SPR #601

TITLE RC-V4 (RC-V2) Motor Burnout #2 (OCONEE-1,2,3)

RELATED SPRs

This SPR has been reviewed by Task Engineering Groups and is applicable to NSS- None. The following is the status and/or resolution of this SPR on other contracts.

REMARKS Per R.G. Bunley this problem is Not Applicable any other confirmed Damage was caused by operator error. (overriding overloads)

NSS-

NSS-

ACTION COMPLETE
ON ALL CONTRACTS

TRANSMITTAL SLIP

PLANT STARTUP SERVICE SITE PROBLEM REPORT

**** CLEARED ****

FILE: 1242

TO: _____ For information

Central Engineering Files

C. C. Plunkett - Contract Admin.

C. M. Fletcher - Quality Assurance

R. G. Burnley - Task Engineer

W. A. Cobb - Sr. Proj. Manager

CONTRACT NO: 620-00 03

SPR 560 (Rev 0 1)

TITLE RC-102

Motor Burnout

DATE: 4/4/74

The attached, cleared SPR is submitted for your information.

TO: _____ J. N. Kaelin - ARKANSAS _____ R. E. Kosiba

_____ E. L. Logan - SMUD _____

_____ B. L. Day - OCONEE _____

_____ L. C. Rogers - MET ED _____

Attached is one copy of Site Problem Report No. 560 which was processed on Contract 620-00 03. Future contracts have been reviewed for the potential of a similar problem. This problem is not considered applicable to other contracts _____.

REMARKS: _____

G. P. WALLING

cc:

NUCLEAR SERVICE SUPPORT ENGINEER

TECHNICAL SUPPORT SUPERVISOR

CLEARED

-21091-1 (9-73)

TWX - ROGER C. HARPE 10/9/73

SITE PROBLEM REPORT

BABCOCK & WILCOX

CUSTOMER Duke Power Company	CONTRACT NO. 620-0003	SPR NO. 560	REV. NO. 0
VENDOR B. & W.	P.O. NO.	TASK NO. 25 GROUP NO. 44	SEQ. NO. 02
SITE ENGINEER E. L. Logan	REQ'D. RESOL. DATE	REQ'D. COMP. DATE	

TITLE RC-4 (RC-V2) MOTOR BURNOUT

DESCRIPTION OF PROBLEM On 10-5-73 RC-4 overloads had been over-ridden at A.E.C.'s direction. During dropped rod incident (See SPR 558), reactor operator attempted to open RC-4. The valve would not open and attempts resulted in a burned out actuator motor. Valve actuator was replaced on 10/7/73. Valve is now in service with overloads still bypassed.

STATUS - ACTION TO DATE INCLUDING PERSONS CONTACTED

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL
ENGR SHOULD RE-EVALUATE NEED FOR EQUALIZATION VALVE - GATE VALVES NORMALLY HAVE THIS FEATURE. ALSO ASSESS NEED MANUAL SHOULD EQUALIZATION VALVE. BOTH UNIT 1 & 2 VALVES HAVE STUCK SHUT WHILE HAVING HIGH DIFFERENTIAL PRESS ACROSS GATE

ORIGINATOR SIGNATURE	DATE	SUPV. / DEPT. REP. SIGNATURE	DATE
[signature]	10-9-73	[signature]	10/9/73

RESOLUTION

RESOLUTION

APPROVED BY	SIGNATURE	DATE
N.S. SUPPORT ENGINEER	R. L. Gilbert	10-12-73
TASK ENGINEER		
PROJECT MANAGER	[signature]	11-7-74

COST CATEGORY ☐ NORM ☐ C ☐ D ☒ G ☐ L ☐ VENDOR CLAIM

AUTH. CHARGE NO. ☐ FIELD CHANGE REQ FC NO. 276

COMPLETION

SITE COMPLETION REPORT
FC-276 Changes motor from a 15 ft-lb to a 25 ft-lb motor.

☐ RECOMMENDED STDS. CHANGE

DEVIATIONS ☐ NONE ☐ SEE SPR REV. NO. _____

DATE COMPLETED 10/30/74 SIGNED BY [signature]

S.O.M./CONSTR. REP. APPROVAL [signature] DATE 10/30/74

FINAL DISTRIBUTION
PROJECT MANAGER
S.O.M./CONST. REP.
QA DOC. FILE
CENT. ENGR
FILE 12M.2

10/9/23
R. P. Ward
RJM

INSTRUCTIONS FOR PDS-21091 - SITE PROBLEM REPORT

Initiated by NPG Nuclear Service

(1) Originator - Fill in: Customer; Contract Number; Vendor; Purchase Order Number; Task Number; Group Number; Sequence Number; Name; Title; Description of Problem; Status; Further Action Recommended by Site Personnel; Originator Signature and Date; Vendor Claim (if applicable).

(2) Site Operations Manager - Fill in: SPR Number; Revision Number; Req'd. Resol. Date; Req'd. Comp. Date; Approval Signature; Date.

(3) Nuclear Service Support Engineer - Fill in: Cost Category; Authorized Charge Number.

(4) Task Engineer - Fill in: Resolution; Recommended Std.'s Change*; (If applicable, FC Req. and FC Number); Signature and Date.

*If recommended standard's change, transmit a copy to cognizant Standard Task Engineer to resolve with Standard Plant Manager.

(5) Field Engineer - Implement resolution; upon completion, fill in: Completion Report; Date Completed and Signature.

NOTE: If necessary to deviate from the approved SPR, note deviation and submit revised SPR to the Site Operations Manager.

(6) Site Operations Manager - Approve completion; sign.

Initiated by B&W Construction Company

(1) Originator - (Same as (1) above)

(2) Construction Co. Site Representative - (Same as (2) above)

(3) Project Manager - (Same as (3) above)

(4) Task Engineer (Same as (4) above)

(5) Construction Co. Site Representative - (Same as (5) and (6) above)

PDG-1108-1 (9-73)

SITE PROBLEM REPORT

BABCOCK & WILCOX

CUSTOMER Duke Power Company	CONTRACT NO. 620-0003	SPR NO. 560	REV. NO. 1
VENDOR B & W	P.O. NO.	TASK NO. 25	GROUP NO. 41 SEQ. NO. 02
SITE ENGINEER E. L. Logan	REQ'D. RESOL. DATE	REQ'D. COMP. DATE	

TITLE: RC-4 (RC-V2) MOTOR BURNOUT # 2

DESCRIPTION OF PROBLEM

Same as reported on Revision 0-
On 10-9-73 motor was again burned out when an attempt was made to open the valve with the overloads bypassed.

STATUS - ACTION TO DATE INCLUDING PERSONS CONTACTED

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL

Same as recommended on Revision 0.

ORIGINATOR SIGNATURE	DATE	SUPERVISOR SIGNATURE	DATE
[illegible]	10-12-73	R J Pittman	10/12/73

RESOLUTION

RESOLUTION

APPROVED BY	SIGNATURE	DATE
N.S. SUPPORT ENGINEER	R J Pittman	10/16/73
TASK ENGINEER		
PROJECT MANAGER		

COST CATEGORY ☐ NORM ☐ C ☐ O ☐ G ☐ L ☐ VENDOR CLAIM

AUTH. CHARGE NO. ☐ FIELD CHANGE REQ FC NO. 276

COMPLETION

SITE COMPLETION REPORT

FC-276 Changes motor from a 15 ft lb to a 25 ft lb motor

☐ RECOMMENDED STDS. CHANGE

FINAL DISTRIBUTION

PROJECT MANAGER
S.O.M./CONST. REP.
QA DOC. FILE
CENT. ENGR
FILE 12M.2

DEVIATIONS ☐ NONE ☐ SEE SPR REV. NO. ____

DATE COMPLETED 10/23/74 SIGNED BY R W Barker

S.O.M./CONSTR. REP. APPROVAL [signature] DATE 10/30/74

INSTRUCTIONS FOR PDS-21091 - SITE PROBLEM REPORT

Initiated by KPC Nuclear Service

(1) Originator - Fill in: Customer; Contract Number; Vendor; Purchase Order Number; Task Number, Group Number; Sequence Number; Name; Title; Description of Problem; Status; Further Action Recommended by Site Personnel; Originator Signature and Date; Vendor Claim (If applicable).

(2) Site Operations Manager - Fill in: SPR Number; Revision Number; Req'd. Resol. Date; Req'd. Comp. Date; Approval Signature; Date.

(3) Nuclear Service Support Engineer - Fill in: Cost Category; Authorized Charge Number.

(4) Task Engineer - Fill in: Resolution; Recommended Std.'s Change*; (If applicable, FC Req. and FC Number); Signature and Date.

*If recommended standard's change, transmit a copy to cognizant Standard Task Engineer to resolve with Standard Plant Manager.

(5) Field Engineer - Implement resolution; upon completion, fill in: Completion Report; Date Completed and Signature.

NOTE: If necessary to deviate from the approved SPR, note deviation and submit revised SPR to the Site Operations Manager.

(6) Site Operations Manager - Approve completion; sign.

Initiated by B&W Construction Company

(1) Originator - (Same as (1) above)

(2) Construction Co. Site Representative - (Same as (2) above)

(3) Project Manager - (Same as (3) above)

(4) Task Engineer - (Same as (4) above)

(5) Construction Co. Site Representative - (Same as (5) and (6) above)

TRANSMITTAL SLIP

File NSS- 3

42-SPR- 560/1

FIELD OPERATIONS SITE PROBLEM REPORT

To W C Butt - NSE For Action

R G Burnley - NSE

To R. J. McConnell (2) For Information

J. N Kaelin

J. P. Kennedy

J. D. Phinney

K Suhrke

CONTRACT 620-00 - 03

SPR 560/1

TITLE RC-H (RC-V2)

MOTOR BURNOUT

#2

DATE 10/16/73

Date Reply to Be Submitted To Nuclear Service Support Engineer

Action Requested: Attached is Rev 1 of SPR 560 documenting a 2nd motor burnout when Duke operations bypassed the motor overloads. THE motor has been rewound by DUKE and re-installed. The actuator is now set for torque closing (setting of 1) and torque opening of 2¼. The valve operated with these values at lower temperatures but will not open at NOP, NOT RG Burnley is investigating whether there is a temp differential problem.

P. A. Patterson
Nuclear Service Support Engineer

MANHOUR LIMITS —

COST LIMITS —

CHARGE No. —

APPROVED: A. A. Casey
Project Manager

cc: G. E. Kulynych
C. C. Flunkett - Contract Admin.
Central Engineering Files
E. V. DeCarli - Quality Assurance

File NSS- 3

TRANSMITTAL SLIP

M2-SPR- 560

FIELD OPERATIONS SITE PROBLEM REPORT

To W.C. BUTT - NSE For Action

To R. J. McConnell For Information

J. N Kaelin

J. P. Kennedy

J. D. Phinney

K Suhrke

CONTRACT 620-00 - 03

SPR 560

TITLE RC-4 (EC-V2) Motor Burnout

DATE 10-12-73

Date Reply to Be Submitted To Nuclear Service Support Engineer

Action Requested: W.C. BUTT states that the valve does not need the equalization feature. However he is investigating the use of the solid wedge vs the split wedge in this application. Site is requested to provide the torque switch setting on this actuator.

R. L. Pittman
Nuclear Service Support Engineer

MANHOUR LIMITS CC 388 10 MHS / CC 350 16 MHS

COST LIMITS

CHARGE No. 620-0003-08-47

APPROVED: C. A. Casey
Project Manager

cc: G. E. Kulynych
C. C. Plunkett - Contract Admin.
Central Engineering Files
E. V. DeCarli - Quality Assurance

BABCOCK & WILCOX COMPANY

DOMESTIC WIRE MESSAGE

Charges to any point in continental U. S., Canada and Alaska

WESTERN UNION

DRESSER INDUSTRIES
P. O. BOX 1431
ALEXANDRIA, LA. 71301
ATTENTION: MACK COX

File No.

PLEASE INSTALL, AT NO CHARGE TO DRESSER, REPLACEMENT ELECTROMATIC MOTORS FOR DUKE I, II, AND III. UNIT 1 AND FLORIDA ON ELECTROMATIC ISOLATION VALVE.

DRESSER TO FURNISH REPLACEMENT ELECTROMATIC MOTOR AND TORQUE SPRING PACK. PER TELECON DECEMBER 21, 1973 J. COX OF DRESSER AND G.T. SUND OF B&W.

ADVISE SHIPPING SCHEDULE ASAP.

6/14/74 These arrived - Were at Huntington
Jim Albert took two of them to Oconee in his
Car R1P

BCC: R.G. Buckley
R.V. Streub
R.I. Pittman
W.S. Dellinte
C.E. Burkdoale
E.H. Davis

G.T. SUND - SR. BUYER - PURCHASING DEPT.

Do not type below this line.

Date DECEMBER 21, 1973

B. Valve Body Stress Analysis

AEC's concern was whether or not the Weld Zone was analyzed in the response of January 22,1974. Dr. Lai and Tom Conlon discussed the analysis and it was finally understood that AEC interpreted the Joint Design as a Cylinder and Flat Head whereas Dressers analysis is for a Hub and Flange. It was agreed that the following would be done and included in the revision of the report:

1. Dresser will do Stress analysis of Cylinder and Flat Head as it applies to Electromatic Design.
2. AEC wants to see that someone else has reviewed the Stress Analysis in addition to Dr. Lai. Dresser will do. Dr. Lai will also apply his PE stamp to the analysis.

C. Effects of Hydrostatic Over Pressurization

AEC doesn't understand the response included in the January 22, 1974 revision. There is a statement in Appendix E1 and a Computer Printout included as Appendix E2 but no explanation as to what the printout is or how to use it. AEC suggested that Appendix E should be expanded to explain the printout or amplify the statements in App.E1. Dresser will expand the statements in App. E1 to explain in words that the valve was not overstressed due to the cold Hydrostatic Test. The printout will be deleted.

Dresser committed to having their work complete in one week and will send to Mr. Thielsch who will revise the report for re-submittal by Duke to AEC.

It is fully expected that this will resolve all AEC questions and the valve Design will be acceptable to AEC.

The final report to be submitted for NSS-3,4,9 will be used as a generic answer with specific references on a contract basis as may be required for NSS-5,6,7,8 &11.

R. B. Bunday

cc: K. Schroeder
G. E. Kulynych
R. V. Straub
E. A. Baker
C. E. Barksdale
W. S. Delicate
W. A. Cobb
J. T. Janis
G. F. Glei
G. T. Sund

LECTROMATIC RELIEF VALVE 1-RV-67, DUKE POWER COMPANY, OCONEE NUCLEAR STATION 1-2-3

E: Report No. 1158, dated November 4, 1973, "Evaluation of Weld Joint Design n Soundness and Integrity of Weld and Base Metal in Electromatic Relief Valves RV-67 (RC-66) Dresser Industrial Valve & Instrument Division, Units 1, 2, 3 conee Nuclear Power Station, Duke Power Company" and Report No. 1143, dated lovember 3, 1973, "Resolution of Acceptance of Electromatic Relief Valves (RV-67 RC-66) from Dresser Industrial Valve & Instrument Division, Units 1, 2, 3 conee Nuclear Power Station, Duke Power Company transmitted by Duke Power Company etter of November 30, 1973.

he above named reports have been reviewed in the RO:II offices. This eview disclosed deficiencies in the following areas:

. Weld documentation
. Valve body analysis
. Effects of hydrostatic overpressurization
. Purchase specification
. Past performance of valves

he following paragraphs describe these deficiencies and list additional nformation that should be provided by the licensee.

. Weld Documentation

There are variations in the welding procedures used on the valve and those used for the mockup, particularly in the area of post-weld heat treatment.

Welding procedure qualification data conflicts with the welding procedure since the procedure requires no post weld heat treatment while the procedure qualification (WS-97, Rev 2, dated October 16, 1973, and WS-65, Rev 3, dated October 17, 1973) indicates post weld heat treatment. Moreover, these procedure qualifications do not provide material thickness nor thickness range qualified.

Drawing 4 3463 indicates that the welding procedures to be used for the lower base to top flange weld joint are WS-345 and WS-304. Documentation indicates that WS-65 and WS-97 were used on both the mockup and the production valves.

The licensee should furnish documented evidence that qualified welding procedures, with continuity, were used throughout fabrication of the valves and in accordance with appropriate codes and specifications.

. Valve Body Stress Analysis

Review of the Dresser stress analysis for valve body as outlined in Duke Power Company report No. 1143, Appendix E, revealed no specific stress analysis of the weld joint between the top flange and the lower base as shown on Dresser Dwg 418463. In addition to the structural discontinuity at the weld joint, there appears to be a possible stress concentration

Attachment #1
Page 1 of 2

POWER GENERATION GROUP

To W. C. Bt , Unit Manager

From R. G. Burnley, Aux. Systems (2281)

Cost. Duke, MET-ED, JCP&L, FPC, AP&L SMUD

File No. or Ref. NSS-3,4,9,5,6 7,8,1 RA70,41 Dresser

Date 3/5/74

Subj. Meeting with Duke, Dresser & AEC on Electromatic Relief Valve

BDS 663.5

This letter to cover one customer and one subject only

I attended the subject meeting held at DP Co. in Charlotte N. C. on Friday March 1,1974. The following personnel were present:

Duke	AEC (RO II)	Dresser B&W
S. K. Blackley, Jr.	A. Herdt	T. R. Bordelon R. Burnle
L. R. Davison	T. Conlon	Y. S. Lai
Tom Cotton	J. C. Bryant	
K. C. Canady	Frank Jape	
Dan Gardner		
Helmut Thielsch (Duke Consultant)		

The meeting was held to discuss additional AEC concerns in response to the revised report that was submitted by Duke on January 22,1974. There were five (5) areas where AEC had asked for additional information (See Attachment #1) and they felt the responses submitted to items A, B, & C were not adequate or their questions had been mis-interpreted. AEC has no additional questions; however, replies to A, B, & C must be expanded as follows:

A. Weld Documentation

A modified Appendix B-6 to the report should be included to show the Thickness Range for which the Weld Procedure was qualified.

B31.7, which was referenced in the specification, requires all NDT to be performe after Heat Treating. Mr. Thielsch stated that in this case it wouldn't make any difference whether NDT was before or after Heat Treating. It was agreed that Dresser would try to establish the sequence in Manufacturing to determine at what point NDT was performed. If no records are available Mr. Thielsch will add a statement in the report to the effect that it makes no difference with the materials and design of the Electromatic Relief Valves.

Apparently, either one or both of the above responses are acceptable.

existing at the edge of the weld zone and the interface formed by the mating parts.

The licensee should evaluate this stress concentration and the possible effect that it could have on the calculated stress levels in the welded joint. In addition, the licensee should take into consideration the stress due to structural discontinuities at the welded joint as evidenced by Dresser Dwg 418463.

C. Effects of Hydrostatic Overpressurization

The hydrostatic records indicate that the valves were tested to 9000 psig for three minutes. This is considerably above the hydro test requirements of ASME Section III, 1968 Edition.

The licensee should evaluate the possible damage caused by the excess pressurization.

D. Purchase Specification

The reports list several codes and editions.

The licensee should state the code and specifications under which the valves were purchased.

E. Past Performance of Valves

Report No. 1143 states that this particular Dresser design has been confirmed by satisfactory service of similar valves, some in nuclear plants.

If this is being used as supporting evidence for a basis of valve acceptance, the licensee should furnish documented history providing the locations, date in service, conditions of service, etc.

ATTACHMENT #1

Tom Bordelon

318-640-2250

SPR560

BABCOCK & WILCOX
Nuclear Power Generation Department

Contract No. 183249

File No. 8030.41

Record of Telephone Call

To Tom Bordelon et al

From T. Burch / R.C. Beasley

Date

Subject Pressurizer Gate Valve RC-V2

Route To:

C. Creasy

R. Pittman

T. Burch

I Discussed possible fixes for RC-V2 problems

1. Insulate valve body up to bonnet-yoke joint

2. Possibly use flexible wedge; Dresser is investigating

a. Rework existing - need to define special tools needed.

b. New flex. wedge by Dresser; different material investigating materials' availability

3. Possibility of using 25# motor; need to test and would like to use class B motor for testing.

Can some testing be done on Unit II if 1 is done and items 2 and/or three performed?

II Electromatic

Proto-type of welded unit went out to Duke consultant Saturday 10-20-73.

R.C. Beasley

To RRB/RUS/CAC

R.R. Leach
JPT

Babcock & Wilcox

Power Generation Group

P.O. Box 1260, Lynchburg, Va. 24505
Telephone: (804) 384-5111

February 5, 1974

E74-26

Mr. S. K. Blackley
Duke Power Company
Post Office Box 2178
Charlotte, North Carolina 28201

ATTENTION: T. L. Overcash

SUBJECT: Oconee 1, 2, and 3
Dresser Shutoff Valve RCV2

REFERENCE: 1. Duke letter to B&W dated February 1, 1974, same subject (OS-18)
2. B&W letter to Duke dated November 13, 1973, same subject

Gentlemen:

After further review of the operating data on 2 RC-V2 with the 25 ft./lb. motor, Dresser has stated that the larger motor is a satisfactory resolution of the operator problem. As you are aware, the present motor on 2 RC-V2 does not meet insulation specification for service in that area. Dresser has ordered replacement motors for all three Oconee units, and they should be available for installation about June 1974.

If you have any further questions, please advise.

Very truly yours,

C. A. Creacy

C. A. Creacy
Associate Project Manager

CAC/www

cc: R. J. McConnell
G. M. Baccich
W. Faasse

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

To
R. R. Beach

From
E. L. Logan

BDS 663.5

Cust.
Duke Power

File No.
or Ref.

Subj.
MORE ON 1 RC-4 (RC-V2) and 1 RC-1 (RC-V1)

Date
12/19/73

This letter to cover one customer and one subject only

Limit Switch LS-9 was added to the 1 RC-V2 circuit on 12/12/73. (See Fig. 1) The switch was set to stop valve travel at 4 turns of the handwheel from the full closed position. This appears to have solved the opening problem as this valve was opened on 12/16/73 at full temperature and pressure. Now the valve cannot be closed. Two attempts were made on 12/17/73 and both times the overloads tripped. The 15 ft # motor is evidently not strong enough to start the valve toward the closed position.

As you know Duke replaced the yoke bushing on 1 RC-1 (1 RC-V1) on 11/23/73 (SPR # 570). The replacement bushing was not the correct one as Rockwell had shipped the wrong replacement part to Duke. Duke had planned to replace this bushing during the December outage. The valve became inoperable on 12/16/73. The valve indicates open when commanded open, but system conditions indicate the valve stays closed. If the bushing is stripped as before, it seems the valve would be hung open rather than closed. This problem will have to be investigated during the next Unit I shutdown. Duke has closed 1 RC-3 (1 RC-Y) to preclude an open failure of 1 RC-1 causing a plant shutdown as occurred on 11/20/73.

The Unit I pressurizer valve line-up is as follows:

Spray Valve (RC-1) - Closed and Inoperable
Spray Block (RC-3) - Closed
Electromatic Relief (RC-66)- Operable
Elec. Block (RC-4) - Open and Inoperable

Since 12/15/73we have been able to obtain comparative RCS and pressurizer boron concentrations. This is in response to SPR-557 and B. A. Karrasch's memo of 11/19/73. Figures 2 and 3 are plots of these values for both Units I and II. The Unit 1 continuous vent (.1 to .4 gpm) was secured on 12/17/73. Before the system is cooled down, we will investigate for leaking valves, etc. Unit II is indicative of normal operation since a conscious effort has been made to maintain RCS boron concentration constant with only the spray valve bypass flow into the pressurizer.

ELL/bh

cc: J. P. Ittner
R. V. Straub
C. A. Creacy
R. L. Pittman ✓
R. C. Burnley
E. L. Logan
W. C. Butt
B. Karrasch
R. J. McConnell

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

To
R. J. McDonnell, Site Operations Manager

From
R. L. Pittman, Nuclear Service (2805)

BDS 663-5

Cust.
Duke Power Company

File No. or Ref. NSS-3 SFR 560

Subj.
RC-V2

Date
November 1, 1973

This letter to cover one customer and one subject only

NSS-3 SFR 560 reported that two motors had burned out while attempting to open the subject valve at normal operating temperatures and pressure, with the thermal overloads on the motor bypassed.

NSS-4 SFR 110 reported that the valve was cycled (on Unit II) during several temperature increments while the plant was being heated up. The valve operated satisfactorily at lower temperatures but when the system was approximately 500°F the valve would not operate, even though it had been cycled every 100°F while heating up.

Several contacts have been made with the Dresser Valve Company, and it is now felt that the problem may be due to differential expansion between the valve gate and the valve body, since there are different metals involved.

NSS-4 Field Change 126 changed the operator motor on this valve from a 15 ft/lb to a 25 ft/lb motor. The valve body was also insulated by the Dresser field service representative at this time.

When this system (NSS-4) is heated up RC-V2 should be cycled open and closed every 50°F increase in the pressurizer temperature. Once the unit has reached normal operating temperature the valve should be opened and closed every hour for at least four hours to determine if the larger motor will continue to operate the valve. The valve should then be opened and closed after approximately 24 hours at normal operating temperature. If operation is then satisfactory, new motors (25 ft/lb) will be requested from Dresser to replace the present 15 ft/lb motors on Units I and III. If, however, the larger motor is not satisfactory a modification to the solid gate will be initiated by Dresser.

In the interim while a final resolution is pending, the Unit I valve (which is now closed) should be made operable especially for plant transients. In order to accomplish this you should make the following recommendations to the customer.

1) When the reactor is shutdown, open the valve by hand and set the operator to close the valve on position vice torque. (Even though the valve wouldn't close off completely, it would preclude jamming the gate into the seat.)

2) The valve should then be tested to insure operability.

It is believed that with the operator set up in this manner the valve can be utilized if necessary for plant transients, and will serve as a temporary resolution

to the problem.

With the 25 ft/lb motor installed on 2 RC-V2 a torque switch setting of 2½ (open direction) should not be exceeded without further consultations with Dresser.

RLP/cs

cc: J. P. Ittner
R. V. Straub
C. A. Creacy
R. R. Beach
R. G. Burnley
E. L. Logan
W. C. Butt

R L Pittman

DRESSER

DRESSER INDUSTRIAL VALVE & INSTRUMENT DIVISION
DRESSER INDUSTRIES, INC.
P. O. BOX 1430
ALEXANDRIA, LOUISIANA 71301

TEL (318) 640-2250
TELEX ... 058-6425
TWX (510) 445-1324
CABLE MANRING

cc
C.A. CREACY
R.L. PITTMAN

November 1, 1973

Messrs: Bob Burnley
Tom Sund
Babcock & Wilcox
P.O. Box 1260
Lynchburg, Va. 24505

Subject: 7900 Gate Valve,
Oconee Units 1,2 & 3

Gentlemen:

Realizing the manner in which we have been trying to expedite resolution of the Gate Valve problem, I felt that it was necessary that we establish Dresser recommendations relative to this project. These recommendations have previously been submitted to you over the telephone.

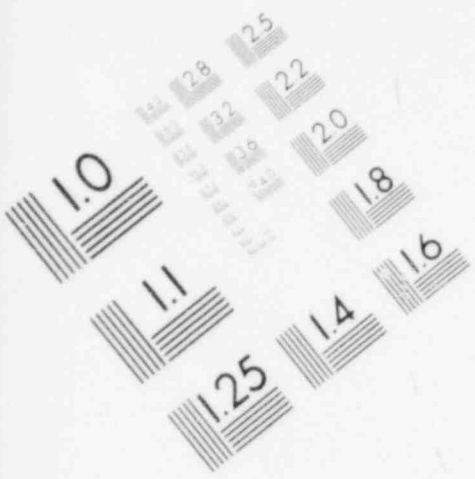
1. The Gate Valve body should be completely insulated up to the joint where the body and yoke are bolted.

2. Although calculations indicated a 15 ft.-lb. operator would be adequate, it is felt that the heavier hammer blow of a 25 ft.-lb. operator along with the insulation previously recommended may resolve the problem.

3. Should either or both of the recommendations above prove to be inadequate, then the next suggested fix would be of a flexible wedge design. We have set up a prototype wedge and successfully cut through the sections as required to make the wedge flexible. The next step if required, would be to prepare new wedges with appropriate NDT or attempt to cut existing wedges installed in the valve during a plant shutdown.

-Continued-

FORM 10-53—STANDARD PRINTING CO., ALEXANDRIA, LOUISIANA



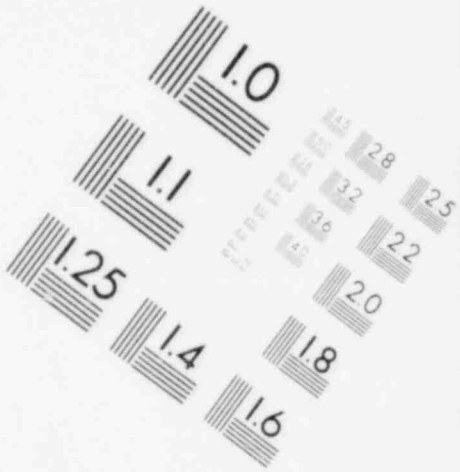
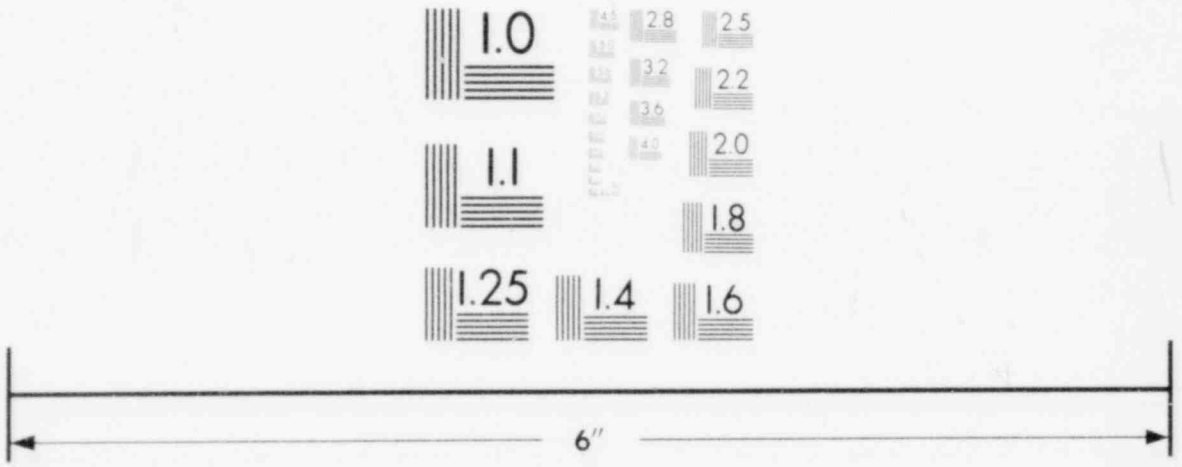
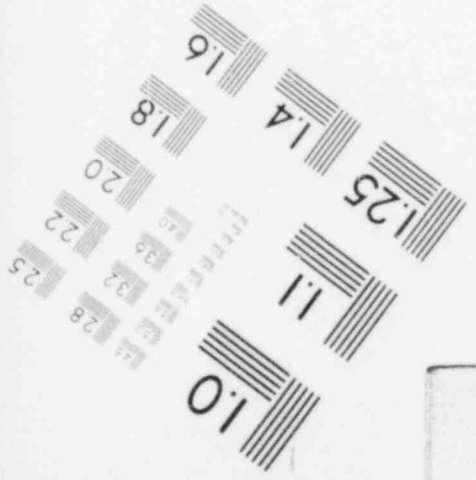
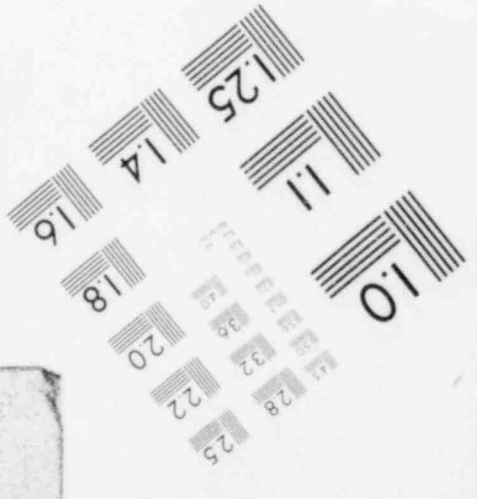


IMAGE EVALUATION TEST TARGET (MT-3)



MICROCOPY RESOLUTION TEST CHART





DRESSER

DRESSER INDUSTRIAL VALVE & INSTRUMENT DIVISION
DRESSER INDUSTRIES, INC.
P. O. BOX 1430
ALEXANDRIA, LOUISIANA 71301

 November 1, 1973

Additionally, I think I need to summarize my personal evaluation of all the facts to insure that we are all properly working towards the same goals.

1. The Gate Valve on Oconee #1 is inoperative at this time.

2. Tests conducted on Oconee #1 and #2 indicated that the valve operated adequately up to 500°F. At that point, the wedge became locked and the valve could not be opened. Two motors were subsequently burned out by shorting out the motor thermal over load and the limit switches in an attempt to open the valve. Although calculations indicate the motor to be adequate and because of the test results we have gained, it is theorized that thermal expansion is a major factor.

3. In following our suggestions, you have insulation on Oconee #2. Although we cannot presently conduct tests. In addition, we have arranged this past weekend for our Mr. McCormack and a Limit Torque Service Representative along with the B & W Representative to install a 25 ft.-lb. motor for temporary usage. Presently Dresser has bought the motor and is absorbing other cost, however, this is being done only in an effort to expedite resolution of the problem. Upon a field fix for the problem, we can then negotiate cost, etc.

4. Although we have purchased the operator and it is currently installed, to my knowledge this operator is not adequate since it is not provided with a heater nor any of the special seals required.

-Continued-

Form 30-55—[illegible] PRINTING CO., ALEXANDRIA, LOUISIANA

DRESSER

DRESSER INDUSTRIAL VALVE & INSTRUMENT DIVISION

DRESSER INDUSTRIES, INC.
P. O. BOX 1430
ALEXANDRIA, LOUISIANA 71301

 November 1, 1973

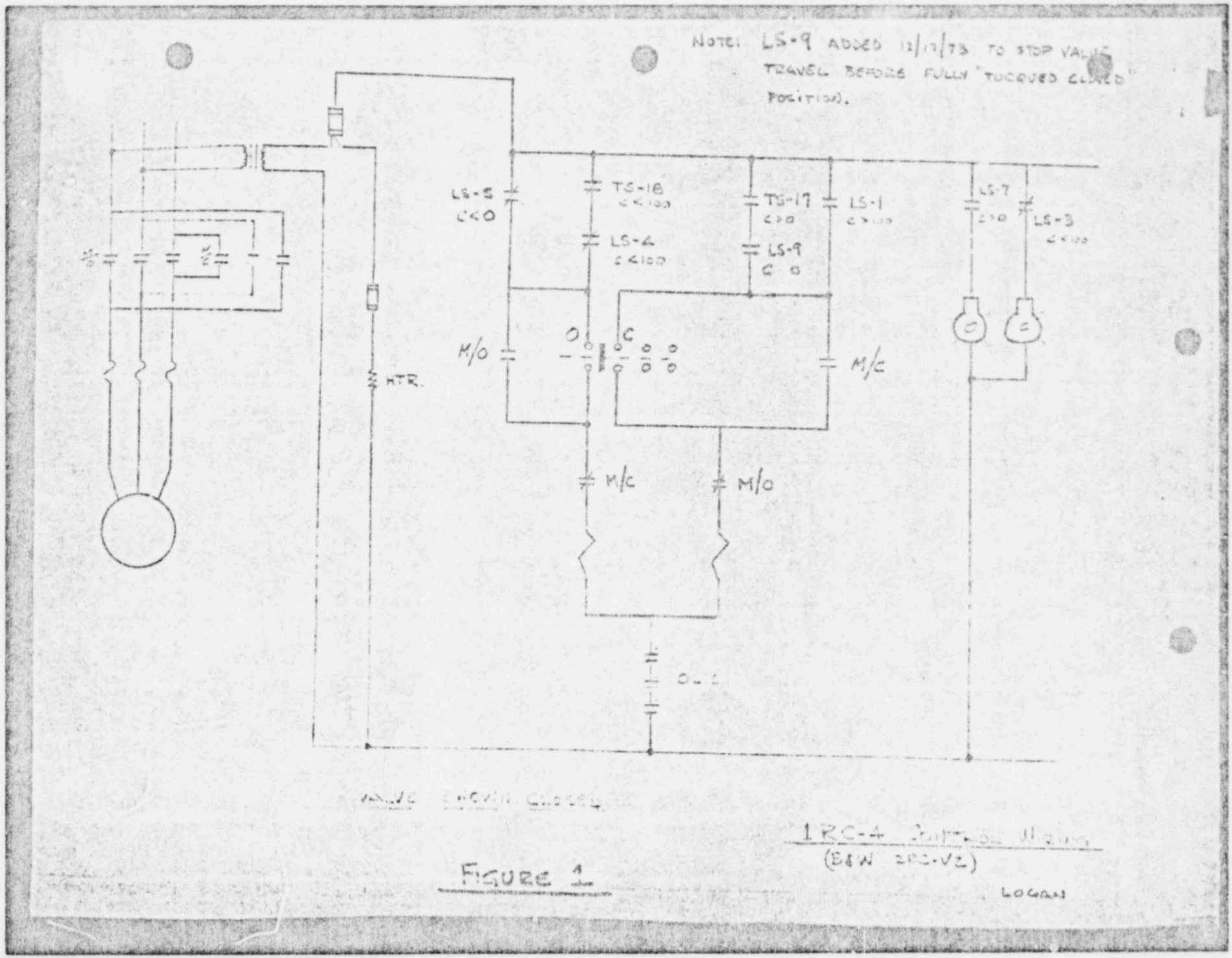
5. I am currently waiting for information relative to our new field fix as it is transmitted to Dresser by B & W.

Very truly yours,

DRESSER INDUSTRIAL VALVE
& INSTRUMENT DIVISION

T.R. Bordelon

TRB/es



1RC-4 (B&W 2RC-V2)

FIGURE 1

LOGAN

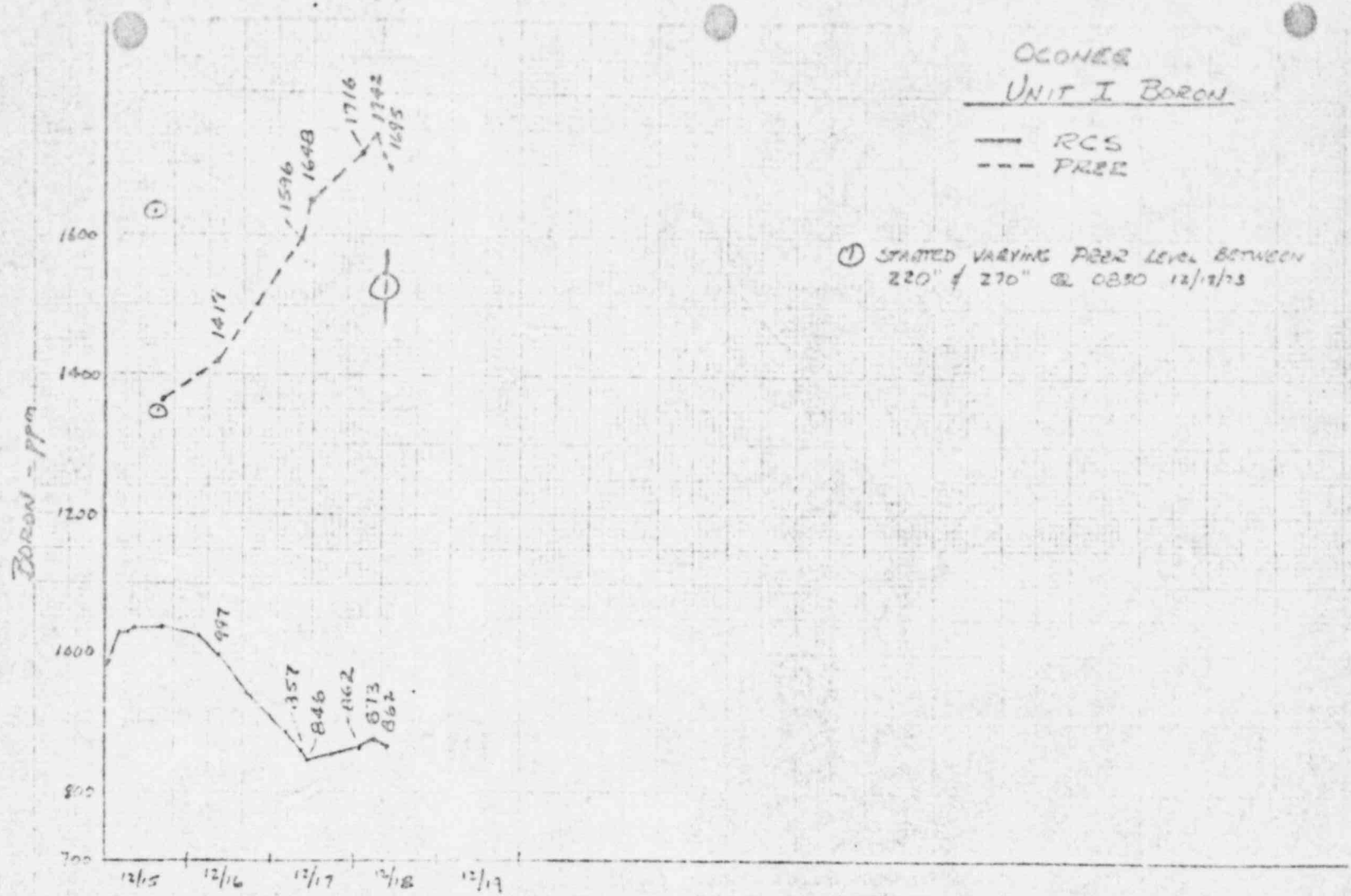

OCONEE
UNIT 1 BORON
RCS
PRZR
① STARTED VARYING PRZR LEVEL BETWEEN 220" & 270" @ 0830 12/12/73
Boron - ppm
1600
1400
1200
1000
800
700
1419
1596
1648
1716
1742
1695
997
357
846
862
813
862
12/15
12/16
12/17
12/18
12/19

FIGURE 2

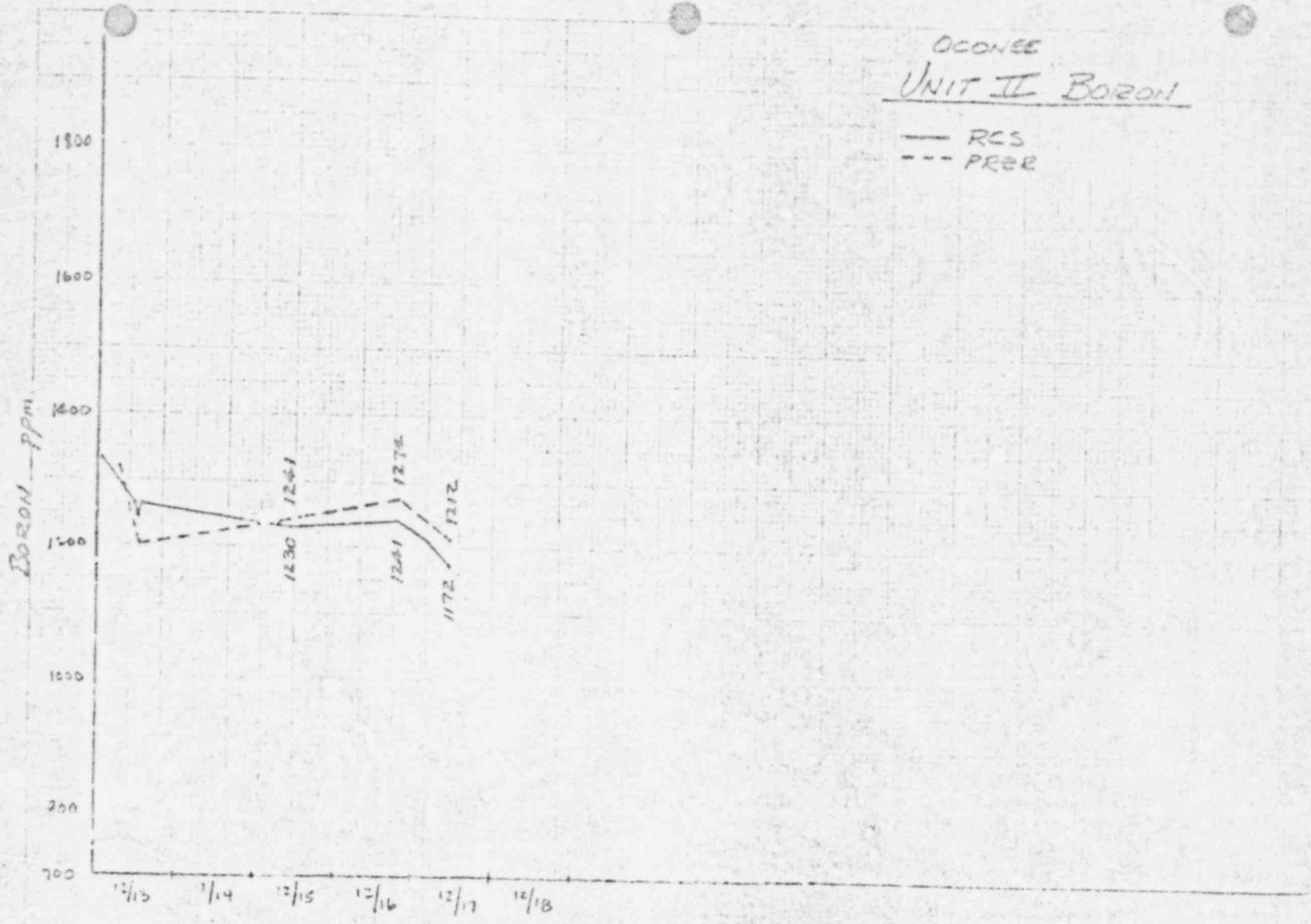
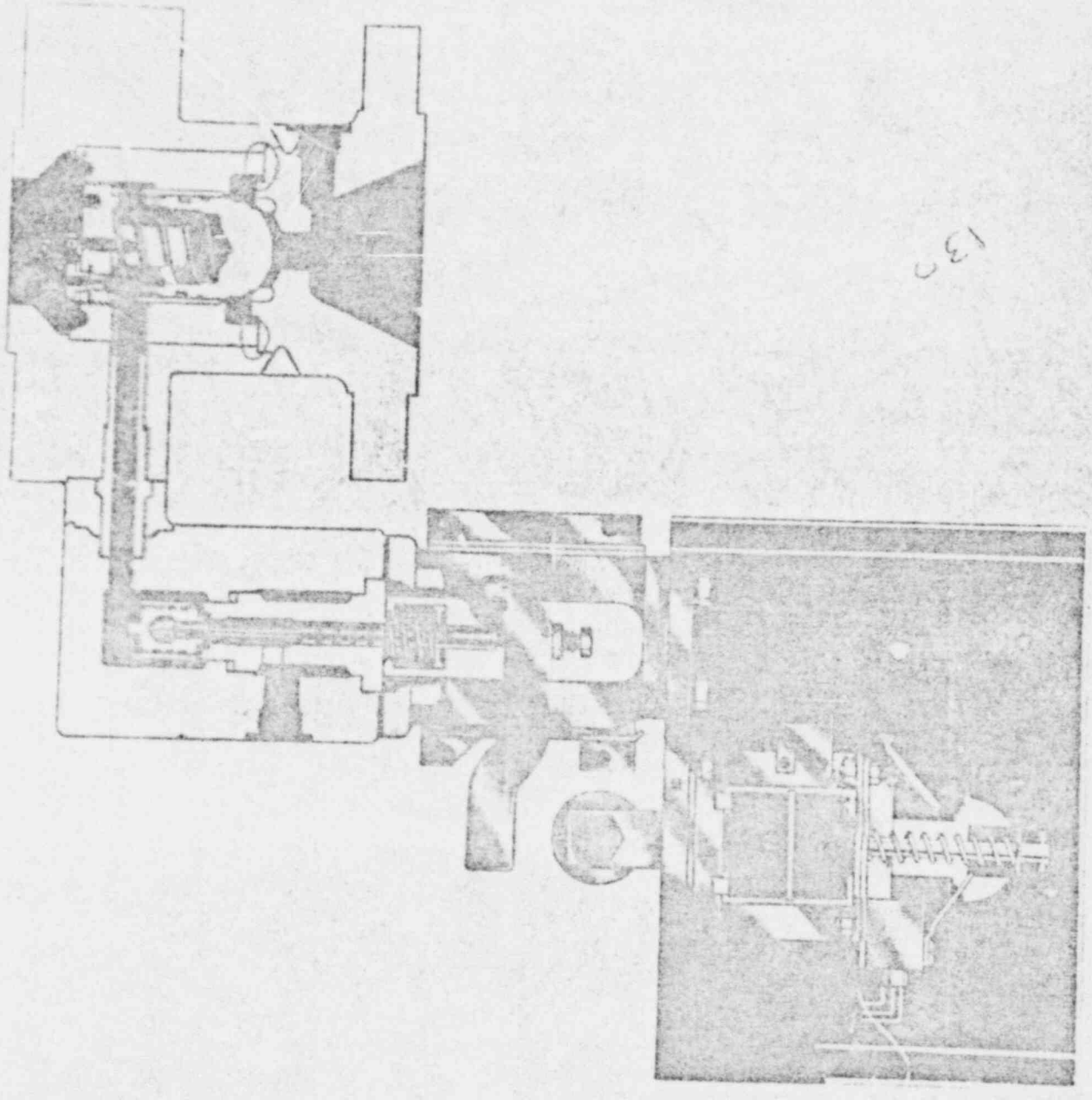


FIGURE 3

LOGAN



LONGHAND MEMORANDUM — THE BABCOCK & WILCOX COMPANY

TO: R. L. PITTMAN

FROM: E. L. LOGAN

CUST.: DUKE

FILE NO. OR REF.:

SUBJ.: 1RC-4 (1RC-V2)

DATE: 12/14/73

I FOUND OUT TODAY THAT THE LIMIT SWITCH MOD WAS MADE TO THIS VALVE ON 12/12/73. THE VALVE WAS CLOSED AND THEN THE HANDWHEEL WAS CRANKED 4 TURNS TOWARD THE OPEN POSITION. THE CLOSE LIMIT SWITCH WAS THEN SET TO STOP VALVE CLOSING TRAVEL AT THIS POSITION. SOME WIRING MODS WERE NECESSARY. WILL SEND A SKETCH AS SOON AS I CAN DIG IT OUT.

Ed.

CC: BOB BUCKLEY, SYS. ENG., OFR

RLB RR Beach JAE

R. R. BEACH
OCT 17 1973

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

To: FILE

From: L. R. ALLEN, ASSOCIATE PROJECT MANAGER EXT. 2310

BDS 663-3

Cust.: DUKE POWER COMPANY

File No. or Ref.: 8A30.41 Dresser

Subj.: DRESSER ELECTROMATIC RELIEF VALVE MEETING MINUTES

Date: 10-11-73

This letter to cover one customer and one subject only.

A meeting was held at Oconee on October 10, 1973, to discuss AEC's concerns on the subject valve.

Attendees

DUKE POWER	AEC	DRESSER	B&W
L. R. Davidson	C. E. Murphy	T. R. Bordelon	E. L. Logan
L. R. Barnes	W. D. Kelley	Y. S. Lai	L. R. Allen
A. R. Hollins			W. C. Butt
T. F. Wyke			
D. G. Gardner			
J. W. Hampton			
T. L. Cotton			
R. E. Dickens			
D. L. Freeze			

The following summarizes discussions which took place during this meeting:

Murphy: I talked to Washington last week and asked that they accept the latest stress analysis which included cyclic analysis however they would not accept the weld joint. Therefore, this meeting was required.

Wyke: We have had H. Thielsch prepare a report on this valve which addresses this weld joint. Please, at this time, review this draft report and determine whether it answers your concerns on this weld joint. (Draft of report attached)

Kelley: Reference page 4, paragraph 1. Solid wedge valve in service such as this block valve could cause problems. Friction factor extremely high for solid wedge valves. Im concerned with operator's ability to close valve with extremely high flow through valve.

Bordelon: The operator was sized to close & open the valve against full 2500 pis differential pressure.

Kelley: Questioned fit up of top and bottom pieces prior to welding. Looked at drawings and welding procedures. Questioned the definition of "seal pass" i.e., with or without filler metal. (It was pointed out that the assembly drawing specifies weld rod for the seal pass). In spite of what the drawing specifies, he would guess that seal pass was fused without filler metal. Also expressed concern over size of the remaining passes and the heat input. Stated that this type weld, unlike a butt weld, since it is bottomed out prior to welding does not allow for weld shrinkage. Since base material strength properties were used in the stress analysis & it can't be proven that cracking did not occur in the heat affected zone, the stress analysis is not adequate. Stated that shop radiograph was meaningless from the standpoint of locations the type cracks with which he is concerned. Stated that if Dresser could show that heat input during welding is sufficiently low such that cracking would not occur during cool-down there would be no problem or if there were some way to NDT weld and heat affected zone to prove that cracks did not exist then previously submitted stress analysis would be acceptable.

Murphy: Basis of our concern is heat input & weld pass size. If heat input is not "high" and weld pass size is not "heavy" then this valve design should be ok.

Allen: Could you quantify "high" & "heavy"?

Kelley: Not really. Had hoped that the weld procedure would have been more specific. Meeting the code from a weld procedure standpoint is really not enough. You could do an engineering analysis which includes cracks and shows that there is no problem if they exist. Radiograph will most likely not show type of cracks which concern me. We could not find this type crack on Hatch vessel with radiograph.

Murphy: We have identified questions which need to be addressed. We will review any analysis which is submitted.

Kelley: You may want to submit a weld mock up.

Bordelon: If I made a mock up and it showed no cracks, would that be an acceptable answer.

Kelley: It would be a better position. The simplest out would be to find a way to NDT this joint and show no cracks exist, then your stress analysis is ok. I would think a mock up and destructive testing would put you on very firm ground. Cracks can exist so long as the stress analysis backs up that the crack will not grow. Also, Duke must submit documentation to show that isolation valve will close under most adverse operating condition.

Lai: If we assume 1/4" crack exists and will not grow over design life, is that acceptable?

Wyke: Would like to submit Thielsch's report for evaluation.

Kelley: We will forward any analysis or report for evaluation. In Summary: Weld joint and welding process should be addressed. Also the stress analysis should take into account cracking which could occur in the heat affected zone during solidifiation. Keep in mind that you may have 4 valves with no cracks and the 5th one may have cracks.

At this point the meeting broke up. Duke contacted H. Thielsch by telephone. Wyke and Thielsch had a private conversation at the end of which Wyke stated that Duke wanted Dresser to make a mock up and send it to Thielsch for evaluation and analysis. Bordelon agreed but said he would need to clear it with his management. At this point Duke, B&W, and Dresser talked to Thielsch relative to how the mock up should be made. The mock up should be made as follows:

1. Should be cylindrical
2. Same material as in valve (will need physicals and chemicals)
3. Same welding procedures, conditions and post weld heat treatment

Thielsch stated that he could submit his report to Duke within 3 days of receipt of the mock up. Assuming this justification is acceptable, we intend to use it across our other plants.

LR Allen

LRA:ch
cc: CE Thomas w/attachs.
RR Beach
SPMs
K Schroeder
WC Butt
RG Burnley
GT Sund
KW Whittaker

REPORT No. 1143

10/9/73

H. THIELSCH

DRAFT

FOR REVIEW AND DISCUSSION

INTRODUCTION

In Units 1, 2 and 3, one Dresser pilot-operated electromatic relief valve No. IRV-67 (EC-66) each was installed. One additional relief valve of the same type had been purchased as a spare.

Photographs of the spare relief valve are shown in Figs. 1 and 2.

The valve is a 2½" size. The gaseous waste disposal piping systems (57), in which the three valves are installed, are Class C piping systems. They are subject to the following service conditions - 2500 psi and 670°F. The maximum operating pressure is 2155 psi. The valves are normally subject to a system pressure of 2155 psi from the pressurizer tanks.

The valve shells were tested by the manufacturer at 9000 psig for three minutes. The valve seats were subsequently tested at 6000 psig for three minutes. (saturation temperature)

After erection, the piping systems in which the valves are installed are tested hydrostatically at a pressure of 3125 psi. However, since this valve was preset to open, it was isolated by isolation valve RC-4.

The documentation applicable to each valve, and identified by the Units (1, 2 or 3) in which they are installed, are included in Appendices A to D.

Weld Assembly

The valves are assembled by welding previously machined Type 304 stainless steel components.

The weld assembly is shown in Fig. 3. One of the welds involved represents a circumferential butt type weld identified by the letter "A" between the flange and lower base sections. It represents a "sleeve-type" of butt joint where one member also serves as a back-up for the other member.

The flanged member of the body is generally seated tightly against the lower base member as detailed in Fig. 4. Since this represents a "socket-type" of weld joint, the tight seating can be subject to questioning since Section ANSI B31.7 shows in Fig. 1-727.4.4(c) a gap in the root of socket joints of approximately 1/16", Fig. 5. Similar requirements are shown in other piping and pressure vessel codes. These, however, generally refer to

fillet type of socket welds normally involving one light wall member such as a small diameter pipe (usually 2½" or smaller nominal outside diameter). In these socket fillet-type of weld joints, illustrated in Fig. 5, the pipe member may heat up more rapidly and thus expand to a somewhat greater extent than the adjacent heavier mass of base metal whenever hot gas or steam flows suddenly through the pipe. Frequent temperature cycling may in time result in cracking across the fillet weld.

The susceptability to cracking depends upon factors such as temperature shock, the number of temperature cycles, principally the heating cycles, the length of the leg below the fillet weld, the size of the filler weld, the materials, etc.

The socket type leg on the Dresser pressure relief valve, shown at "B" in Fig. 4, depending upon machining, may vary from nearly 0" to approximately 1/8". It will probably average 1/16". Because of the mass of metal involving the flange and the cage, this section, even if measuring 1/8" will not be subject to uneven heating or thermal fatigue - even if subject to severe temperature cycling, as the large metal mass, including the cage will equalize the metal temperatures in the flange and lower base sections at the weld location. The tight seating at "C" and the 1/16 average socket length at "B" thus will be of no significance.

Moreover, this valve, functioning as a pressure relief valve, will not even be subject to frequent actuation.

Must state could mis-la

Don't know whether block valve was tested at condition req'd to operate - have experienced failure to operate at Oconee - spoiled to select this valve - relief valve failure -

Furthermore, this valve can be readily isolated by the isolation valves located between the pressure relief valves and the pressurizer tanks.

Morphy: failure of motor operated valves to perform on demand - M.O. valves reliability very low

The extensive experience with valve and component failures in fossil fuel, nuclear and chemical plants, also supports the conclusions that the specific weld joint design applicable to this Dresser valve in the operating conditions involved, should not result in failure.

The entirely satisfactory service of this particular Dresser design has also been confirmed by the entirely satisfactory service of 99 valves from A182 forgings operating in ~~fossil fuel power~~ commercial plants at pressures as high as 2250 psi and temperatures as high as 1000°F. In addition, 14 of these valves to date have been installed in nuclear power plants.

Even when a socket weld of more conventional long socket leg design has failed because of tight "bottom" positioning, the occasional failure encountered in fossil fuel power plants or chemical plants have almost always occurred as localized cracking over part of the joint circumference rather than involving a complete system.

Radiographic Examination

To verify that the "modified socket" was less than 1/8", the valve was radiographed by multiple exposures as detailed in the shooting sketch shown in Fig. 6. Prints of the several exposures are shown in Figs. 7 to 9. They indicate that the socket is likely to be approximately 1/16" and may even be less.

CONCLUSIONS

On the basis of the following criteria, the 2500 lb. class Dresser Consolidated Electromatic Pressure Relief Valves type 2½-31533VX-30(25)x2-XMYI-US1[illegible], as detailed on Dresser Drawings No. CP-1549 and 418463 are considered acceptable.

(1) The wall thicknesses shown in Appendix E and evaluations confirm compliance with the requirements of Section, III 1971 edition of the ASME Boiler and Pressure Vessel Code.

(2) The socket type weld joint with a socket leg length of less than 1/8" is not subject to significant localized stress levels even under the most severe conditions of thermal cycling to which this valve might be subjected.

(3) The valve, and weld assembly conditions, as detailed on Dresser Sketch No. 418463, have been verified by supplementary final radiography.

(4) The acceptability of the flange and lower body materials have been confirmed by Dresser responsible for the verification of the supplier's mill test certificates and ultrasonic and liquid penetrant inspection reports.

(5) The soundness of the weld assembled flanged body was further confirmed by Dresser Industries by a hydrostatic pressure test of the "shell" performed at a pressure of 9000 psig for 5 min., which involves more than three times the maximum working pressure.

(6) Verification of these test results and compliance with the Section III requirements of the ASME Boiler and Pressure Vessel Code was done by Babcock and Wilcox Company.

(7) Confirmation by Dresser that weld failures have not occurred in the Electronatic Pressure Relief Valves of identical "modified socket" weld joint design and tight seating, and that these valves have been produced for over five years and operate in service environments considered equivalent to or more severe than conditions applicable to the specific operations of the gaseous waste disposal piping systems of Units 1, 2 and 3 at the Oconee Nuclear Power Station.

TRANSMITTAL SLIP

PLANT STARTUP SERVICE SITE PROBLEM REPORT

**** CLEARED ****

FILE: 12M2

TO: _____ For Information

Central Engineering Files

C. C. Plunkett - Contract Admin.

C. M. Fletcher - Quality Assurance

R.G. Barnley - Task Engineer

W.A. Cobb - Sr. Proj. Manager

CONTRACT NO: 620-00 C3

SPR 560

TITLE Motor Pursuant Rev 2

DATE: SEP 6 1984

The attached, cleared SPR is submitted for your information.

TO: _____ J. N. Kaelin - ARKANSAS _____

_____ E. L. Logan - SMUD _____

_____ B. L. Day - OCONEE _____

_____ L. C. Rogers - MET ED _____

Attached is one copy of Site Problem Report No. 560 which was processed on Contract 620-00 03. Future contracts have been reviewed for the potential of a similar problem. This problem is/is not considered applicable to other contracts 4, 5, 7, 9.

REMARKS: New motor is on site & will be installed next outage per EC 276.

cc:

Earl B. Davis
NUCLEAR SERVICE SUPPORT ENGINEER
Earl B. Davis

TECHNICAL SUPPORT SUPERVISOR

CLEARED

SITE PROBLEM REPORT

BABCOCK & WILCOX

CUSTOMER Duke Power Company | CONTRACT NO. 583-0003 | SPR NO. 560 | REV. NO. 1

VENDOR B & W | P.O. NO. | TASK NO. 24 | GROUP NO. 41 | SEQ. NO. 02

SITE ENGINEER: E. L. Logan | REQ'D. RESOL. DATE: | REQ'D. COMP. DATE:

TITLE: RC-4 (RC-V2) MOTOR BURNOUT # 2

DESCRIPTION OF PROBLEM

Same as reported on Revision C-
On 10-9-73 motor was again burned out. When an attempt was made to open the valve with the overloads bypassed.

STATUS - ACTION TO DATE INCLUDING PERSONS CONTACTED

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL

Same as recommended on Revision 0.

OPERATOR SIGNATURE | DATE 10-12-73 | REP. SIGNATURE | 10/12/73

RESOLUTION

APPROVED BY	SIGNATURE	DATE
N.S. SUPPORT ENGINEER		
TASK ENGINEER		
PROJECT MANAGER	C. A. Creacy	8-6-74

COST CATEGORY ☐ NORM ☐ C ☐ D ☐ G ☐ L ☐ VENDOR CLAIM

AUTH. CHARGE NO. | ☐ FIELD CHANGE REQ | C NO.

COMPLETION

SITE COMPLETION REPORT New operator motor (25 ft lb) is on site and will be installed the next time plant conditions permit as per FC-276.
This valve is presently open and the 15 ft lb motor installed now is operational. This also clears Rev. 0

☐ RECOMMENDED STDS. CHANGE

DEVIATIONS ☒ NONE ☐ SEE SPR REV. NO. ____

DATE COMPLETED 8/24/74 | SIGNED BY

S.O.M./CONSTR. REP. APPROVAL | DATE 8/28/74

FINAL DISTRIBUTION
PROJECT MANAGER
S.O.M./CONST. REP.
QA DOC. FILE
CENT. ENGR FILE 12V.2

FDS-21091-1 (9-73)

SITE PROBLEM REPORT

BABCOCK & WILCOX

CUSTOMER Duke Power Company	CONTRACT NO. 620-0003	SPR NO. 559	REV. NO. 0
VENDOR B. & W.	P.O. NO.	TASK NO.	GROUP NO.	SEQ. NO.
SITE ENGINEER E. L. Logan	REQ'D. RESOL. DATE	REQ'D. COMP. DATE	

TITLE: RC-4 (RC-V2) MOTOR BURNOUT

DESCRIPTION OF PROBLEM: On 10-5-73 PC-4 overloads had been over-ridden at A.E.C.'s direction. During dropped rod incident (See SPR 558), reactor operator attempted to open RC-4. The valve would not open and attempts resulted in a burned out actuator motor. Valve actuator was replaced on 10/7/73. Valve is now in service with overloads still bypassed.

STATUS - ACTION TO DATE INCLUDING PERSONS CONTACTED

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL
ENGR SHOULD RE-EVALUATE NEED FOR EQUALIZATION VALVE - GATE VALVES NORMALLY HAVE THIS FEATURE. ALSO PRESSER ANST MINIMIZE SIZING EQUALIZATION VALVE. BOTH UNIT 1 & 2 VALVES HAVE SIMILAR SHUT WHILE HAVING HIGH DIFFERENTIAL PRESS. ACROSS GATE.

ORIGINATOR SIGNATURE	DATE	S.O.M./CONSTR. REP. SIGNATURE	DATE
E. L. Logan	10-9-73		10/9/73

RESOLUTION

APPROVED BY	SIGNATURE	DATE
N.S. SUPPORT ENGINEER		
TASK ENGINEER		
PROJECT MANAGER		

COST CATEGORY ☐ NORM ☐ C ☐ D ☐ G ☐ L ☐ VENDOR CLAIM

AUTH. CHARGE NO. | ☐ FIELD CHANGE REQ | FC NO.

COMPLETION

SITE COMPLETION REPORT

☐ RECOMMENDED STUS. CHANGE

DEVIATIONS ☐ NONE ☐ SEE SPR REV. NO. _____

DATE COMPLETED | SIGNED BY

S.O.M./CONSTR. REP. APPROVAL | DATE

FINAL DISTRIBUTION
PROJECT MANAGER
S.O.M./CONST. REP.
QA DOC. FILE
CENT. ENGR
FILE 12M.2

R.J.M.

File SPR-560 Unit 1

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

To: R. R. Beach

From: R. J. McConnell / R. L. Logan

BDS 663.5

Cust.: Duke Power

File No. or Ref.:

Subj.: Another chapter in the continuing SAGA of: RC-V2 (RC-4) ELECTROMATIC RELIEF BLOCK VALVE

Date: 12/[illegible]/73

This letter to cover one customer and one subject only.

References: 1. NSS-3 SPR-560, 11-1-73, (R. L. Pittman to R. J. McConnell)
2. B73-290, 11-13-73 (C. A. Creacy to S. K. Blackley)

I. Problem

As of this date neither the Unit 1 or 2 Pressurizers are being operated as they were designed. The electromatic relief valves (RC-V2) are essentially isolated from the systems for the following reasons:

1. An AEC requirement that the block valves (RC-V2)be closed except during plant transients (concern over electromatic valve wall thickness).

2. The inability to open 1RC-V2 (This valve has not been remotely operable since 10-5-73 and was highly unreliable prior to that time).

3. Failure of the Reactor Operators to open 2RC-V2 during an unexpected plant transient.

The first two trips during the Unit 2 Power Escalation Series resulted from High RCS pressure due to reason 3 above. We are unable to complete the Unit 1 Test Program (turbine trip test and unit loss of electrical load both from 95% power) due to reasons 1 and 2 above.

II. Corrective Action Taken

On Dresser Industries recommendation, the following corrective actions have been taken:

1. The bodies of both 1 RC-V2 and 2 RC-V2 have been insulated.

2. The 15 ft # actuator motor on 2 RC-V2 was changed to a 25 ft # (Class B Insulation) motor by Mr. C. L. Padgett of Limitorque on 10-27-73. Mr. W. A. McCormick of Dresser Industries was on-site for this modification. A heavier torque spring was also installed. (See Field Change 120)

III. Results

Since the motor changeout on 2 RC-V2, the valve has been cycled eighteen (18) times. Eleven of these cycles were at full temperature and pressure of 605° F and 2250 psig. The other seven (7) cycles were at approximately 505° F and 1000 psig. On the first cycle at full power conditions, the valve failed to close. The closing torque switch was bypassed until the valve started to move. After removing the jumper, the valve continued to the closed position. All subsequent operation has been normal.

1 RC-V2 still will not operate.

It seems from the results that insulating the valve does not solve the problem, but that a bigger motor plus valve insulation does give satisfactory operation.

IV. Recommendations

We were informed on 11-8-73 that Dresser would order replacement motors (25 ft #, class H insulation) for these valves. The customer was notified of this both here at the site and by letter (Ref. 2). R. L. Pittman now informs us that Dresser has not ordered the larger motors and is requesting more test data. It seems to us that operation of 2 RC-V2 since 11-27-73 has shown that the larger motor is the solution to the problem. Duke Power personnel also feel this way and continue to ask <u>when</u> the new motors will be delivered.

It is imperative that Purchasing pursue this situation with Dresser.

ELL/th

cc: J. P. Ittner
R. C. Pittman
J. C. Deddens
C. E. Kulynych
R. V. Strauss
C. A. Creasy

Babcock & Wilcox

Power Generation Group
P.O. Box 1260 Lynchburg, Va. 24505
Telephone (703) 384-5111

November 13, 1973

NTS-000

Mr. S. K. Blackley
Duke Power Company
P. O. Box 2178
Charlotte, N. C. 28201

Attention: Mr. T. L. Overcash

Subject: Oconee 2 B-75748 FC-126
Dresser Shutoff Valve 2HC-V2

Dear Mr. Blackley:

The motor installation covered by FC-126 has been accomplished and 2HC-V2 has been operated at full temperature and pressure.

Based on incomplete test results it appears that the 25 foot pound motor will be a satisfactory resolution to the valve operation problem. As you are aware the present motor does not meet all the specifications for this service, thus new 25 foot pound motors meeting all specifications for this service have been ordered by Dresser for Oconee 1, 2 and 3. The insulation for the motors will be Class H rather than Class F as requested in your letter of November 2, 1973 in that B&W considers Class H a superior insulation to Class F for this service. The final conclusions as to whether the new motors will be a satisfactory resolution of the problem awaits further test data.

Very truly yours,

C. A. Creacy

C. A. Creacy
Associate Project Manager

CAC:vw
cc: G. M. Meccich
R. J. McConnell
W. Panzare