Duquesne Light
435 Sixth Avenue
Pittsburgh, Pa.
15219

(412) 456-6000

April 7, 1981

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

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
IE Bulletin 79-14

Gentlemen:

In accordance with our letter dated October 20, 1980, we are submitting a report concerning our activities associated with IE Bulletin 79-14. This is not a final report since the equipment nozzle information is incomplete due to the need for vendor responses which are outstanding. (See Attachment B.)

Duquesne Light Company has undertaken the appropriate actions to provide assurance that the seismic stress analysis of the safety related piping systems 2-1/2" and larger reflect the as-built conditions of the plant and demonstrate acceptability of the subject piping.

Five engineering firms were employed to provide sufficient turn-around of this effort. Duquesne Light provided coordination of the total effort and direct supervision of the field inspection and record search personnel. The tasks entailed the review or analysis of 234 isometric drawings and 2,599 support designs associated with 251 computer pipe stress analyses. All vendors used approved versions of Nuclear Services Corporation's Nupipe Pipe Stress computer program. There were 211 pipe and support stress analysis packages issued for this effort.

The data base for this effort consisted of marked up Isometric and support drawings developed by field inspection of as-built conditions plus as-built material packages.

A list of the isometric drawings defining the scope of the effort was previously sent to you. The as-built material packages were issued on an isometric basis and are a compilation of the results of researching the QC records.

417

Item # 17

(13)

The information transmitted to the analysts is categorized into two types that involve actual physical measurement and the remaining involving searching Quality Control and Engineering records. The following is the categorization of the major elements of the as-built information:

Obtained by Physical Measurement

1) All piping and support geometry (except pipe wall thickness and drilled in anchor base plates, see IEB 79-02 report)

2) All pipe to support clearances

3) All insulated hangers (all insulated hangers were exposed)

Obtained by Searching Quality Control and Engineering Records

1) Valve and equipment parameters

2) Materials of construction

The as-built material packages delineated information obtained from searching the microfilmed documents from the shop's or field fabricator's purchasing records, welding records and field change records. In some instances, the various data sources conflicted. When this occurred, the most conservative parameter was assumed applicable to the loading type in question.

There were a few areas where physical measurements or adequate records could not be obtained. Some areas had high radiation levels or were difficult to get to physically. Where possible, visual inspection data was used. Attachment A delineates the percentages of the total effort for which the geometric as-built information was not complete.

It was determined that the documentation associated with pipe support materials indicated that it was supplied per Manufacturer's Standards Society Specification MSS-SP-58 and 69. Certificates of Compliance (COC) or Certified Mill Test Reports (CMTR) for the pipe support material could not be found. The original specification used to purchase the support material did not require these documents to be supplied to us or retained by the supplier. When contacted, the suppliers indicated that they had not kept the COC's or CMTR's. Thus, for pipe supports the properties of ASTM-A-36 steel were used in the stress analysis. This is a low strength steel and was commonly used industry-wide during the era of Unit I construction.

The applicable criteria described in our various submittals concerning the show cause effort (IEB 79-07) were used for the analysis effort.

The evaluation of the piping data took two forms. The first was the review of the as-built information versus a Nupipe analysis for piping. If a new analysis was required, it was performed incorporating the as-built data. Alternatively, if adequate analytical records did not exist (this was basically for small bore piping), a new analysis was performed. All the piping involved in this effort has been reviewed and, when found unacceptable, all the necessary modifications have been completed.

When evaluating information for pipe supports, a new analysis was performed if there was a significant change in the support configuration or if the imposed piping loads increased significantly over that of the latest record. If neither of the above was the case, the support was determined to be acceptable. Supports were also reviewed to verify that the as-built clearances met their applicable criteria. All the supports within the scope of this effort have been reviewed and, when found unacceptable, all necessary modifications have been completed.

An analysis of pipe supports located on racks along with their associated local rack attachment effects have been completed and found satisfactory or modification performed. A composite analysis of the rack, which includes the effects associated with non-safety related appurtenances outside the scope of this bulletin, is currently being performed. This analysis will provide a consistent, comprehensive analytical basis for these structures.

Nozzle loads on equipment were evaluated in the same way as supports; one difference being that when re-analysis was warranted, the vendors of the equipment were solicited to perform the re-analysis. Because of this, all nozzles have not been completely reviewed by the vendors at this time. The nozzle evaluations to be completed are indicated in Attachment B. Equipment supports will be evaluated after receipt of nozzle load information from the vendor.

Base plate loads were reviewed to determine if the new loads of record exceeded the plate loads used in the IE Bulletin 79-02 effort. If the loads were significantly exceeded, a new analysis was performed. If acceptability could not be justified, then modifications were performed. All the applicable base plates are acceptable for their new design loads. A total of 569 base plates for small bore (generally 3" to 6") piping supports have been evaluated utilizing the IEB 79-02 criteria. As a result, seven modifications were required and have been completed.

Branch lines have been evaluated for flexibility associated with imposed movements at the branch connection point for large bore piping. This evaluation was completed for 105 isometrics involved. Four modifications were required and have been completed.

As a result of the evaluation described above, the following summarizes the actions performed:

Clearance criteria modifications (shim plates or member spreading)	345
Existing support modifications (includes 4 branch line mods & 7 baseplate mods)	171
Added supports	32
Maintenance items (i.e., bolt tightening)	55
Piping changes	0

The final report for IEB 79-14 will be issued upon completion of the nozzle load and equipment support evaluation which we anticipate having complete by July 31, 1981.

Currently, the only condition expected to exceed the final acceptance criteria is associated with the steam line to the turbine driven Auxiliary Feed Pump, FW-P2/FW-T2. The calculated nozzle load is 304% greater than the allowable provided by the vendor. The thermal components of the calculated loads are significant and subsequently the calculated loads associated with the interim criteria of the IEB 79-07 task are 56% of the allowable. The piping associated with this condition is planned to be rerouted at the next scheduled outage. The rerouting will alleviate this condition. The turbine pump set has performed satisfactorily in the past under normal operating conditions, thus demonstrating that actual stresses during normal operation are significantly lower than calculated. In view of these facts, we request that the NRC staff approve the application of the Interim Criteria to the auxiliary steam line to the auxiliary feed pump turbine drive until the piping is rerouted.

If you have any questions concerning this response, please contact my office.

Very truly yours,

J. J. Carey

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Vice President, Nuclear

Attachments

cc: Mr. D.A. Beckman, Resident Inspector
U. S. Nuclear Regulatory Commission
Beaver Valley Power Station
Shippingport, PA 15077

U. S. Nuclear Regulatory Commission
c/o Document Management Branch
Washington, DC 20555

ATTACHMENT A

The following is a report of the percentage of supports and piping geometry that could not be inspected due to high radiation or inaccessibility:

System	No. of Supp. Analyzed	No. of Supp. Analyzed Not Inpsd.	Percent Not Inspd.	Isos Not Insp. For Geometry
CC	551	6	1%	1% of 55 Iso's
QS	103	0	0%	10.7% of 6 Iso's*
RS	133	2	1.5%	5.8% of 6 Iso's*
CH	340	16	5%	2.2% of 32 Iso's
SI	427	9	2%	1.3% of 31 Iso's
WR	324	2	1%	7.8% of 41 Iso's**
BR	38	6	16%	3% of 5 Iso's
All Other Systems	600	0	0	100% of 72 Iso's
TOTAL	2,516	41	1.63%	1% of 248 Iso's

* These percentages include large radius circular piping located on the reactor containment dome that could not by physically inspected, however this piping was visually inspected.

** This percentage includes piping located in the intake sump area of the intake structure and was not accessible.

ATTACHMENT B
STATUS OF EQUIPMENT
APRIL 2, 1981; 13387.02

EQUIPMENT NAME	EQUIP. MARK NO.	NO. UNITS	TOTAL NO. NOZZLES	NOZZLE LOAD/ALLOW COMPARED	NOZZLE STRESS	VENDOR CONF. REQ'D.	OUT TO VENDOR	VENDOR RESPOND	STRUCT. LOADS REQ'D.	SEISMIC LOADS CALC.	NOZZLE LOADS COMBINED	STRUCT. LOAD ACCEPTABLE
COOL.RECOV.FLTR.	BR-FL-1A&B	2	7	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	YES	CALC. IN CHECKING
CESIUM REMOVAL FILTER	BR-I-1A&B	2	4	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	YES	CALC. IN CHECKING
DEGASIFIER CIRC. PUMP	BR-P-7	2	2	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	YES	IN PROCESS
EXCESS LET DOWN HEAT EXCHANGER	CH-E-4	1	2	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	NO	
SEAL WATER FLTR	CH-FL-3	1	2	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	NO	
CHARGING PUMP	CH-P-1A, 1B, 1C	1	3	YES	ACCEPT	NO	NOT REQ'D.		NR	NR	NR	NR
VOL CONTROL TANK	CH-TK-2	1	3	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	YES	CALC. IN CHECKING
PRIMARY DRAINS TRANSFER TANK	DG-TK-1	1	1	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	YES	IN PROCESS
DIESEL GEN HEAT EX	EE-E-1A&B	2	5	NO ALLOW	TO VENDOR	YES	IN PROCESS*		NO	NR	NR	NR
EMERG'Y DIESEL GEN	EE-EG 1&2	2	11	NO ALLOW	TO VENDOR	YES	IN PROCESS*		NO	NR	NR	NR
FULL SIZE AUX FEED PUMP	FW-P2/FW-T2	1	1	YES	1 NOT ACCEPT †	YES	IN PROCESS*		YES	YES	YES	IN PROCESS
NEUTRON SHLD TNK COOL	NS-E-1	1	2	YES	ACCEPT	YES	IN PROCESS*		YES	YES	NO	
STEAM GEN. (SMALL BORE)	RC-E-1A, 1B, 1C	3	5	NO ALLOW	TO VENDOR	YES	IN PROCESS*		NR	NR	NR	NR
BORON INJECT.TNK	SI-TK-2	1	1	YES	ACCEPT	NO	NOT REQ'D.		YES	YES	NO	
CONT. RM. A/C	VS-AS 1B, 1A	1	6	NO ALLOW	TO VENDOR	YES	IN PROCESS*		YES	NO	NO	
CONT. RM A/C COND.	VS-E-4A, 4B	2	4	YES	ACCEPT	YES	IN PROCESS*		YES	YES	YES	CALC. IN CHECKING
SAFETY INJECTION ACCUMULATOR	SI-TK-1B	1	1	YES	ACCEPT	YES	IN PROCESS		YES	YES	YES	YES
LOW HEAD SAFETY INJECTION PUMPS	SI-P-1A,B	2	4	NO ALLOW.	ACCEPT	YES	IN PROCESS		YES	YES	YES	YES
REGENERATIVE (NON) HEAT EXCHANGER	CH-E-2	1	4	YES	ACCEPT	YES	IN PROCESS		YES	YES	YES	YES

† This item will pass interim criteria and permission is requested to continue operation with the requirement applicable to the interim criteria. See information supplied in report.

* All nozzle loads will be sent to vendor by April 22, 1981.

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