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 FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528  
 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529  
 AUTH.NAME AUTHOR AFFILIATION  
 VAN BRUNT,E.E. Arizona Public Service Co.  
 RECIP.NAME RECIPIENT AFFILIATION  
 SPENCER,G.S. Region 5, San Francisco, Reactor Construction & Engineer

SUBJECT: Final deficiency rept re Borg-Warner motor-operated gate valve failure to close under operating conditions.Caused by inadequate guiding of valve gate.Valves will be reworked by 810101.Unit 3 valve design change planned.

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NOTES:Standardized Plant. 05000528  
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50-528

ARIZONA



PUBLIC SERVICE COMPANY

P. O. BOX 21666 • PHOENIX, ARIZONA 85036

October 31, 1980  
ANPP-16653-BSK/JAR

U. S. Nuclear Regulatory Commission  
Region V  
Walnut Creek Plaza - Suite 202  
1990 North California Boulevard  
Walnut Creek, California 94596

Attention: Mr. G. S. Spencer, Chief  
Reactor Construction and  
Engineering Support Branch

Subject: A 50.55(e) Reportable Condition Relating to Borg-  
Warner Motor Operated Gate Valve Failure to Close  
Under Operating Conditions  
Final Report  
File: 80-019-026

Reference: Telephone Conversation between J. Eckhardt and  
B. S. Kaplan on October 1, 1980 (DER 80-30)

Dear Sir:

Attached, is our final written report of the reportable deficiency,  
under 10CFR50.55(e), referenced above.

Very truly yours,

E. E. Van Brunt, Jr.  
APS Vice President  
Nuclear Projects  
ANPP Project Director

EEVBJr/BSK:skc

Attachment

RECEIVED DISTRIBUTION  
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U. S. Nuclear Regulatory Commission  
Attention: Mr. G. S. Spencer, Chief  
ANPP-16653-BSK/JAR  
October 31, 1980  
Page 2

cc: ~~Victor Stello~~, Jr., Director  
U. S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Washington, D. C. 20555

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FINAL REPORT  
REPORTABLE DEFICIENCY 50.55(e)  
ARIZONA PUBLIC SERVICE COMPANY (APS)  
PVNGS UNITS #1 and #2

I. Description of Deficiency

During testing at Duke Power, a Borg-Warner 3", 1500#, motor operated gate valve failed to completely close when actuated under operating conditions of 2,485 psig at 650°F with a flow rate of 220,000 pounds per hour of steam. Extensive testing by Duke Power in conjunction with Borg-Warner, Nuclear Valve Division, determined the potential failure to be inadequate guiding of the valve gate.

Borg-Warner has filed a 10CFR Part 21 Notification Report with the NRC. Reference attached letter V-CE-10009, dated March 14, 1980.

II. Analysis of Safety Implications

This condition is considered reportable based on the following considerations:

- If not detected and corrected, the valves could possibly malfunction as indicated above.
- The supplier has determined that modification is required and is taking the necessary actions to facilitate rework of the valves.

III. Corrective Action

The valves delivered to the jobsite will be reworked by Borg-Warner in cooperation with Combustion Engineering and Bechtel construction forces. The rework is forecast to be completed by January 1, 1981. Reference attached letter V-CE-11058, dated September 11, 1980. Rework will be documented on Bechtel NCR P-A-1643.

The Bechtel Tag Numbers are: 1-J-SIA-HV604, 2-J-SIA-HV604, 1-J-SIB-HV609, and 2-J-SIB-HV609. Unit 3 valves will have the design change incorporated prior to shipment.





C-E Power Systems  
Combustion Engineering, Inc.  
1000 Prospect Hill Road  
Windsor, Connecticut 06095

Tel. 203/688-1911  
Telex: 99297

**CE POWER  
SYSTEMS**

March 14, 1980  
V-CE-10009

Mr. E. E. Van Brunt, Jr.  
Arizona Nuclear Power Project  
P. O. Box 21666  
Phoenix, Arizona 85036

Subject: Valves, Motor Operated Gate,  
10CFR21 Notification

Dear Mr. Van Brunt:

Enclosed is a Borg-Warner-NVD letter to C-E dated February 28, 1980, which forwarded a NVD notification letter to Region V of NRC. The NVD notification (copy enclosed) identifies a valve non-conformance which was found during a valve operability test at Duke Power. NVD has identified four (4) valves at Palo Verde which may have a similar problem; SI-604 and SI609.

These valves are under investigation by NVD. We have requested Borg-Warner to provide us a schedule for completion of their review. I will advise you further when additional information is received from NVD.

Very truly yours,

*C. Ferguson / MFB*  
C. Ferguson  
Project Manager

CF/es  
Enclosures

cc: Messrs:  
F. W. Hartley - w/e  
W. H. Wilson  
W. G. Bingham - w/e  
R. H. Holm  
W. L. MacDonald  
G. A. Butterworth  
A. D. Guglietti - w/e  
S. N. Mager

11118  
JOB 10467  
FILE **N-7-04**  
**MAR 19 '80**

2	PER BINGHAM	
3	PE POMPEN	
1	APR STIRTS	
	APR KLEIN	
	BE BLACK	
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	COORD 2	
	COORD 3	
	FX	
	FX	
	PL/WHI EST Q	
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	CONTROLS	
	ELSCI	
CC	MECH	
	NUCLEAR	
	PLANT DES	
	STR & SUP	
	CLIENT	
	PO FKE	
	CC STUBBINS	
	C. V. KARRIAN	



## Nuclear Valve Division

Borg-Warner Corporation

7500 Tyrone Ave., Van Nuys, California 91409 • Telephone: 213-761-4000

Mailing Address: P.O. Box 2185, Van Nuys, California • TWX 910-495-1726



Q-80-4.3

February 28, 1980

Combustion Engineering, Inc.  
1000 Prospect Hill Road  
Windsor, Connecticut 06095

Attention: W. Pilipski, Engineering

Subject: Copy of NRC Notification Letter from NVD

Reference: Telecon - W. Pilipski, C.E. - W.R. Wheaton, NVD  
2/28/80

Dear Walt;

Per the reference telecon, I am enclosing a copy of NVD's Notification letter to Region V of the NRC. The NRC was at NVD during the week of 2/11/80 and were given a thorough run down on the problem. Their visit was a regularly scheduled audit of our facility. Mr. D.E. Whitesell of the Arlington Texas Office reviewed our actions to-date on this item and was satisfied that all the proper steps had been taken by NVD at this time.

If I can be of any further assistance, please do not hesitate to call.

Respectfully,

BORG WARNER CORPORATION  
Nuclear Valve Division

*W.R. Wheaton*  
W.R. Wheaton  
Director,  
Quality Assurance

WRW/jeh

cc: C. Vermeersch, NVD

Enclosure



Nuclear Valve Division

Borg-Warner Corporation  
7500 Tyrene Ave., Van Nuys, California 91409 • Telephone: 213-781-4000  
Mailing Address: P.O. Box 2185, Van Nuys, California • TWX 910-495-1726

BORG WARNER Energy Equipment

Q-80-041/WRW

February 12, 1980

Robert H. Engelken, Director Region V  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
1990 No. California Blvd, Suite 202  
Walnut Creek, California 94596

Subject: Notification Under Rules of 10CFR21  
Reference: Telecon Feb. 7, 1980 D. Sternberg, NRC and  
W.R. Wheaton, NVD-8W

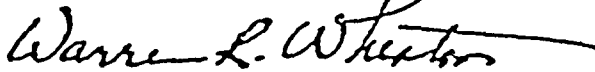
Dear Mr. Engelken;

The attached report serves as formal written notification supplementing the reference telecon of Feb. 7, 1980, as required by 10CFR21. This report is filed on the basis of one known safety related application by Duke Power Company. Other customers noted in the report have been asked to evaluate their applications of similar valves and determine their individual situations.

If additional information is required, do not hesitate to contact the undersigned at your convenience.

Respectfully,

Nuclear Valve Division  
BORG WARNER CORPORATION



W.R. Wheaton  
Director,  
Quality Assurance  
213/781-4000 Ext 267/268

WRW/jeh

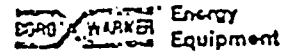
cc: C.A. Dotter, President & Gen. Mgr, NVD  
R.W. Fritch, Vice President, Engr and Q.A.



## Nuclear Valve Division

Borg-Warner Corporation  
7500 Tyrone Ave., Van Nuys, California 91409

## NOTIFICATION REPORT

to  
Nuclear Regulatory Commission

PART NUMBER	Various	N/R No.	0001
PART NAME	Gate Valve, 3"	CUSTOMER	Various
MANUFACTURER	Nuclear Valve Div.	PROJECT	Various
	Borg-Warner Corp.	DATE DEFECT DISCOVERED	Jan. 16, 1980 (Approx.)

DESCRIPTION OF NONCONFORMANCE, ANALYSIS OF CONDITION, AND CORRECTIVE ACTION  
(ATTACH SUPPORTING DATA).

Duke Power Co., as part of an operability test program, established a test loop at their Marshal Steam Generating Station (non-nuclear) near Charlotte, North Carolina. Installed in that test loop was NVD P/N 74380, a 3", 1500# motor operated gate valve. During November of 1979 NVD was notified that the subject valve had failed to completely close when actuated under operating conditions. The operating conditions were 2485 psi @ 650°F with a flow rate of 220,000 lbs per hour of steam, which is equivalent to a velocity of approx. 40 ft/sec. Under these conditions the valve closed to about 10% of full closure.

Extensive testing and evaluation was conducted by Duke Power Co. in conjunction with NVD to determine the exact cause of the nonconformance so that a proper corrective action could be accomplished. By approximately, Jan. 16, 1979, it was confirmed that the basic cause of the failure was inadequate guiding of the valve gate.

Continued on Page 2

QUANTITY AND LOCATION OF ALL SIMILAR ITEMS DELIVERED WITHIN THE U.S.A. THAT  
CONTAIN THE SAME NONCONFORMANCE.

Refer to Page 2

Warren L. Whiston  
Director, Quality Assurance

2/12/80  
Date





(1) Customer: Combustion Engineering Site: Palo Verde  
NVD P/N: 77910 Qty: Four (4)  
C.E. Tag No's SI604 and SI609  
Valve ΔP: 2500 psi Temp: 350° F

(2) Customer: T.V.A. Site: Bellefonte  
NVD P/N: 79190 Qty: Sixteen (16)  
TVA Tag No: 3BW0456-KC-30 Valve ΔP: 2500 psi  
Temp: 650° F Flow: 100 GPM (Approx. 4.54 ft/sec)

(3) Customer: Bechtel Site: Arkansas Nuclear One-Unit 2  
NVD P/N: 75460 Qty: Two (2)  
Bechtel Tag No's: 3ACA-GT-MO-2CV4698-1-PL  
3ACA-GT-MO-2CV4697-2-PL  
Valve ΔP: 2485 psi Temp: 658° F

(4) Customer: Duke Power Co. Site: Catawba  
NVD P/N: 74380-1 Qty: Six (6)  
Duke Tag No: 9J-239 Valve ΔP: 2485 psi  
Temp: 680° F  
Duke Power Co. Site: McGuire  
NVD P/N: 74380 Qty: Six (6)  
Duke Tag No: 9J-221 Valve ΔP: 2485 psi  
Temp: 680° F

**A**



September 11, 1980  
V-CE-11058

Mr. E. E. Van Brunt, Jr.  
Arizona Nuclear Power Project  
P. O. Box 21666  
Phoenix; Arizona 85036

Subject: Motor Operated Gate Valves

Reference: V-CE-10009 dated March 14, 1980

Dear Mr. Van Brunt:

The referenced letter advised of a potential problem with some Borg Warner valves. Please be advised that the valves (SI-604 and SI-609) will require site rework. This work will be done by Borg Warner at their expense. The extent of Bechtel involvement will be addressed by our Site Office once the rework procedure has been approved by C-E. We expect that this work will be completed by the end of the year.

Very truly yours,

*C. Ferguson* / MFB  
C. Ferguson  
Project Manager

CF/MFB/es

cc: Messrs:

F. W. Hartley  
W. H. Wilson  
W. G. Bingham  
R. H. Holm  
W. L. MacDonald  
G. A. Butterworth  
S. N. Mager

125097  
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CC: STUBBLEFIELD  
EL: R. WELCHER  
CC: K. STWERTNIK  
CC: V. KARRIAN

