

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

REGION III

Report No. 50-346/79-11

Docket No. 50-346

License No. NPF-3

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

Facility Name: Davis-Besse Nuclear Power Station, Unit 1

Inspection At: Davis-Besse Site, Oak Harbor, Ohio, and the A-E office.

Inspection Conducted: May 24-25, 31, and June 1, 5-7, 20-22, 1979, at  
the site and corporate office; July 2, 1979, at  
Bechtel Power Corporation, Gaithersburg, Maryland

Inspector: *D. H. Danielson*  
I. T. Yin

7/27/79

Approved By: *D. H. Danielson*  
D. H. Danielson, Chief  
Engineering Support Section 2

7/27/79

Inspection Summary

Inspection on May through July, 1979 (Report No. 50-346/79-11)

Areas Inspected: Special inspection on snubber installations and functional testing. This inspection involved a total of 58 inspector-hours onsite, at the licensee corporate office, and at the A-E office by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

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## DETAILS

### Persons Contacted

#### Toledo Edison Company (TECo)

\*L. E. Roe, Vice President, Facility Development  
\*E. C. Novak, General Superintendent, Power Engineering and Construction  
\*J. D. Lenardson, QA Director  
\*R. P. Crouse, Assistant Vice President  
\*J. Evans, Assistant to Vice President, Energy Supply  
\*C. R. Domeck, DB-1 Nuclear Project Engineer  
T. Murray, DB-1 Plant Superintendent  
B. R. Beyer, DB-1 Assistant Plant Superintendent  
\*C. T. Daft, Operations QA Manager  
\*P. Carr, DB-1 Maintenance Engineer  
G. Wells, DB-1 Administration Coordinator  
J. Baughman, DB-1 Senior Engineer

#### Bechtel Power Corporation, Gaithersburg Power Division (B-GPD)

R. Rosenthal, Project Manager  
M. Malcom, Project Engineer  
R. Peyton, Engineer Manager  
\*E. J. Ray, Licensing, Liaison Engineer  
\*T. C. LaCroix, Plant Design Supervisor  
C. M. Foltyn, Plant Design Engineering Supervisor  
S. A. Bokhari, Plant Design Engineering Supervisor  
J. C. Ventura, Project Engineer  
J. T. Vogel, Assistant Civil Group Supervisor

The inspector also contacted other site and TECO personnel during the course of inspection.

\*Denotes those attending the exit interview on June 22, 1979, at TECO Corporate office.

### Functional or Program Areas Inspected

#### 1. General

The licensee informed RIII on May, 1979, that a significant failure rate was found during hydraulic snubber functional tests. Among the 97 tested, 12 could not meet both lockup velocity (LV) and bleed rate (BR) requirements, 1 failed LV, and 36 failed BR. Out of the 97 tested, approximately 3 contained unacceptable seal materials, and approximately 3 had incorrect reservoir installation. The RIII responded with extensive snubber inspections at site and at the licensee office, and this report documents the findings.

2. Observation of Snubber Installations

- a. The inspector observed the following snubber installation conditions on the Decay Heat Removal System on May 24, 1979:
- (1) GCB-1-H6: the stiffness of the structure was questionable.
  - (2) GCB-1-H51: fluid leak at valve and cylinder.
  - (3) GCB-1-H38: the stiffness of the structure was questionable, no filter breather was on the reservoir, the cold position setting (CPS) differs from the marking.
  - (4) GCB-1-H4: the stiffness of the structure was questionable.
  - (5) GCB-8-H15: the ball bushings had been greased.
  - (6) HCB-3-H16: same as (5).
  - (7) HCB-3-H15: same as (5).
  - (8) HCB-3-H17: same as (5).
  - (9) HBD-87-H18: fluid leak at valve, the ball bushings had been greased, the installation was not in accordance with the as-built drawing.
  - (10) GCB-4-H5: fluid leaks, and ball bushings greased.
  - (11) GCH-1-H10: same as (5).
  - (12) GCB-5-H27: same as (5), no filter breather on reservoir.
  - (13) GCB-1-H33: same as (5).
- b. The inspector observed the following snubber installation conditions in the ECCS No. 1 and No. 2 Rooms on May 31, 1979.
- (1) GCB-8-H12: no filter breather on reservoir.
  - (2) HCB-2-H21: same as (1), the CPS differs from marking on the snubber and from as-built drawing.
  - (3) HCB-3-H10: ball bushing greased, the stiffness of the structure was questionable.
  - (4) GCB-5-H27: same as (1), ball bushings greased.
  - (5) HSC-71-H8: same as (1), the stiffness of the structure was questionable.

- (6) GCB-1-H7: severe fluid leak observed.
  - (7) HCB-1-H4: fluid leak at valve.
  - (8) HCB-7-H7: paint found on piston rod, fluid leak observed.
  - (9) HSC-71-H10: reservoir was mounted on the side of the snubber instead of on top, questionable structural stiffness, and paint was found on the piston rod.
- c. The inspector observed the following snubber installation conditions inside the containment on June 6, 1979.
- (1) EBB-5-H13: torsional moment imposed on beam, the structural stiffness was questionable.
  - (2) Primary Coolant Pump No. 22 Snubbers: one reject tag was attached to a snubber. Subsequent document review indicated that the unit was acceptable.
  - (3) SR-4 Top (SN 12476): questionable structural stiffness.
  - (4) SR-7 Iso. 103B: remote fluid reservoir empty, questionable structural stiffness, the piston rod was fully extended at cold position yet the drawing indicated outward direction thermal movement when hot.
  - (5) SR-8 Iso. 103B: piston rod buried inside the pipe isolation, no filter breather on reservoir.
  - (6) Mechanical Snubber S/N 615 (a pair): PSC-3 units for the small size pipe, the structural stiffness was questionable.

No items of noncompliance or deviations were identified.

3. Review of Snubber Structure Design Calculations

- a. Several of the structures where snubbers were attached appeared to be have insufficient stiffness. The inspector requested TECO obtain the original design calculations for the following snubbers:

HCB-2-H21	GCB-1-H6
HCB-3-H10	GCB-1-H4
HSC-71-H8	EBB-5-H13
HSC-71-H10	SR-4
GCB-1-H38	SR-7
HBD-87-H18	S/N 615
	S/N 929

- b. A review at the Bechtel-Gaithersburg Power Division (B-GPD) revealed that the rigid restraints that share the common structure with the snubbers on the Main Steam lines were inadequate. Thirty-two gusset plates were added to the eight Main Steam line restraints prior to the plant startup. The B-GPD stated on July 2, 1979, that they were in the process of evaluating whether this is a reportable item to the NRC.
- c. On July 2, 1979, the B-GPD also stated that they had been unable to retrieve documentation for approximately 200 safety related Class 2 and 3 small size non-standard design pipe hangers. The inspector stated that design basis and computation documentation are required for all safety related items. This is an unresolved item (346/79-11-01).
- d. On June 20, 1979, the inspector reviewed ITT-Grinnell Corporation (ITT-G) calculations, and identified:
- GCB-1-H6: with date, results OK.
  - HCB-2-H21: with no date, results OK.
  - HCB-2-H21 and GCB-1-H38: dates illegible, results OK.
  - HBC-87-H18: performed recently, configuration not in accordance with existing structure.
  - HSC-71-H8: was done by B-GPD recently, results OK.
  - HSC-71-H10: compared with recent calculation, results OK.
  - GCB-1-H4: calculation no date, shown excessive structural deflection, the alternative method used unconservative beam formula.

Because of the above deficiencies, the inspector requested TECO to review all ITT-G design calculations prior to plant startup. Subsequently, the inspector limited his request to review of all snubbers and rigid restraints (1) attached to beams without bracing, (2) with forces that will cause a torsional moment on the beam, (3) attached to angle irons, and (4) attached to channels. Further, the inspector stated a sample review method was acceptable provided that results can achieve 95% confidence level with less than 5% unacceptable design findings. In addition, all deficiencies identified during review should be corrected prior to plant startup. The licensee committed to perform the above review and to perform a 100% review of all suspension system calculation during plant operation. The inspector stated that he will followup on the licensee review. This is an unresolved item. (436/79-11-02)

No items of noncompliance or deviations were identified.

4. Snubber Functional Tests

Because of the large number of snubber deficiencies identified during plant outage, the licensee had serviced all 4" (32,000 lb. capacity) ITT-G snubbers including functional testing and adjustments. In view of the large number of deficiencies, the inspector requested TECO to functionally test all twelve of the 5" bore (50,000 lbs. capacity) and the 6" bore (72,000 lbs. capacity) installed on Main Steam and Feedwater systems. The licensee performed the tests prior to startup. The inspector observed the conditions of the snubbers and their installations after servicing and tests and considered them to be in order.

The inspector further requested the licensee to test one of the 8" bore ITT-G snubbers installed on the primary coolant pumps. If this failed, they were to test all 8" bore snubbers and if more than 50% of the 8" bore snubbers failed, test all 20" bore snubbers installed on the steam generators. During a telephone conference with a TECO Vice President on June 8, 1979, the inspector agreed that this request could be fulfilled during the next plant refueling outage. This is considered an unresolved item. (346/79-11-03)

No items of noncompliance or deviations were identified.

5. Excessive Snubber Settings

The inspector reviewed several of the QC surveillance records for snubbers and questioned the measured snubbers cold position settings (CPSs). The following snubbers were selected for review. The inspector requested the licensee review all CPS's and Hot Position Settings (HPS's) to ensure proper operation prior to plant startup.

SR-7 East, 5 3/8", NCR 336-79 written  
SR-7 West, 6", NCR 335-79 written  
SR-8 West, 5 1/8"  
SR-8 East, 5 3/16"  
SR-9, 5 7/16"  
SR-9A, 6 15/16"  
SR-4, 5 1/4"  
SR-32, 5 3/4"  
EBB1 and R19, 5 1/8"  
EBB1 and SR19, 5 9/16"  
CCA-6-H5, 5 1/4", NCR 333-79 written  
H5W (6-609), 9 1/2", NCR 331-79 written  
A402 South, 5 1/16"  
PSP-1-H15, 8 5/8"  
GCB-8-H4, 5"

This is considered an unresolved item. (346/79-11-04)

No items of noncompliance or deviations were identified.

6. Items to be Concurred to by ITT-Grinnell Corporation (ITT-G)

- a. The inspector observed many snubber pin connections that had been greased. The common recommendation by the vendor is not to grease these ball bushings although grease fittings are included; however, if grease is applied then continued service is needed every six months if the snubbers experience severe operating conditions. The licensee stated that ITT-G recommend greasing every 18 months. The inspector requested a letter from ITT-G to TECO stating this specific recommendation. This is an unresolved item. (346/79-11-05)
- b. In view of incomplete training records for snubber functional test personnel, on June 5, 1979, the licensee verified several snubber personnel qualification at the request of the inspector. Three snubbers, i.e. EBB-2-H20, PSP-1-H26, and EBB-1-H3, were tested by three operators for lockup velocity (LV) and bleed rate (BR) at both tension and compression conditions. The amount of variations are approximately:

Maximum average tension LV = 10%  
Maximum average compression LV = 15%  
Maximum average tension BR = 35%  
Maximum average compression BR = 53%

The inspector requested that TECO obtain a letter from ITT-G stating that the above differences in snubber functional testing using the same procedure was considered acceptable. This is an unresolved item. (346/79-11-06)

No items of noncompliance or deviations were identified.

7. Procedure Review

During the course of inspection, the inspector reviewed the following procedures, and had no adverse comments:

- a. B-GPD Engineering Recommended Design Guide, WO-30, "Office on Field Engineering Users Manual for Supporting 2" and Under Seismic Class I Piping and Tubing," dated March 3, 1972.
- b. B-GPD Snubber Specification 7749-C-32 for 8" and 20" Bore Snubbers.
- c. G-GPD Snubber Specification 7749-M-90 for 6" and Smaller Bore Snubbers.
- d. ITT-G Instruction Manual, PHD-6511-8, "ITT-Grinnell Fig. 200 and Fig. 201 Hydraulic Shock and Sway Suppressor, Model Ph-74R, 1 1/2 to 6 Inch Bore," dated June 22, 1978.

- e. ITT-G PHD-6511-6, "Maintenance Procedure, ITT-Grinnell Fig. 200 and Fig. 201, All Models Prior to Nov. 16, 1974," dated December 14, 1976.
- f. ITT-G Test Procedure PHD-5434-1, "ITT-G Shock and Sway Suppressor Testor Models 5434-1 and 5434-1A Operating and Maintenance Procedure and ITT-G Shock and Sway Suppressor (Fig. 200/20') Filling, Purging, and Calibration Procedure for 1 1/2" Through 8" Bore Models (PH-74R, PH-76, and PH-76N) Manufactured After November 16, 1974," dated November 18, 1977.
- g. TECO Maintenance Procedure, MP 1410.2, "Maintenance of Hydraulic Snubbers," Rev. 7 dated May 8, 1979.
- h. TECO Surveillance Test, ST 5044.01, "Inspection of Safety Related Hydraulic Snubbers," Rev. 2, dated May 8, 1979.

No items of noncompliance or deviations were identified.

#### Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Paragraphs 3.c, 3.d, 4, 5, 6.a, and 6.b of this report.

#### Exit Interview

The inspector met with site representatives (denoted in the Persons Contacted paragraph) at the conclusion of the inspection on June 22, 1979. The inspector summarized the scope and findings of the inspection noted in this report.