



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

NUCLEAR PRODUCTION DEPARTMENT

October 18, 1982

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

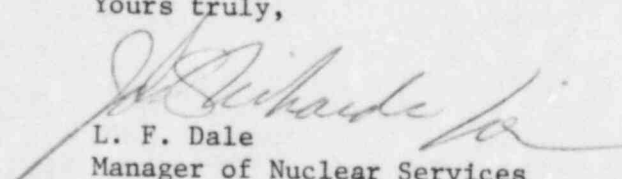
SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
License No. NPF-13
File 0260/L-814.2
Purge Valve Operability -
SSER 2, Section 22.2
(II.E.4.2)
AECM-82/488

In order to address the purge valve operability concerns in SSER 2, Section 22.2 (II.E.4.2), Mississippi Power & Light Company (MP&L) submitted a valve operability analysis in AECM-82/442. Subsequent to the submittal MP&L was advised that an NRC review of the operability analysis indicated that the disc pins in the Grand Gulf 20" purge valves were overstressed.

To respond to this additional concern, MP&L evaluated certified material test reports for disc pins of the same material used at Grand Gulf and at other plants. The MP&L evaluation concluded that overstressing would not occur. This information was relayed to the NRC during an October 8, 1982, meeting in Bethesda, Maryland. As requested during the meeting, MP&L is providing a summary of the evaluation as Attachment 1.

MP&L feels that AECM-82/442, supplemented by Attachment 1 to this letter, closes the purge valve operability issue in SSER 2, Section 22.2 (II.E.4.2). If you have any questions, please do not hesitate to contact us.

Yours truly,


L. F. Dale
Manager of Nuclear Services

8210200030 E

MJD/JDR:lm

Attachment: Evaluation of Valve Disc Pin Overstressing

cc: (See Next Page)

AE2R1

Member Middle South Utilities System

3001

cc: Mr. N. L. Stampley (w/a)
Mr. K. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. B. Taylor (w/o)

Mr. Richard C. DeYoung, Director (w/a)
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. J. P. O'Reilly, Regional Administrator (w/a)
Office of Inspection & Enforcement
Region II
101 Marietta Street, N.W., Suite 3100
Atlanta, Georgia 30303

Evaluation of Valve Disc Pin Overstressing

The disc pins in the Grand Gulf 20" purge valves are 0.750" diameter SA-320 B8M material. A certified material test report (CMTR) for the Grand Gulf pins is provided as Exhibit 1. Additional CMTRs for other disc pin applications of the SA-320 B8M material are also provided as Exhibits 2, 3, and 4. Pertinent information from the CMTRs is tabulated below:

<u>Disc Pin Diameter</u>	<u>Yield Strength (0.2% Offset)</u>
0.687"	48.5 ksi
0.750" (Grand Gulf)	54.5 ksi
0.750"	64.5 ksi
0.8125"	78.0 ksi

If the AISC Code method of calculating allowable shear stress is used, the above values of yield strength must be multiplied by 0.4. The resulting allowable shear stresses thus obtained would envelop the operational shear stress of 12.9 ksi which the Grand Gulf disc pins would experience during combined seismic and LOCA conditions.

In order to have an allowable shear stress value of 12.9 ksi, the actual yield strength would need to be as low as 32.2 ksi, which is a reduction of over 33% from the minimum value tabulated above. Such a reduction is not considered possible with the material in question for the following reasons:

- o Mechanical properties are dependent on chemical content which is normally consistent throughout a heat.
- o The actual mechanical properties obtained are such that small or minor variations in the properties would have negligible effect in the overall strength of the material.
- o Austenitic stainless steels are consistent in mechanical properties throughout a single heat. Mechanical properties are far less dependent on grain size than they are with carbon and low-alloy steels, and variations in grain size have but a minor effect on mechanical properties.



CARPENTER

TECHNOLOGY CORPORATION

P.O. BOX 662 • READING, PA 19603

0302

CERTIFICATE OF TESTS

Q1M41F013

SN D0029-2-3

Q1M41F015

ADDRESS SN D0029-2-4

FOX VALLEY MACHINING CO
LIBERTY STREET RD
PO BOX 1476
AUPORA IL 60505

CHICAGO WAREHOUSE
4501 JAMES PLACE
MELROSE PARK, IL (0304)

WORKER ORDER NO.	ORDER NO.	DATE SHIPPED
1758	CHW 1090	7/6/75

DESCRIPTION OF STEEL	SPECIFICATION
ARPENTER STNLS TYPE 31, F100 TO CG ANL	ASME-SA 479 CHEM & REC ASME SA 320 GR BRM CHEM

SIZE - 0.7500 IN. RD

EAT NO. - 811838

C	MN	S	P	S	CR	NI	U
0.06	1.63	0.02	0.02	0.021	17.12	12.4	50

MICROSTRUCTURE FREE FROM CONTINUOUS GRAIN BOUNDARY CARBIDE PRECIPITATION
ACRO ETCH TESTED AND APPROVED.
CAPABLE OF PASSING CORROSION TEST.

YIELD STRENGTH (0.2 PC) KSI	54.5
TENSILE STRENGTH KSI	83.5
ELONGATION IN 2 INS. PCT.	91.3
REDUCTION OF AREA PCT.	72.7
HARDNESS, BRINELL	170

REFERENCE ONLY

CONTINUOUS MARKED

Handwritten signature and date:
6-9-76

Handwritten: done A-K

I CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.
CARPENTER TECHNOLOGY CORPORATION

EXHIBIT 1

Handwritten signature: MWOL

CERTIFICATE OF TESTS

DATE 2/3/75



Fox Valley Machining Inc
P O Box 1426 Ballco Bldg
Aurora, Ill 60504

Post Office Box 100
Los Angeles, CA 90001

CUSTOMER ORDER NO	CAMP ORDER NO	DATE SHIPPED	WEIGHT
175H	1244 19-Port	2/3/75	568H

PRODUCT DESCRIPTION

Stainless #316 Type 316 Centerless ground

DISCUSSION

ASME SA 479 Chem & Mech Prop Only
ASME SA 320 Gr B8M Chem & Mech Only

DATE	HEAT NO	✓	MM	✓	✓	✓	✓	✓	✓
.687" RD	820582	.08	1.77	.59	-.028	-.030	17.52	12.41	2.15

WELD STRENGTH, ksi	22	48.5
TENSILE STRENGTH, ksi		85.0
ELONGATION IN 2	%	48.1
REDUCTION OF AREA	%	72.9
HARDNESS		159 HB

Micro free from continuous grain boundary carbide precipitation

Case No A-11

STATE OF **California**
COUNTY OF **Los Angeles**

Subscribed and Sworn to before me

On _____ day of _____ 19____

REV. C. O'NEILL, S.J. ONA & R. PIERI, S.

NOTE: THE VALUES AND UNITS LISTED BELOW ARE BASED ON THE ASSUMPTIONS OF THE DATA SHEET.

FOX VALLEY MACHINING CO INC
PC BOX 6
NORTH AURORA IL 60542

FOX VALLEY MACHINING CO INC
159 POPLAR PLACE
NORTH AURORA IL 60542

OUR ORDER NO.

4-51-20272

DATE

9/16/76

CUSTOMER ORDER # & DATE
28 05/7/6

CUSTOMER REF #

DISTRICT CHICAGO

SHIPPED FROM

SYRACUSE

DESCRIPTION OF MATERIAL

CRU 316 PLUS CGA

CHEM & MECH ONLY ASME SA 479 SA 320 GR B8M

PHYSICAL PROPERTIES

SIZE	QUANTITY	HEAT NO.	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	% ELONGATION IN 2"	% REDUCTION OF AREA	HARDNESS (BHN)
.750 RD	5748	K15873	64,500	92,000	48.0	74.5	BHN-187

Material continuous line mark with CRU 316, ASME SA 479, SA 320 GR B8M, Lot 01
Material identified with heat no. stamped on one end of each bar.

CHEMICAL PROPERTIES

HEAT NO.	C	SI	P	S	NI	CR	V	W	MO	CU	CO	RE
K15873	.06	1.70	.032	.023	.58	12.27	17.29		2.13			

HT. COOL No. B-L

BY CHARLES L. KENNEDY
Notary Public in the State of New York
Qualified in 1974 for the 24th District
My Commission Expires March 28, 1978

Approved & Accepted
John J. King
H.L.O.
9-24-76

SWORN TO AND SUBSCRIBED BEFORE ME THIS

16th DAY OF September 1976

M. Michael Kennedy
NOTARY PUBLIC

THE TEST RESULTS SHOWN IN THIS REPORT ARE CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF

John J. King
REPRESENTATIVE



CARPENTER
TECHNOLOGY CORPORATION
P.O. BOX 662 • READING, PA. 19603

CERTIFICATE OF TESTS

DATE: 4-14-76

ADDRESS REPLY TO:

FOX VALLEY MACHINING CO INC
198 POPLAR PL
P O BOX 6
NORTH AURORA, IL 60542

CHICAGO WAREHOUSE
4501 JAMES PLACE
MELROSE PARK, ILL. 60160

ORDER NO.	CARP. ORDER NO.	DATE SHIPPED	WEIGHT
2209	CHW 8834 L15236 BPT		259#
PRODUCT DESCRIPTION		SPECIFICATION	
TMS TYPE 316 PROJ 70 CD ANNEALED CG		ASME SA 479 CHEM & MECH ONLY ASME SA 320 GR B8M CHEM & MECH ONLY	

SIZE 0.8125 IN. RD

EAT NO. 822600

C	MN	SI	P	S	CR	NI	MO	CU
0.03	1.57	0.52	0.026	0.023	17.25	12.51	2.20	0.28

ICAC STRUCTURE FREE FROM CONTINUOUS GRAIN BOUNDARY CARBIDE PRECIPITATION
ACRC ETCH TESTED AND APPROVED
CAPABLE OF PASSING INTERGRANULAR CORROSION TEST

YIELD STRENGTH, (0.20 PCT.) KSI	78.0
TENSILE STRENGTH, KSI	97.5
ELONGATION IN 2 INS., PCT.	37.0
REDUCTION OF AREA, PCT.	73.8

ADDRESS: ERINELL - 207

Approved & accepted
John K. [signature]
4-28-76
H. Oa.

Code Mark No. BC

CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT AS CONTAINED
ON THE RECORDS OF THE COMPANY.

CARPENTER TECHNOLOGY CORPORATION

K. Cronin