



Duquesne Light

Nuclear Construction Division
Robinson Plaza, Building 2, Suite 210
Pittsburgh, PA 15205

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April 11, 1986

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. Peter Tam, Project Manager
Division of PWR Licensing - A
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
General Design Criterion 51

REFERENCE: 2NRC-3-087, dated November 14, 1983

Gentlemen:

The referenced letter provided a summary of the fracture toughness properties of the containment pressure boundary components with respect to General Design Criterion 51 (GDC 51). It reported a Lowest Service Metal Temperature (LSMT) value of 120°F for the feedwater system piping between the reactor containment penetration and the feedwater isolation valve. This temperature was based on steam generator hydrostatic testing. Subsequently, it has been determined that during startup and shutdown the LSMT is 70°F.

The feedwater check valve covers were the only components affected by this lower LSMT. The check valve covers have been replaced as described in the following attachments:

- 1.) This attachment is a revision of Attachment I of the referenced letter and includes the feedwater LSMT change and the feedwater check valve cover material change.
- 2.) This attachment encloses the replacement feedwater check valve cover material CMTRs, which supersede the cover material CMTR information contained in Section 13 of Attachment II of the reference letter.

Compliance with GDC51 has been accordingly maintained.

8604210081 860411
PDR ADOCK 05000412
A PDR

Boo!
/i/

United States Nuclear Regulatory Commission
Mr. Peter Tam, Project Manager
Grand Design Criterion 51
Page 2

DUQUESNE LIGHT COMPANY

By J. J. Carey
J. J. Carey
Vice President

JJS/jdw
JJS/NRC/GDC51
Attachment
AR/NAR

cc: Mr. P. Tam, Project Manager (w/a)
Mr. J. M. Taylor, Director (3) (w/a)
Mr. W. Troskoski, Sr. Resident Inspector (w/a)
Mr. L. Privity, Resident Inspector (w/a)
INPO Records Center (w/a)
NRC Document Control Desk (w/a)

SUBSCRIBED AND SWORN TO BEFORE ME THIS
9th DAY OF April, 1986.

Sheila M. Fattore
Notary Public

SHEILA M. FATTORE, NOTARY PUBLIC
SHIPPINGPORT TOWNSHIP, BEAVER COUNTY
MY COMMISSION EXPIRES OCT. 23, 1989
Member, Pennsylvania Association of Notaries

Attachment I

TECHNICAL SUMMARY GDC-51
BEAVER VALLEY POWER STATION - UNIT 2
DUQUESNE LIGHT COMPANY

1. Lowest Service Metal Temperature

The lowest service metal temperature (LSMT) for appurtenances of the containment liner, feedwater piping and valves, equipment hatch, and personnel airlock is identified as +70°F during normal operating maintenance.

The LSMT for the main steam piping and valve is 120°F. The LSMT in this evaluation applies during hot hydrostatic testing. The 120°F is a minimum value for hot hydrotest of the system and the actual test temperature would be higher to assure that the minimum is not violated.

2. Containment Pressure Boundary Materials

The materials of the containment pressure boundary reviewed within the context of GDC51 were:

a. Equipment Hatch; Personnel Airlocks

Equipment hatch bolt flange, 5 1/2 in. SA 516 Gr. 60 normalized, is identified as a limiting material. Summer 1977 addenda of ASME Class 2 rules would assign as Tndt of 0°F and an LPSMT of +58°F. However, CMTR indicates that the material was DWT tested to a measured NDT of -10°F, which would assign a lowest permissible service metal temperature (LPSMT) of +48°F to the material, allowing adjustment for thickness.

Personnel airlock head ring, 5 1/2 in. SA516 Gr 70 quenched and tempered, is identified as a limiting material. CMTR indicates that the material was DWT tested to a measured NDT of -10°F. Summer 1977 addenda of ASME Class 2 rules would assign an LPSMT of +48°F to the material, allowing adjustment for thickness.

b. Sleeves

(1) SA 333 Gr. 6 is applied in penetration sleeves with a max wall of 0.937 in., (18 in. electrical penetration). CMTR indicates that the material was normalized and DWT tested to a measured Tndt of -10°F. Summer 1977 addenda of ASME Class 2 rules would assign an LPSMT of +20°F to the material.

(2) SA 155 KCF60, 1/2 in. thick, (pens. 90 and 91) is exempted from testing as the materia' is less than 5/8 in. in thickness.

(3) SA 537 Cl. 2, 1 1/4 wall thickness (pens 73, 74, 75) is identified as a limiting material. CMTR indicates the material was quenched and tempered and DWT tested to a measured Tndt of -10°F. Summer 1977 addenda of ASME Class 2 rules would assign an LPSMT of +20°F to the material.

c. Flued Heads

SA 508 Class 1, max axial thickness of 9 in. main steam, is identified as a limiting material. CMTR indicates that the material was normalized and quenched and tempered and DWT tested to a measured Tndt of -30°F. Summer 1977 addenda Class 2 rules would assign an LPSMT of +45°F to the material allowing adjustment for thickness.

SA 508 Class 1, max axial thickness of 7 in. feedwater, is identified as a limiting material. CMTR indicates that the material was DWT tested to a measured Tndt of -40°F. Summer 1977 addenda Class 2 rules would assign an LPSMT of +27°F, allowing adjustment for thickness.

d. Process Pipe

Process pipes are integral with flued head forgings in flued head penetrations.

Process pipes, penetrating and welded to liner, were reviewed as sleeves with max wall of .432 in.

e. Multiple Penetration Header Plate

Limiting material is identified as SA 350 Gr. LF2, 2 1/4 in. thickness. CMTR indicates that the material was quenched and tempered and DWT tested to a measured Tndt of -10°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +20°F to the material.

f. Main Steam/Main Feedwater Systems

- (1) Main Steam System (MK MSS 169/170/171-1
169/170/171-3)

Piping:

SA106, 30 in. x 1.875 in. wall, by Cameron, normalized with no CVN. NUREG 0577 Fig. B.7, given that the material normalized, would place the Tndt in that population at or below the Table 4.4 NDT of +40°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +70°F to the material.

Fittings: (MK MSS 169/170/171-2 TYP)

Tee: SA234 WPCW, 30 in. x 1.875 in. minimum wall, applying SA106 Gr. C fittings quenched and tempered no CVN. NUREG 0577 Fig. B.7 would assign the material a Tndt in that population below +40°F (Table 4.4). Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +70°F to the material.

Bosses: SA105, normalized, -2 1/2 in. max thickness typical. NUREG 0577 Table 4.4 assigns a (NDT +1.3T)NDT of -5°F. Summer 1977 Addenda ASME Class 2 rules would assign an LPSMT of +25°F.

Headers(Relief Valve) MSS 105/106/107-1

SA106 Gr C, 35.945 nominal OD x 30.000 in. minimum I.D. x 2.750 in. wall by Cameron, normalized. NUREG 0577 Fig. B.7 would assign an NDT in that population at or below 40°F of Table 4.4, given that the material is normalized. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +75°F, allowing adjustment for thickness.

Header Cap:

SA234 WPC, 36 in. OD x 2.75 in. minimum wall, applying SA106 Gr.C with no CVN normalized. NUREG 0577 Fig. B.7 would assign an NDT in that population at or below +40°F of Table 4.4. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +75°F, allowing adjustment for thickness.

Header W/N Flanges

SA105, 6 in. x 1500 lb, normalized per CMTR. NUREG 0577 Table 4.4 assigns a (NPT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +25°F.

Main Steam Isolation Valve (HYV-101A/B/C)

Body: SA350 Gr. LF2: normalized, quenched, and tempered with a 2.28 in. minimum design thickness. NUREG 0577 Table 4.4 would assign a Tndt in the population below -28°F, given that the material was quenched and tempered. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +19°F, allow adjustment for thickness.

Bonnet: SA350 Gr. LF2, normalized, quenched, and tempered, 6.5 in. minimum design thickness. NUREG 0577 Table 4.4 would assign a Tndt in the population below -25°F, given that the material was quenched and

tempered. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +37°F, allowing adjustment for thickness.

Ball: Exempt - fabricated from austenitic stainless steel

Bolting: NA

Reducers: Ht216492 also applied for the bonnet, thus the reducers have the same heat treat as bonnet. The minimum design thickness is 1 7/8 in. Therefore the bonnet is limiting.

(2) Main Feedwater (105/106/107-1)

Pipe: SA106 Gr. C, 16 in. Sch. 80 (0.843 in. wall thickness) by Phoenix Steel. No heat treat nor CVN. However, Phoenix practice (as developed from Salem 2 review) discharges pipe to cooling at or above AR₃. Material can reasonably be characterized as normalized. NUREG 0577, Fig. B.7 would assign the material a NDT in that population at or below the NDT of +40°F of Table 4.4. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +70°F.

Fittings

Fittings: 3/4, 1 1/2, and 2 in. X3000 lb socket weld bosses of SA105 normalized with a wall thickness less than 2 1/2 in. NUREG 0577 Table 4.4 assigns a (NDT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +25°F.

Feedwater Check Valve (VCW-06082V305/306/307)

Body: SA 216 Gr WCB, 1.094 in. minimum wall design thickness, normalized, and tempered. NUREG 0577 Fig. B.2 data would locate the Tndt of the material in the population at or below the Table 4.4 NDT of +35°F, taking into account the size effort. Summer 1977 addenda, ASME Class 2 rules would assign an LPSMT of +65°F.

Disc: SA 216 Grade WCB, less than 2 1/2 thick, normalized and tempered. LPSMT same as as check valve body.

Cover: SA 516 Gr. 70, 3 1/2 in. thick, normalized. CMTR indicates that the material was normalized and DWT tested to a measured Tndt

of -10°F. Summer 1977 Addenda, ASME Class 2 rules would assign an LPMST of +35°F, allowing adjustment for thickness.

Bolts and Nuts: The bolts and nuts used in assembly of the check valve are SA-193 B7 and SA-194 2H respectively. NUREG 0577 Table 4.6 categorizes the material as having the least susceptibility to brittle fracture.

Feedwater Isolation Valve (2FWS-HYV157 A/B/C)

Body: SA 105, 22 1/2 in. dia x 1.008 in. wall, normalized. NUREG 0577 Table 4.4 assigns a (NDT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +25°F.

Bonnet: SA 105, 2.935 in. in thickness, normalized. NUREG 0577 Table 4.4 assigns a (NDT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +35°F, allowing adjustment for thickness.

Neck: SA 105, 1.015 in. in thickness, normalized. NUREG 0577 Table 4.4 assigns a (NDT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPMST of +25°F.

Retainer: SA 105, less than 2 1/2 in. in thickness, normalized. NUREG 0577 Table 4.4 assigns a (NDT +1.3T) NDT of -5°F. Summer 1977 addenda ASME Class 2 rules would assign an LPSMT of +25°F.

Gate: SA 351 Gr. CF8M, 10 in. x 1500 lb gate, casting. This is an austenitic stainless steel material and exempt from testing.

GDC-51 Fracture Prevention of Containment Pressure Boundary (Criterion 51)

Component System	Item (In)	Thick. (In)	Material	Heat Treatment	Impact Type	Nureg 0577	NDTT (°F)	LPMST (°F)	LMST (°F) See Note
Equip. Hatch	Bolt Flange	5½	SA 516 GR 60	Normalized	DWT -10°F	NA	-10	+48	+70
Personnel Air Lock	Head Ring	5½	SA 516 GR 70	Quenched Tempered	DWT -10°F	NA	-10	+48	+70
Sleeves	Elect. Pent. 18"	0.937	SA 333 GR 6	Normalized	DWT -10°F	NA	-10	+20	+70
	Pen 90 & 91	0.500	SA 155 KCF 60	Exempt - less than 5/8" wall thickness					
	Pen. 73, 74, 75	2½	SA 537 CL 2	Quenched & Tempered	DWT -10°F	NA	-10	+20	+70
Flued Heads	Main Steam	9(axial)	SA 508 CL 1	Normalized Quenched Tempered	DWT -30°F	NA	-30	+45	+70
	Feed Water	7(axial)	SA 508 CL 1	Normalized Quenched Tempered	DWT -40°F	NA	-40	+27	+70
Process	Integral with flued heads - see flued heads								
	Welded	0.432	(See Electrical Penetration for limiting Case)						
Multiple Penetration	Header Plate	2½	SA 350 GR LF2	Quenched Tempered	DWT -10°F	NA	-10	+20	+70
Main Steam	Piping	1.875	SA 106 GR C	Normalized	NA	Fig.B.7 Table4.4	+40	+70	+120
	Tee Fitting	1.875	SA 234 WPCW	Quenched Tempered	NA	Fig.B.7 Tbl.4.4	+40	+70	+120
	Boss Fitting	2½Max.	SA 105	Normalized	NA	Tbl.4.4	-5	+25	+120

GDC-51 Fracture Prevention of Containment Pressure Boundary (Criterion 51)

Component System	Item (In)	Thick. (In)	Material	Heat Treatment	Impact Type	Nureg 0577	NDTT (°F)	LPMST (°F)	LMST (°F) See Note	
Main Steam (Cont)	Header (Relief Valve)	2.75	SA 106 GR. C	Normalized	NA	Fig.B.7 Tbl 4.4	+40	+75	+120	
	Header Cap	2.75	SA 234 WPC	Normalized	NA	Fig.B.7 Tbl 4.4	+40	+75	+120	
	Header Weld Neck Flange	3.25	SA 105	Normalized	NA	Tbl 4.4	-5	+30	+120	
	Isolation Valve Body	2.28	SA 350 GR. LF2	Normalized Quenched Tempered	NA	Tbl 4.4	-28	+19	+120	
	Isolation Bonnet	6.5	SA 350 GR LF2	Normalized Quenched Tempered	NA	Tbl 4.4	-25	+37	+120	
	Isolation Valve Ball		Exempt - fabricated from austenitic stainless steel							+120
	Isolation Valve Reducers	1 7/8	Same heat as bonnet, therefore bonnet is limiting							+120
Main Feed Water Piping		0.843	SA 106 GR. C.	Normalized	NA	Fig.B.7 Tbl 4.4	+40	+70	+70	

GDC-51 Fracture Prevention of Containment Pressure Boundary (Criterion 51)

Component System	Item (In)	Thick. (In)	Material	Heat Treatment	Impact Type	Nureg 0577	NDTT (°F)	LPMST (°F)	LMST (°F)
Main Feed Water	Fittings	2½max.	SA 105	Normalized	NA	Tb14.4	-5	+25	+70
	Check Valve Body	1.094	SA 216 GR WCB	Normalized Tempered	NA	Fig.B.2 Tb14.4	+35	+65	+70
	Check Valve Disc	2½max	SA 216 GR 70	Normalized	NA	Fig.B.2 Tb14.4	+35	+65	+70
	Check Valve Cover	3½max.	SA 516 GR 70	Normalized	DWT -10°F	NA	-10	+35	+70
	Check Valve Bolts & Nuts	1 3/8 max.	SA 193 B7 SA 194 2H	NA	NA	Tb14.6	Least Susceptibility to Failure		
	Isolation Body	1.008	SA 105	Normalized	NA	Tb14.4	-5	+25	+70
	Isolation Valve Bonnet	2.935	SA 105	Normalized	NA	Tb14.4	-5	+35	+70
	Isolation Neck	1.015	SA 105	Normalized	NA	Tb14.4	-5	+25	+70
	Isolation Valve Retainer	Less than 2½	SA 105	Normalized	NA	Tb14.4	-5	+25	+70

GDC-51 Fracture Prevention of Containment Pressure Boundary (Criterion 51)

Component System	Item (In)	Thick. (In)	Material	Heat Treatment	Impact Type	Nureg 0577	NDTT (°F)	LPMST (°F)	LYST (°F)
Main Feedwater	Isolation Valve Gate		SA 351 GR CF8M	Exempt - Stainless Material					

Note 1 The 120 F for the main steam is a minimum for hot hydrotest of the system and the actual temperature would be higher to assure that the minimum is not violated.

ATTACHMENT II

CMTRs
FOR
REPLACEMENT
FEEDWATER
CHECK VALVE COVERS



ATWOOD & MORRILL CO., INC.

DESIGNERS AND MANUFACTURERS SINCE 1900

285 CANAL STREET • SALEM, MASSACHUSETTS 01970 • 617 744-5690 • TELEX 94-0299 • TWX 710 347-0220

September 30, 1985

Mr. Kari Luuri 245/8

STONE & WEBSTER ENGINEERING CORP.
P.O. Box 2325
Boston, MA 02107

Subject: Drop Weight Testing for Covers
S&W P.O. 12241-2BV-20
A&M 24169-01

Dear Mr. Luuri;

Please find enclosed a corrected documentation package for the above referenced parts. The package has been ammended to include Drop Weight Testing as required by your specification.

Should you need more assistance please contact me directly.

Very truly yours,

ATWOOD & MORRILL CO., INC.

Alan C. Smith
Quality Assurance

ACS/mf

**FORM N-2 N OR NPT CERTIFICATE HOLDERS' DATA REPORT FOR IDENTICAL
NUCLEAR PARTS AND APPURTENANCES***

As Required by the Provisions of the ASME Code, Section III, Division 1
Not To Exceed One Day's Production

1. Manufactured and certified by Atwood & Morrill Co., Inc. 285 Canal Street, Salem, Ma. 01970
(name and address of certificate holder)

2. Manufactured for Stone & Webster Corp. P.O. Box 2325, Boston, Ma. 02107
(name and address of purchaser)

3. Location of installation Beaver Valley Power Station- Unit No. 2 Shippingport, Pa.
(name and address)

4. Type 23997-C Rev.1 SA516-Gr.70 70,500 PSI N/A 1984
(drawing no.) (mat. spec. no.) (tensile strength) (CRN) (year built)

5. ASME Code, Section III: 1974 Summer-74 2 N/A
(edition) (addenda) (class) (Code Case no.)

6. Fabricated in accordance with Const. Spec. (Div. 2 only) N/A Revision N/A Date N/A
(No.)

7. Remarks: Ref. A&M Spare Parts Replacement Covers for prior
Order No. 24169-01 A&M S.O. 13540-03 for 16" 600 Lb.
Check Valves per Design & Spec.
2BVS-20 Add. 2 dated 12-14-83

8. Nom. thickness (in.) N/A Min. design thickness (in.) N/A Dia. ID (ft. & in.) N/A Length overall (ft. & in.) N/A

9. When applicable, Certificate Holders' data reports are attached for each item of this report:

Part or Appurtenance Serial Number	National Board No. in Numerical Order	Part or Appurtenance Serial Number	National Board Number in Numerical Order
(1) <u>Heat No.</u>	<u>N/A</u>	(26)	
(2) <u>801809490-830546</u>		(27)	
(3)		(28)	
(4) <u>S/N 1</u>		(29)	
(5) <u>S/N 2</u>		(30)	
(6) <u>S/N 3</u>		(31)	
(7)		(32)	
(8)		(33)	
(9)		(34)	
(10)		(35)	
(11)		(36)	
(12)		(37)	
(13)		(38)	
(14)		(39)	
(15)		(40)	
(16)		(41)	
(17)		(42)	
(18)		(43)	
(19)		(44)	
(20)		(45)	
(21)		(46)	
(22)		(47)	
(23)		(48)	
(24)		(49)	
(25)		(50)	

10. Design pressure N/A psi Temp. N/A °F. Hydro. test pressure 2200 PSI at temp. °F.
(when applicable)

*Supplemental information in form of lists, sketches or drawings may be used provided (1) size is 8 1/2 x 11, (2) information in items 2 and 3 on this data report is included on each sheet, (3) each sheet is numbered and number of sheets is recorded at top of this form, and (4) each additional sheet shall be signed by the Certificate Holder and the ANI.
(6/83)
This form (E00040) may be obtained from the Order Dept., ASME, 345 E. 47th St., New York, N.Y. 10017

ATWOOD & MORRILL CO., INC.

DESIGNERS AND MANUFACTURERS

PHONE 617-744-5690
TELEX 94-0290

Special Valve and Control Equipment
POWER PLANT · OIL INDUSTRY · MARINE AND INDUSTRIAL SERVICE

SALEM, MASSACHUSETTS 01970

* Corrected 1/20/85
ACS

CERTIFICATE OF COMPLIANCE

Date December 14, 1984

Customer Stone & Webster Engineering Corp.

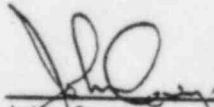
Customer P.O. Number 12241-2BV-20 *

A&M S.O. Number 24169

Description:

Item 01 (3) Covers Heat/Serial No. 801809490-830546
S/N 1
S/N 2
S/N 3

We hereby certify that the product described above, shipped against the subject order, conforms to all specifications and instructions in the contract to the best of our knowledge and belief.



John Covey
Manager of Quality Assurance

cc: Customer (4 Copies)
cc: w/shipment
Order File 24169

3 cc sent N-2 r Hydro
1/21/85 to
site
with: J. Wisniewski

QC-F-101

VALVE AND FLOW CONTROL EQUIPMENT SPECIALISTS
POWER PLANT, OIL & GAS, MARINE & INDUSTRIAL SERVICE

Telex To Keri
LURI 589 5757
Floor 8



ATWOOD & MORRILL CO. INC.

DESIGNERS AND MANUFACTURERS SINCE 1900

285 CANAL STREET • SALEM, MASSACHUSETTS 01970 • PHONE 617 744-5690 • TELEX 94-0299

MATERIAL CERTIFICATION STATEMENT


A&M Sales Order 24169-01

HT# 801B09490-B30546

Part COVERS

Identification S/N's 1-2-3

Atwood & Morrill Co., Inc. certifies that the above materials meet or exceed the requirements of the 1974 Edition, Summer 74 Addenda of the ASME Code.



Alan C. Smith
Quality Assurance

COVERS 24169-01



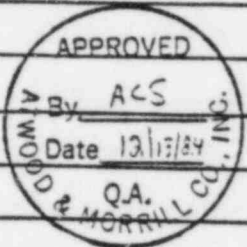
MILLS ALLOY STEEL COMPANY
Twinsburg, Ohio 44087

CERTIFICATE OF CONFORMANCE

CUSTOMER
Atwood & Morrill Company
285 Canal Street
Salem, MA 01970

DATE 11/16/84
OUR ORDER NO. 36612-N
YOUR ORDER NO. A2397E4

ITEM	ITEM DESCRIPTION	HEAT NUMBER (and letter code when applicable)
	ASME SA-516 Grade 70 carbon steel plate	
1	3pcs. 4 x 24-1/2 OD	801B09490-230546



REPORT OF
CHEMICAL & PHYSICAL
ACCEPTED
BY McGraw-Hill
DATE 12-13-84
ATWOOD & MORRILL CO. INC.
Quality Assurance

This is to certify that the material furnished for your order and described above, complies to the requirements of the applicable material specifications, as reported on the attached copies of the manufacturer's certified material test reports, and meets all requirements of your purchase order.

(THE FOLLOWING APPLY AS INDICATED)

- This is to certify that the material supplied for your order conforms to the requirements of specification;
- This is to certify that the material furnished for your order was supplied in accordance with our identification and verification program per the quality requirements of ASME Section III, Division 1, Subarticle NCA 3800/NA3700 and complies to the applicable requirements, as specified, of ASME Section II, Subsection NC Class 2 1983 Edition Winter of 1983 Addenda.
- This is to certify that repair by welding was not performed on the material described above.
- This is to certify that to the best of our knowledge this material, during the manufacturing processes, tests and inspections, has not come into direct contact with mercury or any of its compounds nor with any mercury containing devices employing a single boundary of containment.
- This is to certify that your order was furnished in accordance with the following specifications and/or procedures:

Sw
12/13/84

MILLS ALLOY STEEL COMPANY

BY Lisa Reich
Lisa Reich - Documentation Secretary

ASME QUALITY SYSTEM CERTIFICATE
(Materials) #QSC-324
Expires March 24, 1987

T-3537

BETHLEHEM STEEL CORPORATION
METALLURGICAL DEPARTMENT

53864N

BURNS HARBOUR PLANT

REPORT OF TESTS AND ANALYSES

SHIPMENT NO. 803-16377	DATE SHIPPED 9-18-84	CAR OR VEHICLE NO. KAPLAN	TRK 3	PAGE 1
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SOLD TO: MILLS-ALLOY STEEL CO
BOX 187
TWINSBURG OH 44087

SHIP TO: MILLS-ALLOY STEEL CO
8383 BUYLE PKWY
TWINSBURG OH 44087

MATERIAL	SERIAL NUMBER	PAT. NO.	HEAT NUMBER	SIZE AND QUANTITY				WEIGHT POUNDS	YIELD POINT PSI	TENSILE STRENGTH PSI	ELONG.		RED. S.
				NO. PCS	THICKNESS INCHES	WIDTH OR DIA. INCHES	LENGTH INCHES				IN	%	
PLATES			ASME SA516 GR 70 PVO WINTER 83 ADD CH-V SA2058 MULT L 15FTLB AT -20F INFO L MILS&SHR AT -20F BEND TEST SA20514 60 GAS CUT 4 SIDES NORMALIZED										
MFST			LIFT MAX 20 TON-SIZES SEP IN ACCORD W/ACCEPTED QA PROG DTD 1/4/82 PER ASME SECT 3 NCA 3800 AUDITED & APPROVED BY MILLS ALLOY ON 8/16/83 P69 TRF.										
			CO# 3854JSN GH 015-1794B										
			PLATES HEAT TREATED WITH TEST SPECIMENS ATTACHED AND YIELD STRENGTH & .5% E.L.O.										
B 10136			802B40540	1	5	96	120	16335	51000	76900	2	22	
					N	1650	DEG F - 290 MIN						
B 30546			801B09490	1	4	96	240	26137	40600	70500	2	30	
					N	1650	DEG F - 230 MIN						

REPORT OF
CHEMICAL & PHYSICAL
ACCEPTED

QA
REVIEWED
M.A.S. CO.

9/25/84

BY: 11/5/84
DATE: 12-13-89
ATWOOD & MORILL CO. INC.
Quality Assurance

SERIAL NUMBER	PAT. NO.	HEAT NUMBER	HARD	MESH	THICKNESS INCHES	TYPE	SIZE	DIR.	TEST TEMP F	CHARPY IMPACT ENERGY FT-LBS			SHEAR (15)			LAT. EXP. MILS		
										1	2	3	1	2	3	1	2	3
B 10136		802B40540		OK	5.000	V	FULL	L	-20	67	72	73	47	52	58	62	59	63
B 30546		801B09490		OK	4.000	V	FULL	L	-20	71	58	48	60	57	44	42	47	40

HEAT NUMBER	CHEMICAL ANALYSIS														MICROALLOY GRAIN SIZE	
	C	Mn	P	S	Si	Ca	Ni	Cr	Mo	V	Ti	Al	B	Co		N
802B40540	.21	1.07	.012	.022	.190											
801B09490	.21	1.02	.016	.021	.206											

SUBSCRIBED AND SWORN TO BEFORE ME
THIS 14th DAY OF September 1984
[Signature]
NOTARY PUBLIC
FOSTER COUNTY INDIANA
MY COMMISSION EXPIRES JULY 31, 1988

I CERTIFY THAT THE ABOVE RESULTS ARE A TRUE AND CORRECT COPY OF RECORDS PREPARED AND MAINTAINED BY BETHLEHEM IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATION CITED ABOVE.

CHIEF METALLURGIST: [Signature]



PRL Industries, Inc.

CORNWALL, PENNSYLVANIA 17018
TELEPHONE (717) 273-6787
TELEX 84-2372

24169-001

CUSTOMER ATWOOD + MORRILL CO. P.O. NO. AM42462
SPECIFICATION ASME SA516 GRADE 70
SHOP ORDER NO. 342 LAB NO. 2348

NIL DUCTILITY TRANSITION TESTS USING P3 SPECIMENS

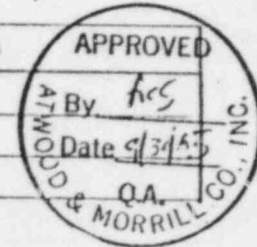
Ht. No.	No Break Test Temp	No Break Test Temp	Break Test Temp	T NDT	T Cv-60°F	RT NDT	Orientation of Test Specimen
801809490- 830546	-10°F	-10°F	N/A	< -10°F	N/A	N/A	Transverse at 1/4 T

BEND TESTS

Ht. No.	Size	Orientation	# of tests	Accept	Reject	Comments

INTERGRANULAR CORROSION TESTS IN ACCORDANCE WITH

Ht. No.	Size	Current A/Cm2	H.T. Cond.	Sensitizing Temp	Accept	Reject	Comments



HEAT TREATMENT

COMMENTS: We certify that the services on AsM P.O. No. AM42462 have been supplied in accordance with and meet the requirements of ASME Sec III, Div. 1 1983 Ed. with Winter 1983 Add. and the material specification

BY J. R. Whitney Lab Mgr

DATE 9-20-85

A & M TEST REPORT

N^o 7111

Date 12-7-84

Customer name STONE + WEBSTER	Valve type 16" 600 # SPARE PART COVER	A & M Shop Ord. No. 24169-01
Valve or Assembly Serial No. SN-1	Procedure No. 300-13540	Revision 2

TESTS	TYPE	PRESSURE	ALLOWABLE LEAKAGE	ACTUAL LEAKAGE	TEST TIME	TESTER
HYDRO <i>Mauge #</i> 306	SHELL					<i>John A. M</i> <i>12/7/84</i>
	FINAL	2200			20 min	
SEAT						
OPERATIONAL						
LEAKAGE						
	PISTON					
	HELIUM					

ADDITIONAL TESTS, REMARKS: _____

A & M TEST REPORT

No. 7112

Date 12-7-84

Customer name <i>Stimp + Webster</i>	Valve type <i>16" 600#</i> <i>Spare Part Cover</i>	A & M Shop Ord. No. <i>24169-01</i>
Valve or Assembly Serial No. <i>SN-2</i>	Procedure No. <i>300-13540</i>	Revision <i>2</i>

TESTS	TYPE	PRESSURE	ALLOWABLE LEAKAGE	ACTUAL LEAKAGE	TEST TIME	TESTER
HYDRO <i>Gauge # 306</i>	SHELL					<i>Law AMI 12/7/84</i>
	FINAL	<i>2200</i>			<i>20 min</i>	
SEAT						
OPERATIONAL						
LEAKAGE	PISTON					
	HELIUM					

ADDITIONAL TESTS, REMARKS: _____

A & M TEST REPORT

N^o 7113

Date 12-7-84

Customer name <i>Stone + Webster</i>	Valve type <i>16" 600²</i> <i>Spur Part Cover</i>	A & M Shop Ord. No. <i>24169-01</i>
Valve or Assem ^y : Serial No. <i>SN-3</i>	Procedure No. <i>300-13540</i>	Revision <i>2</i>

TESTS	TYPE	PRESSURE	ALLOWABLE LEAKAGE	ACTUAL LEAKAGE	TEST TIME	TESTER
HYDRO <i>Gauge # 306</i>	SHELL					<i>LEONARD G. OUELLETTE TESTER 12/7/84</i>
	FINAL	<i>2200</i>			<i>20 min</i>	
SEAT						
OPERATIONAL						
LEAKAGE	PISTON					
	HELIUM					

ADDITIONAL TESTS, REMARKS: _____

CR Bishop, Attn Records
 Management Center(enc)
 Site dist by RMC,
 1 copy each to:
 CEEwing
 RJSwiderski
 RCoupland
 RRhein(enc)
 JFZagorski(enc)
 ACMcIntyre-2(2 enc)/SEG
 LRicci/PE Bk
 JSutton

LRicci/PM Bl
 JEWilliams
 LRicci/Job
 Bk 207-1.9(enc)
 Official File
 (Fld Acct)
 JGProven
 CSS 470/4
 (B4-12241-4460)
 General Files
 PWward(enc)

Copy to:
 RJWashabaugh-3(3 enc)
 FACavalier-1
 HMJimenez
 JLKoeppinger
 WGLogan
 RCSchopper
 FSalmom
 JEWalsh
 DWDenning-3
 LFirestone-Ohio Ed.
 JSyzSlowSki(enc)
 GKurtz(enc)

Mr. R. J. Washabaugh
 BV-2 Project Manager
 Duquesne Light Company
 Robinson Plaza Bldg. No. 2
 Suite 210
 PA Route 60
 Pittsburgh, PA 15205

November 3, 1983

J.O.No. 12241
 2DLS-19156
 LR8311030003

BEAVER VALLEY POWER STATION - UNIT NO. 2
 J.O.NO. 12241-O.F.E.NO. 10080-C.O.NO. 6289
FRACTURE PREVENTION OF CONTAINMENT BOUNDARY GDC-51

Attached is a summary of the fracture toughness properties of the containment boundary in accordance with General Design Criterion 51 (GDC-51). The materials forming the BVPS-2 containment pressure boundary meet the requirements of GDC-51, Fracture Prevention of Containment Pressure Boundary.

It should be noted that the lowest permissible service metal temperature of the cover for the feedwater check valve is 122°F, whereas the lowest system service metal temperature is 120°F. We believe this is acceptable, as the 120°F is a minimum temperature for hot hydrotest of the system and under normal test conditions would be higher to assure the minimum is not violated.

The criteria used to determine the lowest permissible service metal temperature (LPSMT) values of the pressure boundary components are more stringent than those committed to by the BVPS-2 FSAR.

These criteria are:

1. The use of the Class 2 acceptance criteria from the summer 1977 addenda of the ASME code Section III. The code in effect for BVPS-2 is the ASME code, Division I, Section III, 1971 edition through and including the winter 1972 addenda which does not impose impacts criteria on the piping system, neither Charpy V-notch (CVN) nor Drop Weight Tests (DWT).
2. The use of the criteria in NUREG-0577 for determining the LPSMT is in lieu of the Charpy V-notch (CVN) data enclosed on the Certified Mill Test Reports (CMTR). The CVN data was not used due to Mr. Halapatz's (of the NRC) opinion that CVN data does not represent a true Nil Ductility Transition Temperature (NDTT). The opinion

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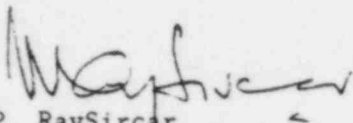
2

is based on a number of reports which document a wide range of CVN data for similar materials. Drop Weight Test data is used where available.

The summary of the properties for the materials, heat treatment methods, LPSMT, and the lowest service metal temperature are enclosed in Attachment I. Attachment II encloses the CMTRs for the information of Attachment I.

After your review of this material, we would be ready for a final review meeting with Mr. J. Halapatz of NRC.

Should you have any questions, please contact our P. W. Ward at (617) 589-5413.


P. Ray Sircar
Project Engineer

Enclosures

PWW:cs

AR/NAR

CRBishop, Attn Records

Management Center

Site dist by RMC,

1 copy each to:

CEEwing

RJSwidorski

RCoupland

RRhein

JFZagorski

ACMcIntyre-2/SEG

LRicci/PE Bk TWaters

GMHughes BCKuechler

JSutton MLynch

LRicci/PM Bk

JWilliams

LRicci/Job

Bk 231-10.5

Official File

(Fld Acct)

JGProven

CSS 470/3(B4-12241-5846)

HMKrafft

PCTalbot

JENiland

General Files

~~PLIard~~ 470/3

Copy to:
 RJWashabaugh-3
 FACavalier-1
 HMJimenez
 JLKoeppinger
 WGLogan
 RCSchopper
 FSalmon
 JEWalsh
 DWDenning-3
 LFirestone-Ohio Ed.
 JJCarey

Mr. R. J. Washabaugh
 BV-2 Project Manager
 Duquesne Light Company
 Robinson Plaza Bldg. No. 2
 Suite 210
 PA Route 60
 Pittsburgh, PA 15205

June 28, 1984

J.O.No. 12241

2DLS-21934

LR8400280004

BEAVER VALLEY POWER STATION - UNIT NO. 2
 J.O.NO. 12241-O.F.E.NO. 10080-C.O.NO. 6289
FRACTURE PREVENTION OF CONTAINMENT BOUNDARY GDC-51

Reference: SWEC letter 2DLS-19156 dated November 3, 1983

The referenced letter stated that the BVPS-2 reactor containment pressure boundary materials met the requirements of 10CFR50, Appendix A, GDC-51. This conclusion with respect to the feedwater system materials was based on the lowest service temperature of 120°F required for hydrotesting the steam generator. However, it has been subsequently determined that lower temperatures are expected during startup and shutdown.

A new lowest service temperature of 70°F is anticipated for the feedwater system between the reactor containment penetration and the feedwater isolation valve. This portion of the system includes two short lengths of pipe, a check valve, and the isolation valve.

The component with associated lowest permissible metal service temperatures (LPMST) determined in accordance with NUREG 0800, SRP-6.2.7, affected by the lower service metal temperature is the feedwater check valve cover. The existing covers are SA-515 Grade 70 with a LPMST of 122°F. The covers will be replaced with the following cost and schedule:

Three check valve covers at \$1,750 each for a total of \$5,250. Delivery 10-12 weeks after receipt of order. The covers will have material drop weight tested to ensure a NDT of -10°F and LPMST of 45°F.

The plant systems can be operated to maintain a 70°F minimum operating temperature. These operating procedures will support a revised position on GDC-51 that, due to material replacement, a lowest metal service temperature of 70°F for the main feedwater system components included in the reactor containment pressure boundary will be acceptable.

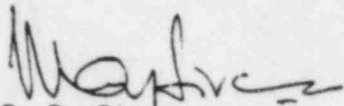
024 27 A
COPY

RJW

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A revision to the report, submitted by the referenced letter, will be forwarded upon receipt of material documentation for the feedwater check valve replacement covers.

The cost of the replacement materials is included in Revised Estimate No. 7.



P. Ray Sirdar
Project Engineer

PWW:cs

AR (NAR)