager
*R. E. Blanchon, Construction Supervisor
*G. E. Eichenauer, Quality Assurance Engineer
*D. A. Poage, Quality Assurance Engineer
*O. Fraser, Quality Control Engineer
*E. R. Michaud, Operations Engineer



Other Personnel

Individual "A"
*C. L. Houston, Bechtel Construction Manager
*W. C. Lowery, Bechtel Quality Assurance
*C. D. Miller, Bechtel Engineer
*J. D. Heaton, Bechtel Quality Control Supervisor
J. Polverari, BISCO Foreman
W. E. May, BISCO Area Superintendent
D. M. Needland, BISCO, General Foreman
K. G. Granate, BISCO Area Supervisor
D. E. Parker, BISCO Insulator
C. C. blanchard, BISCO Foreman
S. Andreakos, BISCO Project Manager
J. Kovach, Bechtel Engineer
J. Dusseau, BISCO Foreman
W. Burch, BISCO Foreman
K. Michalski, BISCO Foreman
J. Armstrong, BISCO Documentation Clerk
R. Sperry, Quality Control Engineer, Bechtel
R. Stuffy, Bechtel Engineer
F. Rollins, BISCO Field Engineer
J. Arslanian, BISCO Quality Control Supervisor

The inspectors also contacted and interviewed other licensee, Bechtel, and contractor employees including members of the Quality Assurance, Technical, and Engineering staffs.

*denotes those present at the exit interview.

Licensee Action on Previous Inspection Findings

None identified.

Items Investigated

1. Interview with the Alleger and Findings During Subsequent Plant Inspection

Individual "A" contacted the RIII office by telecon twice on May 23, 1977. During these conversations he made highly specific allegations regarding the quality and control of the Davis-Besse Plant penetration blockout sealing activity. At this time, RIII arranged to interview Individual "A" at his home. The following allegations were made during this interview and subsequently investigated:

a. Individual "A" stated that "some penetrations within the plant have not been sealed and there is no documented mechanism for assuring that these penetrations will be sealed; an example may be found in Room 419."

Finding - Substantiated

Inspection of the penetration in Room #419 and other areas substantiated this allegation. Examination of plant documents disclosed that this penetration had not been previously identified on documentation which would have required its closure. Penetrations of this category are identified on civil drawings which were not available to BISCO employees. Other areas examined in this regard did not contain any "uncontrolled penetrations."

b. Individual "A" stated that "During the "interim" negative pressure boundary testing, (Emergency Ventilation System) many penetrations, doors, conduits, and floor drains were either covered with masking tape or otherwise improperly sealed. For example, some were sealed with tape and caulking, and conduits were filled with silicon foam. Moreover, this occurred without prior Engineering and QA/QC control. Some of these fixes were identified with QC Trace Numbers but many were not." Individual "A" could not provide specific locations but referenced other members of the BISCO staff who could and stated that these conditions would be easily detectable through observation.

Finding - Substantiated

Interogation of other members of the site contractors staff and inspection and observation by the NRC inspectors confirmed the existance of nonconforming seals made with tape, caulking and/or silicon foam in condulets, doors, drains, and conduits.

These conditions (in part) were not controlled by documented instructions from engineering nor QA/QC.

It was reported by the licensee's representatives that the site contractor (BISCO) was instructed to make these "expeditious" seals as a result of leaks detected during interim testing of the Emergency Ventilation System. For expediency, such seals and seal repairs were not controlled in the usual fashion in that Engineering and QA/QC did not approve these repairs prior to implementation. The inspectors found that all of these "repairs" were identified by the craft forces with trace numbers as was instructed. It was the stated intent of the licensee to use these trace number identifications to retro-fit Engineering and QA/QC involvement in this work.

The above decision and the subsequent sealing violated the licensee's quality assurance commitments and reduced the probability that conforming repairs and/or configurations would be accomplished.

The "expeditious" and improper penetration sealing activity was found by NRC inspection to be confined to penetrations within the Emergency Ventilation System boundary, as defined by the licensee's representatives.

c. Individual "A" stated that a large percentage of the BISCO drawings used to control the penetration and block out sealing were erroneous in that the drawings frequently don't reflect the as-built configuration. For example, he stated that in Room No. 110, the walls look nothing like the as-builts.

Findings - Substantiated

Examination of the BISCO production/Bechtel Engineering control drawings and instructions relative to blockouts and penetrations showed that no substantial deficiencies exist. While it is true that various drawings in BISCO's control don't show the current as-built condition, the process (document control) is such that all such drawings are in process

of revision to show final as-built configurations. At the time that the drawings questioned by Individual "A" were made, they were acceptably accurate. Subsequent installations changed the configurations. Final drawings showed the as-built configurations.

d. Individual "A" stated that Bechtel Engineering provides what appeared to him to be incorrect and conflicting instructions relative to the use of silicone foams (SF 20 and SF 150) and pipe boots for sealing piping penetrations. That is "frequently the same wall drawing for seal ng pipe penetrations will specify both the silicone foam and pipe boots." Individual "A" did not think that penetrations through a common wall could have different criteria for closure. He stated that an example of this may be found on the north wall of Room #126.

Finding - Substantiated

The description of the conditions described by Individual "A" were found to be correct. However, the allegation of error is not correct in that the use of silicone foam and caulking versus the use of boots, to seal pipe penetrations depends on the amount of pipe movement during operations or heatup. If the pipe movement exceeds the criteria, then boots are used to make the seal. If not, then the silicone foams are used.

The example pointed out in room #125 by Individual "A" was a correct observation. The NRC examination found that an error had been made during silicone foam damming operations. This error had been previously identified and was properly controlled. No other instances were identified by NRC inspectors or other BISCO craftsmen.

e. Individual "A" stated in summary that the Emergency Ventilation Test Boundary was not adequately def ned for sealing and leak test purposes. Many more penetrations (other than those on the boundary), doors, drains, and conduits had to be sealed either with temporary taping, caulking, and/or silicone foam during the "Interim pressure testing" and the concurrent smoke leak detection. He indicated that all apparent leakers were plugged in the above fashion until the air pressure criteria was met. He further stated that there was no indication that

permanent conforming repairs are intended nor was there any indication that Engineering and Quality Assurance was fully aware of the extent of the repairs and plugs. Many of these repairs were not identified by trace numbers.

Finding - Substantiated

The inspectors confirmed through discussion with the BISCO craftsman and observations that this allegation was substantially correct. Items other than those on the specified EVS Boundary such as conduit ends without trace numbers were observed to be sealed with a combination of tape and caulking material; condulets were either taped or filled with silicone foam; door frames were observed to be taped; wall sockets were observed to be taped; and floor drains were observed to be taped. Many of these temporary fixes were not on the (smoke list) i.e., trace numbers had not been assigned.

The licensee's representatives stated that in this regard it was also the intention to evaluate the successfulness of the as-built seals during the "interim" EVS test. However, so many leaks were detected during this testing, that it was decided that the production crews should immediately plug all leaks detected during the draw down and smoke testing. All such leaks were to be assigned "trace numbers" which would enable Engineering and QA/QC to evaluate them later. However, it is apparent that many of these fixes were not assigned trace numbers and this nonstandard repair process was not properly controlled.

f. Individual "A" stated that "a comprehensive documented procedure (criteria) for executing "walk-down" inspections for determining if all penetrations (including the EVS Boundary) have been properly sealed does not prevail across the entire TECo organization, i.e., BISCO-Bechtel Engineering, QC and TECo QA organizations."

Finding - Substantiated

Through examination and discussion with the licensee's representatives the inspector concluded that clearly defined criteria and instructions relative to the control of the inspection and verification of blockout and penetration status for the EVS boundary is not adequately established. This condition was apparently caused by or aggrevated by

the uncontrolled repairs made during interim EVS test and incomplete establishment of the "Smoke List" which ostensibly documented all repairs, and deficient conditions.

g. The following list summarizes the room designations which identify the locations of the discrepancies identified by Individual "A" and those areas identified by other BISCO craftsmen in response to NRC questions:

(1) Location of taped floor drains: Rooms 314, 303, 208, 236 and 225. (Note: a modification to preclude the need for taping has been approved and should be in place. It prescribes the installation of "Wafer Check Valves" in the drains within the EVS Boundary.)

(2) Location of penetrations not sealed and not identified by documentation as needing to be sealed. Example: Room 419 and/or 418.

(3) Areas where temporary tape was found as of May 25: Rooms 314, 303, 208, 236 and 225.

(4) BISCO Foreman identified conduit seal with tape covered with caulking material and subsequent repaired condition in passageway.

(5) Apparent discrepancy in closure criteria between boots and silicone foam at rooms 125 and 126.

(6) Craftsmen reported tape still used in Rooms 115, 113, and 105 (verified by Bechtel Engineers walk-down on May 25).

(7) Within Room 314 a ventilation damper had to be recycled by hand during previous test. This was done by Bechtel organization.

(8) Hot lab, Room 424 el. 603, verify that all drains and duct penetrations have been properly sealed.

(9) Verify that all "Cera" fiber has been removed or proper seals made in Rooms 221, 115, 113, and 105.

(10) Verify that door (seals) were repaired where required in Rooms 314, 303, 113, and 208.

2. Sequence of Events and Immediate Action Letter

The allegations were received on May 23, 1977. The investigation was initiated on May 24, 1977. On May 25, 1977, the NRC inspectors concluded after inspection, that the allegations were substantially true and quality control problems existed. On May 25, 1977, the TECo Vice President acknowledged these conditions and committed to immediate corrective action relative to the EVS boundary blockouts penetrations doors and drains. The primary concern was to satisfy conditions necessary for testing the emergency ventilation system. On May 26, 1977, the licensee informed RIII that all corrective actions were complete and requested reinspection. The NRC inspector returned to the site on May 26, 1977, and continued the investigation by interrogating 10 BISCO craftsmen relative to the status of the rework. During these discussions several of the craftsmen identified additional areas wherein non-controlled work (seals) and temporary tape on doors and drains had not yet been removed. On May 27, 1977, at the NRC's request the licensee's representatives conducted an inspection of the areas reported by the BISCO craftsmen as being incomplete. The results of this inspection confirmed the continuing existence of discrepant seals and temporary tape. The corrective action taken was proven to be inadequate. On May 27, 1977, the NRC inspectors verbally outlined the text of an NRC RIII Immediate Action Letter to the licensee's representatives.

This Immediate Action Letter specified what corrective actions must be taken pending further regulatory action. The licensee concurred with these remarks. They are as follows:

a. Prepare comprehensive procedures for control of penetration inspections.

b. Conduct inspections of areas containing penetrations within the boundaries defined in the above procedures utilizing engineering and QA personnel of TECo and Bechtel.

c. Document any observed deviations from design, including material, workmanship, and incomplete or missing seals.

d. Repair all discrepancies in accordance with approved procedures.

e. Ensure both TECo and Bechtel engineering and QA review and approve all repairs.

f. Correct all required floor drain seals to meet design requirements.

g. Provide documentation control for interface between BISCO and other site contractors to insure proper inspection and repair of any previously released seals.

h. Inform the RIII office when all discrepancies are corrected so we can review the results of your corrective action.

The understanding was that the above would be completed prior to the official performance of T.P. 110.01, Emergency Ventilation System Test.

Exit Interview

The inspectors met with the licensee representatives (denoted under Persons Contacted) at the conclusion of the investigation on May 27, 1977. The inspectors summarized the purpose and findings of the investigation and discussed the directives of the RIII Immediate Action Letter which is to be issued relative to corrective actions. The licensee acknowledged the findings as reported.

DETAILS

Section II

Prepared by: J. F. Kohler 7/28/77

Reviewed by: W. S. Little

Persons Contacted

Rick Martell
G. Euhanhaurer, Quality Assurance Engineer
*J. D. Lenardson, Quality Assurance Manager
*D. A. Pouge, Toledo Edison QA
*J. D. Heaton, Bechtel QC
*C. D. Miller, Bechtel GPDE
*W. C. Lowery, Bechtel QA
*R. E. Blanchong, Toledo Edison Construction
*E. R. Michaud, Toledo Edison Test Project Manager
*O. M. Fraser, Toledo Edison QC
*L. E. Roe, Toledo Edison Vice President
*C. L. Huston, Bechtel Construction Management
J. Kovachs, Bechtel Engineer

*denotes those present at the exit interview.

1. Emergency Vent System Turnover

The inspector interviewed employees of Bechtel, Bisco, Babcock Wilcox and Toledo Edison. The personnel interviews were conducted in order to determine the different organizational responsibilities for completion of construction activities on the Emergency Ventilation System (EVS). Based on these interviews, the inspector determined that the licensee did not include the boundaries of the EVS in the system definition of the EVS.

A walkdown of the EVS boundary defined in TP 110.01 determined that penetrations, doors, and drains which formed part of the EVS boundary were being turned over to startup personnel with temporary closures, such as tape, forming the seal for critical EVS boundaries. At the time of the inspection there were no plans to replace the temporary closure material with permanent fixes before performance of the preoperational EVS test (TP 110.01).

At the management exit, the inspector stated that he would not witness a preoperational test performed on a system which contained temporary closures that formed the seal on critical boundaries. Furthermore, the inspector stated that he considered the boundaries of the EVS to be part of the system, and that a procedure would have to be developed which defined these boundaries and had detailed acceptance criteria for completion and quality control prior to performance of the EVS preoperational test. The licensee acknowledged these comments.

2. Control Room Preoperational Test

The preoperational test performed on the control room requires the maintenance of a 1/8 inch wg positive pressure by supplying filtered makeup air from outside the control room. During the inspection the inspector reviewed memorandum which stated that temporary sealing material would be necessary to seal air leakage if difficulty was encountered in maintaining the 1/8 inch wg positive pressure.

The inspector questioned the individual responsible for the Davis Besse startup program and was informed that the control room preoperational test had been completed. He was unable to state whether temporary sealing material was removed prior to performance of the test. During the management exit, the inspector stated that he considered the boundaries of the control room to be part of the control room emergency ventilation system and that procedures would have to be developed for the inclusion of these boundaries in the completion prerequisites prior to control room test performance. The inspector stated that the completed test would be considered invalid if temporary closure material was found.

In a phone call subsequent to the inspection, the inspector was informed that procedures were being developed that defined the control room boundaries so that temporary closure material, if used, could be replaced with permanent material. The inspector stated that the control room preoperational test would be inspected during a subsequent inspection.

3. Filter Trains

Preoperational testing of ventilation systems which contain charcoal are being performed without the charcoal installed. There are three systems affected: The Emergency Ventilation System; Fuel Building Ventilation System; Control Room Ventilation system. The inspector stated that he did not consider the preoperational test of these systems to be complete until the charcoal was installed.

The licensee stated that interior painting which is currently taking place could adversely affect the charcoal filter elements and that the determination was made to delay installation of the charcoal. Consequently, during the preoperational test of the EVS, a differential pressure device would simulate the pressure drop across the filters and that the pressure drop would be verified as conservative when the charcoal filters were installed.

The inspector stated the TS 4.6.4.4.e requires DOP and freon testing of filtration systems after each complete or partial filter replacement. Consequently, after charcoal filter installation and prior to moving from Mode 5 to Mode 4, technical specification filter testing would be required in addition to verifying the differential pressure.

4. EVS Walkdown

At the inspector's insistance, a walkdown of the following EVS boundaries as defined in TP 110.01 was initiated by the licensee: Mechanical Penetration Rooms one through four; east and west ECCS pump rooms. During this walkdown, the licensee discovered temporary closure material was still present in the EVS boundary. This material was removed by the licensee. However, no assurance could be given that all material was removed. The inspector stated at the management exit that additional quality control would be necessary prior to performance of the EVS preoperational test to assure all temporary closure material was removed.

5. Startup Package for System 34

The inspector reviewed the completed duct leakage and air balancing reports for system 34. No deficiencies were found.