TIE

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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.

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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.

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.

No. of Plates	Factor of Safety
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. [illegible] 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.

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 nonexistent.

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
C. N. Dunn
Vice President, Operations

Attachment

AJA = AIR EJECTOR DISCHARGE
BR = BORON RECOVERY
CC = COMPONENT COOLING
CH = CHARGING & VOLUME CONTROL
CV = CONTAINMENT VACUUM
CVP = CONTAINMENT VENTILATION & PRESSURE
DG = COOLING SYSTEM LOOP DRAINS
FC = FUEL POOL & PURIFICATION SYSTEM
GW = GAS WASTE
NSL = NEUTRON SHIELD TANK COOLING
OL = DIESEL GENERATOR OIL LINE
QS = QUENCH SPRAY
RC = REACTOR COOLANT
RH = RESIDUAL HEAT
RS = RECIRCULATION SPRAY
SDHV = STEAM DELAY HEAT LINE CONTROL VALVE
SHP = HIGH PRESSURE STEAM
SI = SAFETY INJECTION
VG = HYDROGENATED VENTS
VS = CONTROL ROOM VENTILATION SYSTEM
WAPD = STEAM GENERATOR AUXILIARY FEEDWATER PUMP DISCHARGE
WD = DEMINERALIZED WATER
WFPD = STEAM GENERATOR FEEDWATER PUMP DISCHARGE
WGCB = GENERATOR WATER BLOWDOWN
WR = RIVER WATER

STATUS OF FIELD INSPECTION, TESTING AND FLEXIBILITY ANALYSIS OF BASEPLATE/ANCHOR BOLT TASK IE BULLETIN 79-02

DATE: JULY 19, 1979

SYSTEMS	REACTOR				AUXILIARY BUILDING				FUEL BUILDING				M.S.V.B				SAFEGUARDS				DIESEL GENERATOR				SERVICE BUILDING				TUNNEL, TRENCH & INTAKE				TOTAL PLATES	TOTAL PLATES TESTED	TOTAL ANCHORS TESTED	ANCHORS NOT ACCEPTABLE	ANCHORS PERCENT ACCEPTABLE	PLATES DEFERRED (a)	AIR'S (d)		PLATES REWORK	GROUP 1 PLATES ANALYZED (b)	GROUP 2 PLATES ANALYZED (c)
	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED	TOTAL PLATES	PLATES TESTED	ANCHORS UNACCEPT	PLATES ANALYZED							FIELD	[illegible]			
AJA					4			1					8	5	1	4																	12	5	28	1	96.4		2			3	2
BR					5			2																									5									2	
* CC	135	56	10	14	175	88	18	30	16	8		7																	1	1	1		327	153	697	28	96.0	11	23		4	31	20
* CH	42	20	8	11	120	17		6																					9	1		2	177	38	141	8	94.3	16	3		5	7	12
* CV	4	4																															4	4	48		100						
* CVP	8	3																															8	3	12		100						
DG	2																																2										
FC	3								23	[illegible]	4																						26	21	71	4	94.4		3				
GW					3	3		1																									3	3	12		100					1	
NSL	12																																12										
* OL																					11	6	2										11	6	23	2	91.3		2				
* QS	24	14											27	11		3	14	8		2													65	33	156		100	1	1			3	2
* RC	52	5		10																													52	5	25		100				2	10	
* RH	93	9	1	22																													93	9	60	1	98.3	2	1			22	
* RS	47	10	1														12																59	10	44	1	97.7		3				
* SDHV													2																				2										
* SHP													23	7	3	1																	23	7	39	3	94		1				1
* SI	121	17	1		29	6		3					40	3			40	15	1	11					9								239	41	184	2	99.0	10	4			12	2
VG					21	4		1																									21	4	14		100						1
VS					6																												6	5	13		100		3				
* WAPD													27			12																	27									12	
* WD													37	23		2																	37	23	78		100		5			2	
* WFPD	8																																8										
* WGCB	20	3	1																		1												21	3	12	1	91.7		1				
* WR	11	3			87	16	6	12	13	4											17	6			23	1			74	24	1	3	227	53	293	7	97.6	9	5		1	12	3
TOTAL	582	144	22	57	450	139	24	56	52	33	4	7	124	49	4	22	110	23	1	13	29	11	2	0	32	1	0	0	84	26	1	5	1466	426	1945	58	97.0	49	57	0	12	117	43

NOTES
(a) DEFERRED PER SITE CRITERIA-HIGH RADIATION, INACCESSIBILITY
(b) GROUP 1 PLATES ANALYZED BY FLEXIBILITY ASSUMING NO FIELD DEFICIENCIES
(c) GROUP 2 PLATES ANALYZED BY FLEXIBILITY USING FIELD INSPECTION RESULTS
(d) ACTION ITEM REPORTS-DEFINE DEVIATIONS FROM DRAWING OF RECORD & CONDITIONS WHICH PREVENTED PERFORMANCE OF TESTING (TO BE COMPLETED BEFORE INTERIM START-UP)
* SAFE SHUTDOWN SYSTEMS

TABLE 1 INTERIM START-UP
STATUS OF FIELD INSPECTION, TESTING & FLEXIBILITY ANALYSIS OF BASEPLATES/ANCHOR BOLT TASK 79-02 DLC-BEAVER VALLEY POWER STATION-UNIT No. 1

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