Duquesne Light

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August 14, 1980

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Mr. Boyce H. Grier, Director

Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Response to IE Bulletin 79-14 (Interim Report)

Dear Mr. Grier:

In accordance with IE Bulletin 79-14 dated July 2, 1979, Revision 1, dated July 18, 1979, and Supplements 1 & 2 dated respectively August 15 and September 7, 1979 we are submitting herewith an interim report for the results to date, and a schedule for completion of all remaining tasks.

The primary purpose of the task undertaken to comply with the subject bulletin was to assure that the as-built condition of Beaver Valley Unit No. 1 (BV-1) piping and supports agreed with the analytical models. In our letter of September 27, 1979 we estimated that this task would be completed by May, 1980. This has turned out to be unrealistically optimistic due to a number of factors. The amount of work involved in reanalyzing the computer analyzed large bore piping required by the Show Cause Order to include the effects of the OBE was greater than originally estimated. In order to complete this activity, it was necessary to utilize the same personnel needed to review the results of the as-built inspection related to IEB 79-14. This delayed the start of the review and slowed general progress. The field inspection schedule was affected by the heavy workload placed upon the required radcon personnel due to the large amount of concurrent maintenance and construction activities. Also, the scope of inspection was expanded to include a reinspection of the Containment annulus pipe racks and other originally unanticipated inspections.

A summary and conclusion of results to date are provided in Attachment No. 1. The Stone & Webster report on the results of their review including the specific non-conformances identified is provided in Attachment No. 2. A schedule for the completion of work remaining to be accomplished under IEB 79-14 is provided on Attachment No. 3.

We have completed the review of all piping isometrics associated with the computer analyzed large bore piping. This includes 96 piping isos and associated supports. Certain isometric drawings include more than one computer problem. There have been 263 modifications required, of which 233 consisted of shim corrections to pipe restraints in order to meet clearance criteria. It is probable that a more rigorous analysis could have eliminated many of the shimming modifications; however, the most expedient solution was to carry out the modification. A total of only three non-conformances were identified. The breakdown of the specific hanger modifications is indicated in Attachment No. 2.

A complete report of the results of the reanalysis and modifications of the computer analyzed large bore piping required by IE Bulletin 79-07 is being provided to NRR in accordance with the commitments made in our July, 1979 request to return the unit to operation on an interim basis in accordance with our Show Cause Order of March 13, 1979.

DLC decided to computer analyze all of the originally non-computer analyzed safety related piping primarily from 2 1/2 in. to 6 in. diameter utilizing the same design requirements as applied by Stone & Webster for the large bore piping. This was done as a result of a lack of supporting design information against which the as-built information could be compared. A total of 128 piping isometrics were analyzed, and for pipe supports and restraints, 538 have been reviewed out of 1314. The only supports remaining to be reviewed are outside of the containment.

For Class 1 small bore piping all supports have been analyzed and found to be acceptable. Supports for the SI lines have also been specifically evaluated and found satisfactory. All other safety related piping and supports inside the containment have been analyzed and modifications installed where necessary. The balance of the analysis for piping external to the containment will be completed by September 30, 1980. Should any overstress conditions be identified they will be evaluated and reported in accordance with IEB 79-14.

All piping inside the containment has now been completely inspected. Small bore piping (less than 2 1/2" diameter) outside of the containment and a few insulated supports are all that require verification for completion of this as-built inspection task. The field inspection of the small bore piping external to the containment that must be seismically supported will be completed by September 15, 1980.

In summary, with respect to the requirements of IEB 79-14, the following describes the present status of the seismically designed safety related piping systems at Beaver Valley Power Station, Unit No. 1:

1. All inspections of large and small bore piping (2 1/2" diameter and greater) have been completed.

2. All required modifications to the large bore piping will be completed prior to returning the unit to service later this month.

3. All required modifications to Code Class I small bore piping will be completed prior to returning the unit to service.

4. All required modifications to Safety Injection System piping (Code Class II) will be completed prior to returning the Unit to service.

5. The balance of the inspection work on seismically designed safety related small bore piping systems (less than 2 1/2") external to the containment will be completed by September 15, 1980. This basically covers branch lines (i.e. high point vents, drains, instrumentation). Several insulated hangers remain to be inspected outside of the containment.

6. Any modifications that are determined to be required for the small bore piping systems external to the containment will be scheduled to be performed consistent with safety consequences associated with the safety significance of identified overstress conditions.

We have determined that with the completion of the modifications referred to in items 2, 3, and 4, all piping systems installed in the Beaver Valley Power Station to prevent or mitigate the consequences of the postulated accidents and to place the unit in a safe shutdown condition will be able to perform their required safety functions during and subsequent to an occurrence of a seismic event as described in the Final Safety Analysis Report for the facility.

DUQUESNE LIGHT COMPANY

By E. J. Woolever

E. J. Woolever
Vice President
Engineering & Construction

(CORPORATE SEAL)

Attest:

Joan S. Senchyshyn

Joan S. Senchyshyn
Assistant Secretary

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this 15th day of August, 1980, before me, HENRY G. STOECKER a Notary Public in and for said Commonwealth and County personally appeared EARL J. WOOLEVER who, being duly sworn, disposed and said that (1) he is Vice President of Duquesne Light Company, (2) he is duly authorized to execute and file the foregoing Report on behalf of said Company, and (3) the statements set forth in the Report are true and correct to the best of his knowledge, information, and belief.

WITNESS my hand and seal the day and year first above written.

Henry G. Stoecker

HENRY G. STOECKER, Notary Public
Pittsburgh, Allegheny County, Pa.
My Commission Expires
February 20, 1982

Attachments

cc: United States Nuclear Regulatory Commission
Director of the Office of Inspection and Enforcement
Washington, D.C. 20555

United States Nuclear Regulatory Commission
Director of the Division of Reactor Operations Inspection
Washington, D.C. 20555

D. H. Beckman
Beaver Valley Power Station Office Building

ATTACHMENT NO. 1

BEAVER VALLEY POWER STATION - UNIT NO. 1
Docket No. 50-334

RESPONSE TO THE IE BULLETIN 79-14

Summary, Conclusions, and Scope of Work

August 14, 1980

Beaver Valley Power Station - Unit No. 1
Section 1
Summary & Conclusions

IE Bulletin 79-14 issued July 2, 1979, Rev. 1, dated July 18, 1979, and supplements dated August 15 and September 7, 1979 required the implementation of a program to verify that the plant safety related piping and support analysis agrees with the as-built condition of the plant.

The program for BVPS Unit 1 compliance with IEB 79-14 is about 80 percent complete at this time and the balance of the work will be completed in accordance with the schedule shown in Attachment 3 of this report with a final report due for submittal November 30, 1980.

As of August 5, 1980 Stone & Webster completed their review of all dynamically analyzed safety related piping consisting of 96 piping isometrics and 1280 supports. Remaining to be checked are several insulated hangers and small bore piping (less than 2 1/2" diameter) all outside of the containment which are still being inspected. Also, Stone & Webster is reviewing the results of the material verification program.

There have been 262 modifications required as a result of the review for these lines, of which 233 were adjustments to piping clearances on seismic restraints or supports. Many of these modifications could likely have been eliminated if a more rigorous analysis was performed. However, the most expedient solution was to modify the supports due to the simple nature of the changes. Section 3 includes the Stone & Webster report which covers the results of their as-built review.

As of August 15, 1980 SCE & NSC Corporation have analyzed, using NuPIPE, 128 piping isometrics out of 128 that were originally designed using the chart method. A total of 59 modifications to supports were required inside the containment. No piping, penetration, or nozzle modifications have been required thus far. All of the Class 1 piping and other safety related piping in the containment has been analyzed and any modifications required will be implemented prior to startup.

All of the seismic supports and restraints in this task were originally designed using decal loads. Of 300+ supports evaluated it has been indicated by statistical analysis that there is a 96 percent confidence that the decal loads will not be exceeded in a seismic event. Therefore, sufficient technical justification exists to assume that the balance of hangers to be analyzed outside of the containment are satisfactory for operation.

The remaining analyses will be accomplished in accordance with the required reporting procedures of IEB 79-14 for any non-conformances identified during plant operation. It is anticipated that any additional modifications required will be of the same nature as those identified to date.

We are therefore requesting an extension to the date for the updating of this interim report to include a final summary of the work to March 30, 1981.

Beaver Valley Power Station - Unit No. 1
Section 2
Scope of Work

Scope of Work

The implementation of IEB 79-14 requirements necessitated the as-built inspection, review, and/or analysis of 220 piping isometrics. This task was divided into several sub-tasks in order to perform certain jobs in parallel to expedite the total effort. A field inspection team was developed by DLC consisting of 17 piping designers and one engineer. This group was supported by the station radcon technicians and maintenance personnel for controlled plant access. The inspection schedule slipped due to an expanded scope of work which resulted from the need to verify the as-built condition of the containment annulus piping and to perform other inspection tasks not originally anticipated. The size of this team was essentially established to utilize all radcon personnel available which were limited due to demands from extensive concurrent maintenance and construction activities. The only work remaining to be accomplished is the inspection of the small bore branch lines (and several insulated hangers) outside of the containment.

A complete set of as-built marked up prints of the piping isometrics and hangers is available to the station and to DLC and Stone & Webster Engineering until the original drawings are revised and reissued.

The comparison between the marked up as-built drawing and the original analysis for all of the dynamically analyzed, safety related piping 6" and above was performed by Stone & Webster. For this comparison S&W utilized the recent results from the reanalysis performed for the Beaver Valley Unit No. 1 Show Cause Order of March 13, 1979. This analysis was performed using the NuPIPE-SW computer code. For this task Stone & Webster reviewed 96 piping isometrics and 1285 seismic restraints and supports. There have been 262 modifications required which mostly consisted of shimming restraints to correct clearances between pipe and restraints. Because of a desire to minimize the engineering time and due to the simplicity of most modifications it was deemed expedient to effect a change in the plant rather than pursue a time consuming rigorous solution to eliminate the modification. The detail report for the Stone & Webster results is covered in Attachment 2.

The balance of safety related piping was designed by Stone & Webster utilizing the chart method (nomographs). Records for these analyses were determined to be insufficient in detail to serve as the permanent calculation of record, and therefore DLC decided to computer analyze these lines utilizing the as-built sketch as a basis. In order to expedite this effort SCE and NSC were contracted to perform these analyses as Stone & Webster personnel were unavailable due to the magnitude of the Show Cause Order reanalysis requirements. This work encompassed analyzing 124 piping isometrics primarily for piping 2 1/2 to 6 in. diameter using the NuPIPE computer program applying the same design criteria as that applied to the Stone & Webster analysis. Modifications required were similar to those identified for the large bore piping. No piping modifications were required. Of 538 supports in the containment, 71 required modification and 22 additional supports were required.

Beaver Valley Power Station - Unit No. 1
Section 2
Scope of Work, cont.

As of August 11, 1980 all of the safety related lines in the containment and all Safety Injection lines regardless of location have been analyzed and any required modifications are to be implemented prior to start up.

The balance of this analysis for all piping outside of the containment is continuing and will be completed by September 30, 1980 as can be seen by the schedule in Attachment No. 3. Any overstress conditions will be evaluated in accordance with its respective safety implications and reported in accordance with IEB 79-14.

In process currently is a review of the insulated hanger details and branch line field information and the small bore piping analytical results for nozzle penetration, and baseplate acceptability. This work should be completed in accordance with the schedule in Attachment 3.

Verification of piping and support materials is another subtask in process at this time. A team of DLCo. reviewers is compiling material data for the piping and fittings for transmittal to Stone & Webster for their evaluation. Not all information has been readily retrievable, and at this time vendors are still searching their files for certain material data. Assuming this information is obtained in a timely manner, this effort should be completed by October 31, 1980.