



Duquesne Light

436 Sixth Avenue
Pittsburgh, Pa.
15219

(412) 458-6000

July 30, 1979

Mr. Boyce H. Grier, Director
United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Supplemental Response to IE Bulletin 79-02

Gentlemen:

Duquesne Light Company submits the following justification for an interim startup which is scheduled for August 6, 1979. An initial report of Duquesne Light Company's response to I.E. Bulletin 79-02 was submitted on July 6, 1979. The initial report outlined the program undertaken and the results of inspection and analysis completed at the time of submittal. Summarized in Table 1 enclosed is the status to date of those baseplates and anchor bolts inspected, tested, and analyzed. A statistical analysis of the data presented in Table 1 supports a 95% or greater confidence level that the noted acceptance rates will attain and or remain between 96 and 98 per cent. The statistical analysis used is based on a method presented in an ASTM publication title "ASTM Manual of Presentation of Data and Control Chart Analysis" - STP-15D dated October, 1976.

Duquesne Light Company is committed to completing all analyses, inspections, and corrective actions prior to the plant start-up after the completion of the refueling outage.

The following analysis of the inspection and engineering data completed to date is presented as justification of system operability to permit the interim startup of Unit 1.

- a) Approximately 28 percent of baseplates identified applicable to 79-02 have been inspected and tested. Twenty-four percent of the baseplates in the Reactor Containment have been inspected and tested, and nine percent have been analyzed for flexibility.
- b) The support baseplates and anchor bolts surveyed for as-built conditions conform within 98 percent to the drawing of record.

Item# 37

C/37

(4)

- c) The torque testing of the anchor bolts currently reveals an acceptance of 97.0 percent for the 1930 anchors tested out of an expected population of 9,000 bolts. The unacceptable anchors are being repaired or replaced.
- d) The flexibility analysis procedure outlined in the initial report was used to analyze 160 baseplates and resulted in 12 plates requiring re-work. All these plates are acceptable for interim startup since the reported bolt deficiencies are being corrected and each of the anchors has a factor of safety greater than 2. One (1) support having two of the base requiring rework had loose bolts. This condition was reported in LER 79-20 and the anchors are being repaired. The baseplates were analyzed in two groups. Group 1 baseplates were analyzed assuming no bolt or as-built deficiencies. Group 2 baseplates were analyzed using field inspection results as described in Attachment C of the initial report.
- e) The data obtained from the flexibility analysis was used to evaluate each anchor's factor of safety. All anchors analyzed exhibited factors of safety greater than 2 and are considered to be acceptable for interim start-up. The following table presents the results of these analyses.

<u>No. of Plates</u>	<u>Factor of Safety</u>
12	2 < FS < 5
66	5 < FS < 10
80	FS > 10

The remaining anchors are stressed in shear only and therefore acceptable.

- f) Fifty-three (53) plates were deferred due to physical inaccessibility or high radiation levels in order to facilitate the initial inspection effort. It is intended to inspect, and test if necessary, these plates during the plant outage. Twenty-five (25) percent of these plates have been analyzed using Group 1 criteria, and passed flexibility analysis. The majority of these plates are located in the Auxiliary Building while 2 plates are located in the Reactor Containment. The justification required by 79-02 Revision 1 for those plates that cannot be inspected will be provided in the final report.
- g) Field inspections reported conditions which prevented the performance of testing or which were deviations from engineering drawings. Action Item Reports (AIR) were issued to request engineering evaluation of the reported conditions. All Action Item Reports on plates which are located within the Reactor Containment Building will be cleared prior to returning the Unit to power operations.

Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Supplemental Response to IE Bulletin 79-02
Page - 3 -

The results of the inspection, testing, and analysis of the baseplate and anchor bolts obtained to date have demonstrated a high percentage of acceptance. The results were obtained principally from safe shutdown inaccessible Category I lines; further, it is expected that this high confidence level of acceptance should continue. The data analyzed to date supports a 93 percent acceptance for baseplate flexibility, a 97 percent acceptance for anchor bolt installations, and a 98 percent compliance with the drawings of record. Statistical analysis then provides a 95% confidence factor that the acceptance rates for anchor installations will remain between 96 and 98 percent.

Based upon our review of the results of a very large sample of the base plates which are installed in the Beaver Valley Power Station, we have concluded that the quality of the installation is excellent and that unacceptable overstressed conditions due to plate flexibility are non-existent.

The results of the baseplate flexibility analysis performed to date indicate that greater than 93% of the installed baseplates have been designed with sufficient margin to withstand the calculated increased loadings resulting from the flexibility of the baseplates without infringing upon the anchor manufacturer's recommended factor of safety of 5.0.


Calculations performed to date do indicate that slightly less than 7% of the installed baseplates have something less than the desired factor of safety of 5.0, but in all of these cases the factor of safety exceeds 2.0. Most of the cases with a safety factor of less than 5.0 have a calculated factor of safety of greater than 3.0.

We, therefore, conclude that the operation of the unit for the approximately six or seven weeks of full power operation required to expend the nuclear fuel remaining in the first fuel cycle will not result in any threat to the health and safety of the general public.

We shall complete the inspections and analysis requested by I.E. Bulletin 79-02 and perform any modifications required to achieve the desired factor of safety for all baseplate anchor bolts during the fall refueling.

Full compliance with the requirements of the bulletin will be achieved prior to returning the unit to service at the conclusion of the refueling outage.

Very truly yours,


C. N. Dunn
Vice President, Operations

Attachment

- Stat analysis 95% or greater acceptance rate
- Complete all analysis, inspection & repair before restart.
- 23% of applicable base plots inspected and tested
- 24% " " inside containment
- 98% conform to "as built's"
- 97% of 1930 tested anchor bolts acceptable
- Population of 9000
- 12 of 160 B.P. analyzed flexibility require rework SF > 2
- 53 plots inaccessible
- 25% analyzed

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July 27, 1979
DVS:JJC:598

Updated Response to IE Bulletin 79-02

Mr. G. W. Moore:

Attached is an updated response to IE Bulletin 79-02 which presents a reasonably sound justification for the acceptability of the existing baseplates for the short period of operation required to burn down the core.

A copy of the signed page that contains Mr. Dunn's signature should be telecopied to Region I as soon as possible.


J. J. Carey

JJC/am

Attachment

CC: J. A. Werling

R. J. Swideraki

J. Latchaw

K. Burgundy



Duquesne Light

438 South Avenue
Pittsburgh, Pa.
15219

(412) 438-8000

Mr. Boyce M. Grier, Director
United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

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- c) The torque testing of the anchor bolts currently reveals an acceptance of 97.0 percent for the 1930 anchors tested out of an expected population of 9,000 bolts. The unacceptable anchors are being repaired or replaced.
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Based upon our review of the results of a very large sample of the base plates which are installed in the Beaver Valley Power Station, we have concluded that the quality of the installation is excellent and that unacceptable overstressed conditions due to plate flexibility are non-existent.

The results of the baseplate flexibility analysis performed to date indicate that greater than 93% of the installed baseplates have been designed with sufficient margin to withstand the calculated increased loadings resulting from the flexibility of the baseplates without infringing upon the anchor manufacturer's recommended factor of safety of 5.0.

Calculations performed to date do indicate that slightly less than 7% of the installed baseplates have something less than the desired factor of safety of 5.0, but in all of these cases the factor of safety exceeds 2.0. Most of the cases with a safety factor of less than 5.0 have a calculated factor of safety of greater than 3.0.

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Full compliance with the requirements of the bulletin will be achieved prior to returning the unit to service at the conclusion of the refueling outage.

Very truly yours,

C. M. Dunn
Vice President, Operations

Attachment

10 - STEAM GENERATOR RELAY UNIT
 11 - HIGH PRESSURE STEAM
 12 - SAFETY VALVE
 13 - CONTROL ROOM VENTILATION SYSTEM
 14 - STEAM GENERATOR RELAY UNIT
 15 - SAFETY VALVE
 16 - CONTROL ROOM VENTILATION SYSTEM
 17 - STEAM GENERATOR RELAY UNIT
 18 - SAFETY VALVE
 19 - CONTROL ROOM VENTILATION SYSTEM
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 98 - STEAM GENERATOR RELAY UNIT
 99 - SAFETY VALVE
 100 - CONTROL ROOM VENTILATION SYSTEM

DATE: JULY 29, 1962

FLATABILITY ANALYSIS OF BASEPLATE/ANCHOR BOLT TASK #2 BULLETIN 79-02

ITEM NO.	BASELINE SURVEY		TUNNEL SURVEY		TOTAL PLATES TESTED	TOTAL ANCHORS TESTED	ANCHORS NOT ACCEPTABLE	ANCHORS PERCENT ACCEPTABLE	PLAYERS REPAIRED (%)	ANCHORS (%)	CATCH PLATES ANALYZED (%)
	NO. OF PLATES	NO. OF ANCHORS	NO. OF PLATES	NO. OF ANCHORS							
1	12	38	5	38	38	1	96.4	2	3		
2	5	28	38	28	67	11	96.0	38	4		
3	127	141	8	141	141	16	94.3	5	5		
4	177	48	4	48	48	100	100				
5	4	12	3	12	12	100	100				
6	2	71	4	71	71	4	94.4	3	1		
7	26	12	3	12	12	100	100				
8	3	23	6	23	23	2	91.3	2	2		
9	11	156	53	156	156	1	100	1	3		
10	65	25	5	25	25	1	100	3	10		
11	52	60	9	60	60	1	98.3	2	22		
12	93	44	10	44	44	1	97.7	3	12		
13	54	34	7	34	34	5	94	1	12		
14	2	184	41	184	184	2	99.0	4	12		
15	23	14	4	14	14	100	100				
16	239	13	5	13	13	100	100				
17	21	78	23	78	78	100	100				
18	6	12	8	12	12	1	91.7	1	2		
19	27	3	3	3	3	7	97.6	5	12		
20	37	23	53	23	23	7	97.6	5	12		
21	8	1495	58	1495	1495	58	71.0	12	117		
22	21	12	1	12	12	1	91.7	1	12		
23	74	293	7	293	293	7	97.6	9	12		
24	237	426	58	426	426	58	71.0	12	117		
25	53	1495	58	1495	1495	58	71.0	12	117		
26	1460	426	58	426	426	58	71.0	12	117		

TABLE 1. INTERIM START-UP STATUS OF FIELD INSPECTION YES FLEXIBILITY ANALYSIS OF BASEPLATE/ANCHOR BOLT TASK 79-02 DUC-BEAVER VALLEY PUMP STATION UNIT

NO. OF PLATES ACCEPTED BEFORE INTERIM START-UP

12800 04



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We, therefore, conclude that the operation of the unit for the approximately six or seven weeks of full power operation required to expand the nuclear fuel remaining in the first fuel cycle will not result in any threat to the health and safety of the general public.

We shall complete the inspections and analysis requested by I.F. Bulletin 79-07 and perform any modifications required to achieve the desired factor of safety for all baseplate anchor bolts during the fuel refueling.

Full compliance with the requirements of the bulletin will be achieved prior to returning the unit to service at the conclusion of the refueling outage.

Very truly yours,



C. W. Dunn
Vice President, Operations

Attachment