REPORT OF INSPECTION CONDUCTED AT OYSTER CREEK NUCLEAR
GENERATING STATION IN ACCORDANCE WITH IE BULLETIN 79-14
(ACCESSABLE PORTIONS OF SAFETY RELATED SYSTEMS)

Inspection of Safety Related Piping for Conformance
to Design Documents Oyster Creek Nuclear Generating Station

INTRODUCTION

This inspection was initiated in accordance with the requirements of Inspection and Enforcement Bulletin 79-14 and 79-14, Rev. 1 dated July 2, 1979, and July 18, 1979, respectively, entitled "Seismic Analyses for As-Built Safety Related Piping Systems." This bulletin requested specific actions to be performed by the licensee and reported to the NRC Office of Inspection and Enforcement. JCP&L responded to Item 1 of the bulletin by letter dated August 1, 1979, in which a commitment was made to perform the inspection referred to in item 2 of the bulletin and report the results of this inspection by September 1, 1979.

This report provides the results of the inspection performed at the Oyster Creek Nuclear Generating Station. As noted in the August 1, 1979, letter, the Oyster Creek plant was licensed prior to the issuance of seismic category 1 requirements; therefore, the inspection was performed to verify that the actual configuration of safety-related systems, utilizing piping 2 1/2 inches in diameter and greater, meets design requirements. The inspection as accomplished by JCP&L personnel and representatives from Burns & Roe, Inc., as well as Bergen Patterson, who are specialists in the field of piping stress analysis and hanger design.

SCOPE

The systems which were inspected are those listed in Table 1 where the piping diameter was 2 1/2 inches or greater. As per IE Bulletin 79-14, Rev. 1, only accessible portions (those portions accessable during normal operation) of these systems have been inspected. The inspection consisted of comparing the as-found condition of piping, valves, supports, and restraints with the design documents used as input to the seismic analysis. Phase 1 of the program was accomplished by engineers who physically inspected the systems noting any deviations from the design documents.

Phase 2 of the inspection consisted of reviewing the results of Phase 1 and evaluating any deviations to determine whether or not a nonconformance existed. Deviations were not considered non-conformances if the installation had been modified to accommodate actual conditions in the field as long as the deviation did not prevent the installation from performing its intended function. Personnel who are specialists in the field of piping stress analysis and hanger design made an engineering judgment as to whether or not the existing configuration fulfilled the design objectives. Nonconformances were identified in those instances where:

SCOPE
(Continued)

1. The piping geometry differed significantly from design documents; or

2. Actual valve positions and weights differed signficantly from design documents; or

3. The engineering evaluation concluded that the existing configuration may not fulfill the design requirements; or

4. The installed hanger was a different type than specified in the design documents (i.e. rigid instead of spring, etc.); or

5. The installed hanger was found to be damaged; or

6. The installed hanger was found to be inoperable; or

7. The installed location of the hanger was found to be more than 2 feet from the location specified in the design documents; or

8. The design documents indicated a hanger where none existed; or

9. A hanger was installed which was not specified in the design document

Phase 3 of the inspection consisted of either performing an analysis to verify that the nonconformance did not affect system operability or restoring the existing installation to conform to the design specifications. In the event where analyses or modifications will require additional time to complete, a schedule for completion is presented in Appendix 1.

TABLE 1

Systems Inspected

1. Isolation Condenser
2. Containment Spray
3. Core Spray
4. Emergency Service Water

1147 042

Summary

The inspections performed on the systems listed in Table 1 revealed that, with the exception of core spray system II, the installations as exist at Oyster Creek meet design requirments. Although some non-conformances were found, for the most part the systems were installed as indicated in design documents used as input to the seismic analyses of safety related systems. The nonconformances that were identified were evaluated and, with one exception, were found to fulfill design requirements. A listing by system of all nonconformances identified is provided in the following data sheets. Where further analysis or repair is indicated, Appendix 1 provides a schedule for the completion of such analysis/repair.

The one exception to the above occurred when inspecting core spray system II in which several hangers were found to exist in a manner that would compromise design requirements. This situation was evaluated and it was determined that system operation might be jeopardized. Accordingly, Reportable Occurrence Report No. 50-219/79-27-17 for the Oyster Creek Station was sent to the NRC Region I Office of Inspection and Enforcement. A copy of this report is presented in Appendix 2.

Appendix 3 of the report presents a discussion of the plans for updating design documents to As-Built conditions and of the measures taken to assure that future modifications of piping systems, including their supports, will be relfected in As-Built documents.

System: Isolation Condenser

Hanger Mark No.	Nonconformance	Remarks/Resolution
NE-S-H to NE-1-H7	(1) Spring hangers added to valve stem to support valve.	Does not affect system design requirements.
	(2) Snubber attached to top structure of H7.	Further analysis required (See Appendix 1).
NE-1-HE1	(1) Spring hanger added to valve stem to support valve.	Does not affect system design requirements.
NE-2-HE2	(1) Spring hanger added to valve stem to support valve.	Does not affect system design requirements.
Penetration Snubbers	(1) Configuration does not conform to design documents. Amendment 50 to FDSAR indicates design change.	This item is being reviewed with General Electric to determine proper configuration (See Appendex 1).

1147 044

System: Containment Spray

Hanger Mark No.	Nonconformance	Remarks/Resolution
NQ-2-H44	All 4 mounting studs missi[illegible]	Reinstalled mounting studs. Does not affect system design requirements.
NQ-2-38A	Additional dead weight spring hanger installed.	Does not affect system design requirements.
Discharge Piping	Discharge piping for heat exchange 1-3 and 1-4 is shown as 10". Actual piping is 14".	Does not affect system design requirements.
NQ-2-T-H1	Rigid dead weight hanger is 4' from design location.	Does not affect system design requirements.

1147 045

System: Core Spray

Hanger Mark No.	Nonconformance	Remarks/Resolution
NZ-1-H2	Hanger not installed.	Installed missing hanger. Does not affect system design requirements.
NZ-2-H15	Cantilever angle from wall found to be bent.	New cantilevel angle with brace designed and installed. Does not affect system design requirements.
368-R1	Additional plate installed as shim.	Additional plate had 6 concrete fasteners instead of 4 as originally designed. Does not affect system design requirements.
NZ-2-R11	Pipe clamp not found in box restraint.	Reinstalled clamp to proper position. Does not affect system design requirements.
NZ-2-R13	Hanger not attached to wall.	New hanger designed and installed. Does not affect system design requirements.
NZ-2-R14	Hanger not installed.	New hanger installed. Does not affect system design requirements.
NZ-2-H6A	Rigid hanger not indicated on design documents.	Does not affect system design requirements.
NZ-2-R2	Pipe clamp not found in box restraint.	Reinstalled clamp in proper position. Does not affect system design requirements.
NZ-2-H58	Rigid hanger instead of spring located 5'9" from design position.	Does not affect system design requirements.
411-R11A	Additional rigid restraint not indicated on design documents.	Does not affect system design requirements.
NZ-2-H34	Angle cantilever changed to cantilever with brace.	Does not affect system design requirements.
NZ-2-H37	Rod and angle bent.	Replaced with new hanger. Does not affect system design requirements.
* NZ-2-25	Pipe clamp not in restraint box.	Reinstalled clamp in proper position.
* NZ-2-R8	Pipe clamp not in restraint box.	Reinstalled clamp in proper position.
* NZ-2-R9	Pipe clamp not in restraint box.	Reinstalled clamp in proper position.
* NZ-2-R7	Hanger sheared off wall.	Designed and installed new hanger.
NZ-2-R4	Pipe clamp not in restraint box.	Reinstalled clamp in proper position. Does not affect system design requirements
NZ-2-R5A	Not installed properly due to misalignment.	New hanger designed and installed. Does not affect system design requirements.
* NZ-2-6A	Pipe clamp not in restraint box.	Reinstalled clamp in proper position.
* NZ-2-R6	Pipe clamp not in restraint box.	New restraint installed.

*See Reportable Occurrence No. 50-219/79-27-17

1147 046

System: Engineering Service Water

Hanger Mark No.	Nonconformance	Remarks/Resolution
Discharge Valve For Each Set of Heat Exchangers	Not installed as per original design.	In both cases, additional dead weight and sieimic loads are within acceptable range. Does not affect system design requirements.
SW-SN-5	Hanger not attached to wall.	Hanger was reattached as per design requirements. Does not affect system design requirements
SW-SN-3	Hanger not contacting wall.	Hangers to be repaired (See Appendix 1).
SW-SN-4	Hanger not contacting wall.	

APPENDIX 1

SCHEDULE FOR ANALYSIS/MODIFICATION

ITEM	SYSTEM	COMPLETION DATE
NE-1-H7	Isolation Condenser	Analysis complete by October 1, 1979
Penetration Snubbers	Isolation Condenser	Review complete by October 1, 1979
SW-SN-3 & SW-SN-4	Emergency Service Water	Modifications complete by September 15, 1979

APPENDIX 2

[4021]

Jersey Central Power & Light Company
Madison Avenue at Punch Bowl Road
Morristown, New Jersey 07960
(201) 455-8200

August 21, 1979

Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
Region 1
United States Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Licensee Event Report
Reportable Occurrence No. 50-219/79-27-1T

This letter forwards three copies of a Licensee Event Report to report Reportable Occurrence No. 50-219/79-27-1T in compliance with paragraph 6.6.1.a of the Technical Specifications.

Very truly yours,

Donald A. Ross, Manager
Generating Stations-Nuclear

pk

Enclosures

cc: Mr. John G. Davis, Acting Director (40 copies)
Office of Inspection and Enforcement
United States Nuclear Regulatory Commission
Washington, DC 20555

Mr. William G. McDonald, Director (3 copies)
Office of Management Information and Program Control
United States Nuclear Regulatory Commission
Washington, DC 20555

(CONTROL BLOCK) 1 (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

N J O C F 1 (3) 0 0 - 0 0 0 0 0 - 0 0 (4) 4 1 1 1 1 (5) (6)

REPORT SOURCE L (6) 0 5 0 0 0 2 1 9 (7) 0 8 0 7 7 9 (8) 0 8 2 1 7 9 (9)

DOCKET NUMBER (7) EVENT DATE (8) REPORT DATE (9)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

On August 7, 1979, during an inspection of seismic restraints associated with Core Spray System II, four seismic restraints, NZ-2-R5, NZ-2-R7, NZ-2-R8, and NZ-2-R9, were discovered in positions other than required by original design or had failed. On August 8, 1979 two more restraints, NZ-2-R6 and NZ-2-R6A, were found to be in a condition not representative of the original design criteria. Core Spray System II was considered inoperable for a time until analyses were made and conditions corrected.

SAFETY CODE (11)	CAUSE CODE (12)	CAUSE SUBCODE (13)	COMPONENT CODE (14)	COMP. SUBCODE (15)	VALVE SUBCODE (16)
S F	B	C	S U P O R T	B	Z

(17) LER/RO NUMBER: EVENT YEAR	SEQUENTIAL REPORT NO.	OCCURRENCE CODE	REPORT TYPE	REVISION NO.
7 9	0 2 7	0 1	T	0

ACTION TAKEN (18)	FUTURE ACTION	EFFECT ON PLANT (20)	SHUTDOWN METHOD (21)	HOURS (22)	ATTACHMENT SUBMITTED (23)	NPRD-4 FORM SUB. (24)	PRIME COMP. SUPPLIER (25)	COMPONENT MANUFACTURER (26)
F	F	Z	Z	0 0 0 0	Y	Y	Z	Z 1 9 9 9

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

Four of the restraints were found to be installed contrary to original design criteria and because of this two others were damaged due to unrestrained pipe movement in other sections of the piping. Four of the restraints were restored to their designed condition. NZ-2-R7 design was modified. NZ-2-R6 will be restored to original design or relocated.

FACILITY STATUS (28)	POWER (29)	OTHER STATUS (30)	METHOD OF DISCOVERY (31)	DISCOVERY DESCRIPTION (32)
E	0 9 8	NA	C	Test for IE Bulletin 79-02

ACTIVITY RELEASED (33)	CONTENT OF RELEASE (34)	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
Z	Z	NA	NA

PERSONNEL EXPOSURES

NUMBER (37)	TYPE (38)	DESCRIPTION (39)
0 0 0	Z	NA

PERSONNEL INJURIES

NUMBER (40)	DESCRIPTION (41)
0 0 0	NA

LOSS OF OR DAMAGE TO FACILITY (42)

TYPE	DESCRIPTION
Z	NA

PUBLICITY (43)

NRC USE ONLY	
N	NA

POOR ORIGINAL

1147 052

Manager, Generating

OYSTER CREEK NUCLEAR GENERATING STATION
Forked River, New Jersey 08731

Licensee Event Report
Reportable Occurrence No. 50-219/79-27-1T

Report Date

August 21, 1979

Occurrence Date

August 07, 1979

Identification of Occurrence

Discovery of six seismic restraints for the 6-inch core spray test line, which were either in positions other than required by original design criteria or had failed. This event is considered to be a reportable occurrence as defined in the Technical Specifications, paragraph 6.9.2.a.9.

Conditions Prior to Occurrence

The plant was operating at steady-state power.

Power:	Core	1909.16 MWt
	Electric	639 MWe
Flow:	Recirculating	15.2×10^4 gpm
	Feedwater	7.143×10^6 lb/hr
Stack Gas Activity:		27,900 uci/sec

Description of Occurrence

On Tuesday, August 7, 1979, during an inspection of seismic restraints associated with Core Spray System II, it was determined that two seismic restraint (NZ-2-R5 and R9) clamps were not in their as-built position. Additionally, one restraint, NZ-2-R7, was found to have its wall attachment bolts sheared, rendering this restraint inoperable. The structural configuration of the fourth restraint, NZ-2-R8, was found to have been altered. All of the restraints are connected to the 6-inch test line for Core Spray System II. Because of the configuration and condition of four restraints, System II was considered inoperable at this time until further analyses could be performed.

After returning the above four restraints to their as-designed status on August 8, 1979, two more restraints, NZ-2-R6 and R6A, were found to be in a condition not representative of original design criteria. The condition of these two restraints alone did not justify declaring System II inoperable at this time.

Apparent Cause of Occurrence

Four of the seismic restraints, NZ-2-R5, R6, R6A, and R9, were found to be installed contrary to original design criteria. Because of the failure to install the above restraints properly, restraints NZ-2-R7 and NZ-2-R8 were damaged due to unrestrained pipe movement in other sections of the piping.

Analysis of Occurrence

The 6-inch test piping routes water in the core spray system from the discharge of the core spray booster pumps through a motor operated test isolation valve located close to the core spray line, a check valve located in the area of the torus and into the torus. Failure of the restraints during a seismic event could have produced a failure of the test line at some point between the motor operated test isolation valve and the check valve. The significance of this event is that core spray system function would not have been impaired by the failure. Primary containment would be maintained by the reliance on a single check valve. The check is not part of the local leak rate testing program since normally it does not serve as a primary containment isolation barrier. Therefore, the integrity of this valve is not known.

Corrective Action

All restraints were restored to their designed condition with the exception of restraint NZ-2-R7 and NZ-2-R6. NZ-2-R7 design was modified to provide easier placement of anchor bolts. Core Spray System I was on an accelerated surveillance test schedule until System II was declared operable. NZ-2-R6 will be restored to original design or relocated based on radiation levels in the reactor cleanup filter sludge tank room.

Failure Data

Piping restraints designed by: Bergen Patterson Pipe Support Company
Clifton, NJ

APPENDIX 3

Updating of As-Built Drawings

Recently, responsibility for the control and updating of as-built drawings has been transferred to the Generation Engineering Department. Procedures are being developed to assure that As-Built drawings are updated to reflect modifications of piping systems in a timely manner. Existing procedures require that these drawings be revised as part of the engineering effort; however, it is expected that the new organization and revised procedures will provide greater control of these drawings.

The results of this inspection will be incorporated into as-built documents on an expedited basis. Burns & Roe has been contracted to provide As-Built Drawings reflecting the information learned as a result of this inspection.