OCONEE-1,2,3

THE BABCOCK & WILCOX COMPANY
POWER GENERATION GROUP

To: C. A. Creacy - Service Manager

From: D. J. Morris - Plant Equipment Services Section (Ext. 2057)
D J Morris

Cust. Duke Power Company

File No. or Ref. NSS-3,4, & 9

Subj. Trip Report
PZR Code Safety Valves Meeting

Date May 25, 1976

This letter to cover one customer and one subject only.

ATTENDEES

B&W

C. A. Creacy
J. C. Simonis
D. J. Morris

Duke Power Company

C. D. Hatley
G. W. Hallman
Bill Keisler
Mike Alexander
S. A. Holland
W. E. Martin
Harry Lipe-McGuire
Ray Rider-McGuire

PURPOSE OF MEETING

To present to Duke the results of B&W's effort toward improving performance of pressurizer code safety valves. The meeting was conducted in accordance with the meeting agenda (Attachment 1).

MEETING MINUTES

Introduction - Presented an outline of the joint effort between B&W, Duke Power, and Dresser (Attachment 2).

Instrumentation on Oconee Unit 2 - Technical presentations by Jack Simonis on the PIPING LOADS/STRAIN GAUGE STUDY and the VIBRATION/ACCELEROMETER STUDY were very well received. These presentations readily demonstrated both the time and effort expended on these studies and the high degree of technical competence of the personnel involved. Due to his direct involvement in this program, he was also able to correlate his findings with other areas of the overall program. Following each technical presentation, a discussion of both specific and general conclusions which could be drawn from these studies as a result of both data analysis AND visual observations/common sense approach to all data presented.

DISCUSSION

Operating Plant Survey - Discussed the extensive nationwide PWR survey on operating plants. These included plants from coast to coast with several on-site visits. Both B&W and non-B&W plants were included in this survey. Specific areas of Maintenance, Handling, Testing, Piping Arrangements, and Operating History were covered. A multitude of correlations were made which complemented the theories and results of the presentations by Jack Simonis.

Several questions were raised by the customer during this discussion in each of the areas covered, indicating a high degree of enthusiasm toward the information presented. At the conclusion of the Survey discussion, handouts were presented on the information obtained (Attachment 3), and a sample of the Survey questionnaire (Attachment 4).

Present Status at TMI and Crystal River - A brief discussion of recent events at these plants was conducted which primarily emphasized the high degree of correlation between those events and previously discussed theories and information.

Conclusions and recommendations were then presented, along with the schedule for implementing the action plan (Attachments 5 and 6). Duke agreed to the action plan and as a result of the discussions, decided to implement vertical handling of these valves as soon as possible. The agreement was made to have detailed maintenance, handling and testing procedures available for use and an on-site test facility constructed in time for the Unit 3 refueling in September.

The meeting was highly successful and more than adequately accomplished its purpose.

Duke Power was impressed with the work that was required to retrieve the information and well pleased with B&W's interpretation and analysis which provided a logical/common sense set of recommendations.

DJM:NF
Attachments

cc: K. R. Ellison
J. A. Middleton
R. L. Pittman
H. Konig
J. M. Neilson (ARC)
J. C. Simonis

DUKE POWER COMPANY

PRESSURIZER CODE SAFETY VALVES

MEETING 5/19/76

AGENDA

INTRODUCTION	DuWayne Morris
PIPING LOADS/STRAIN GAUGE STUDY	Jack Simonis
VIBRATION/ACCELEROMETER STUDY	Jack Simonis
DISCUSSION	DuWayne Morris
OPERATING PLANT SURVEY (INCLUDES MAINTENANCE, HANDLING, AND TESTING)	
PRESENT STATUS AT TMI AND CRYSTAL RIVER	
SUMMARY OF CONCLUSIONS	
RECOMMENDATIONS FOR OCONEE NUCLEAR STATION	
ACTION PLAN AND SCHEDULE	

INTRODUCTION

Efforts were initiated by B&W toward improving performance of pressurizer code safety valves as a direct result of B&W and customer concern over recurring problems with excessive valve leakage. This concern was expressed to Dresser which resulted in a joint effort between B&W and Dresser.

The first step taken was to determine, by joint discussion, the probable causes for excessive leakage based upon all information available at the time. The following items were determined to be the most probable causes for excessive leakage:

PROBABLE CAUSES

A. Ambient temperature and associated thermal profile effects.

B. External piping loads created by thermal growth during Rx heatup resulting in excessive mechanical strain on valve internals.

C. Vibration of sufficient magnitude may result in relative seat/disc movement and associated surface degradation.

D. Maintenance techniques may need to be more stringent to insure proper seating.

E. Handling and installation should be closely scrutinized to insure that the seating surfaces are not damaged during these processes.

F. Valve testing, specifically hot vs. cold setting of these valves, needs closer analysis to determine set point drift associated with the thermal growth of valve internals.

Subsequent to determination of the most probable causes listed above, a course of action was established to facilitate assignment of relative magnitudes and/or elimination each of the aforementioned probable causes as follows:

ACTION TAKEN

A. An extensive nationwide PWR survey was undertaken on operating plants to provide additional information, both general and specific. This included several on-site visits coast to coast and lengthy survey questionnaires at both B&W and non-B&W plants.

B. Determine external piping loads at Duke Power Company's Oconee Unit II through both visual observations and installation of strain gauge instrumentation.

C. Determine effects of vibration at Oconee Unit II by installation of accelerometer instrumentation on the valve body.

D. Installation of thermocouple instrumentation to provide valve and piping thermal profile information at Oconee Unit II.

E. Discuss the results of the above listed actions with Dresser.

F. Formulate a new plan.

With regard to the action plan, tremendous cooperation, effort, and technical assistance was obtained from all personnel involved in the instrumentation and data retrieval on the Oconee Unit II valves. The efforts of Olie Bradham, Bill Keisler, Mike Alexander, John Neilson (ARC), Bill Crawford (ARC), and Jack Simonis (OFR) were particularly outstanding and greatly appreciated.

ATTACHMENT 3

PRESSURIZER CODE SAFETY RELIEF VALVES GENERAL INFORMATION

PLANT	REACTOR SUPPLIER	ARCHITECT ENGINEER	VALVE VENDOR	LOOP SEAL	INLET SIZE	NET MWe	COMMERCIAL DATE	LCD = LOST CAPACITY DAYS PROBLEMS	OPERATING PRESSURE	OPER. PRESS. / SET PRESS. %	FINAL POLISH GRIT #	WHO PERFORMS LAPPING?	LOCATION OF TESTING	TEST METHOD	HANDLING
ARKANSAS 1	B+W	BECHTEL	DRESSER	No	3"	810	10/74	-0- LCD	2155	86.2	1000	VENDOR	IN PLACE	HYDRO-SET	
CALVERT CLIFFS 1	COMBUSTION	BECHTEL	DRESSER	No	2½"	800	10/75	YES	2250	90	1000	UTILITY	HOT SHOP	N_2 + HYDRO ASSIST	[illegible]
MAINE YANKEE	COMBUSTION	STONE/WEBSTER	DRESSER	No	3"	790	11/72	No(1)	2235	89.9	8000	UTILITY	WILEY LAB	STEAM + HYDRO	TRUCK
MILSTONE 2	COMBUSTION	BECHTEL	DRESSER	YES * SEE NOTE BELOW	2½"	880	~10/75	No							
OCONEE I-II-III	B+W	UTILITY	DRESSER	No	2½"	887	I-7/73 II-9/74 III-12/74	10.75 LCD	2155	86.2	1000	VENDOR	WILEY LAB	STEAM + HYDRO	TRUCK
PALISADES	COMBUSTION	BECHTEL	DRESSER	No	3"	700	12/71	YES, INITIALLY	1800	72	1200	UTILITY	HOT SHOP	N_2 + HYDRO ASSIST	VERTICAL
SAN ONOFRE 1	WESTINGHOUSE	BECHTEL	CROSBY	No	3"	430	1/68	VERIFIED SINCE 1/68	2085	83.9	8000	UTILITY	CONTAINMENT	N_2 + HYDRO ASSIST	VERTICAL
SMUD	B+W	BECHTEL	DRESSER	No	3"	913	4/75	-0- LCD(1)	2155	86.2	1000	UTILITY	MACH. SHOP	N_2 [illegible]	VERTICAL
TMI-1	B+W	GILBERT	DRESSER	YES	2½"	818	9/74	20 LCD	~~2166~~ 2155	~~83.9~~ 88.5	1000	VENDOR	CONTAINMENT	N_2 + HYDRO ASSIST	VERTICAL

NOTES: CALVERT CLIFFS 1 - HAS ~6FT INLET EXPANSION LOOP - SET POINT CHANGES NOTED BETWEEN FIRST / SECOND LIFT CHECK SEE QUESTION #2(?)

MAINE YANKEE - SUMMER OF '75 UPGRADED PRIMARY PRESS FROM 1800 TO 2235 PSI, NO CHANGES NOTED THUS FAR - UP UNTIL LAST FUELING OUTAGE TESTING WAS CONDUCTED ON SITE WITH N_2.

PALISADES - 1973 DE-RATED PRIMARY PRESS. FROM 2100 TO 1800 PSI NORMAL OPERATING

FIELD REPRESENTATIVES - SMUD - WERNER STELZ
TMI-1 - ROLAND PRUETT - TOM CASSIDY
OCONEE - TOM CASSIDY
PALISADES - WERNER STELZ

(1) [illegible]
(1) [illegible]

* MILSTONE 2 - LOOP SEAL IS ELECTRICALLY HEATED TO ~350°F

PRESSURIZER CODE SAFETY RELIEF VALVES PIPING ARRANGEMENT

PLANT	GIMBAL EXP. JOINTS	BELLOWS	SPRING HANGERS	HYDRAULIC SNUBBERS	INLET EXP LOOP	INLET LOOP SEAL	(CUSTOMER COMMENT) ELIMINATES EXCESSIVE STRESS	
ARKANSAS 1	NO	NO	YES	YES	NO	NO	YES	SEE TEST RESULTS BY BECHTEL TP 800.29
CALVERT CLIFFS 1				YES	YES	NO		
MAINE YANKEE					NO	NO	YES	
MILLSTONE 2				YES	N/A	YES		
OCONEE 1/2/3	YES - 1&2	NO	NO	YES	NO	NO	YES	
PALISADES					NO	NO	NO	
SAN ONOFRE 1	NO	NO	YES	NO	NO	NO	COULD BE IMPROVED	
SHOD	YES - 2&3	YES	NO	NO	NO	NO	OK	
TMI-1	NO	NO	YES	NO	N/A	YES	YES	

PRESSURIZER CODE SAFETY RELIEF VALVES CRAFTSMANSHIP

PLANT	WHO PERFORMS LAPPING?	FINAL POLISH GRIT #	OPTICAL FLATNESS CHECKS: LAPPING BLOCKS BEFORE USE	OPTICAL FLATNESS CHECKS: LAPPING BLOCKS AFTER USE	OPTICAL FLATNESS CHECKS: VALVE SEAT	OPTICAL FLATNESS CHECKS: VALVE DISK	VISUAL INSPECTION: STROBE LIGHT & LAPPING BLOCKS	VISUAL INSPECTION: VALVE SEAT	VISUAL INSPECTION: VALVE DISK	CONDITION OF OPTICAL PARTS	OPTICAL FLATS CALIBRATED?	MECHANICAL AIDES USED FOR UNIFORMITY IN LAPPING?	CLEANING FLUID USED	WHO PERFORMS ASSEMBLY?	IS DIRT OR FOREIGN MATTER A PROBLEM?
ARKANSAS 1	VENDOR	1800	No	No	No	No	MAG GLASS	EYEBALL	EYEBALL	NOT USED	NOT USED	No	ACETONE	UTILITY	No
CALVERT CLIFFS	UTILITY	1000	No	No	No	No	EYEBALL	EYEBALL	DRY LAP AND EYEBALL	NOT USED	NOT USED	No	ACETONE	UTILITY	No
MAINE YANKEE	UTILITY	8000	No	No	No	No	EYEBALL	BLUING & EYEBALL	BLUING & EYEBALL	NOT USED	NOT USED	No	SOLVENT	UTILITY	No
MILLSTONE 2															
OCONEE I II III	VENDOR	1000	No	No	No	No	EYEBALL	EYEBALL	EYEBALL	NOT USED	NOT USED	No	SPOT CHECK	UTILITY & VENDOR	No
PALISADES	UTILITY	1200	No	No	No	No	EYEBALL	EYEBALL	EYEBALL	NOT USED	NOT USED	No	ACETONE	UTILITY	YES- DURING LAPPING
SAN ONOFRE I	UTILITY	8000	YES	YES	± 1 light band	No	EYEBALL	EYEBALL WITH HIGH INTENSITY LIGHT		GOOD	YES	NOZZLE GUIDE	ALCOHOL & CHEM WIPES	UTILITY	YES
SMUD	UTILITY	2000	± 1 light band	No	± 1 light band	No	MAG GLASS	MAG. GLASS	MAG GLASS	GOOD	YES	No	ACETONE	UTILITY	No
TMI-I	VENDOR	1000	SEE VENDOR					EYEBALL	EYEBALL	GOOD	NO			CONTRACTOR	NO

PRESSURIZER CODE SAFETY RELIEF VALVES TESTING & HANDLING

PLANT	LIFT TESTING: LOCATION OF TESTING	LIFT TESTING: AMBIENT TEST TEMPERATURE	LIFT TESTING: TEST MEDIUM	LIFT TESTING: (FOR LOWEST SET VALVE) SET POINT	LIFT TESTING: SET POINT DEVIATION NOTED?	LEAKAGE TESTING: LEAK TEST PRESSURE	LEAKAGE TESTING: LEAK TEST MEDIUM	LEAKAGE TESTING: LEAK TEST TIME	LEAKAGE TESTING: LEAK TEST SPECIFICATION	IN PLACE TESTING: HAVE VALVES BEEN TESTED IN PLACE?	IN PLACE TESTING: PRESSURE PERMANENT	IN PLACE TESTING: SUCCESS OF IN PLACE TESTING	HANDLING: ARE VALVES HANDLED VERTICALLY AT ALL TIMES?	HANDLING: ARE VALVES EVER TRANSPORTED FROM OFF-SITE REPAIR TESTING?	SUPERVISION: TESTING	SUPERVISION: HANDLING
ARKANSAS 1	IN PLACE		STEAM	2500						YES		GOOD	HANDLED VERTICALLY?	No	UTILITY	UTILITY
CALVERT CLIFFS 1	HOT SHOP	AMBIENT	N_2 + HYDRO ASSIST	2485±1%	YES - SEE NOTE BELOW	2350 PSI	N_2 + HYDRO ASSIST	5 MIN	410 BUBBLES/MIN	No	N/A	N/A	Yes - BUT SEE NOTE BELOW	No	UTILITY	UTILITY
MAINE YANKEE	WILEY LAB	SPRING TEMP 125°F ± 5°	1200 LB STEAM & HYDRO-SET	2485 +3% -1%	No COMMENT	2200 EQUIVALENT	STEAM	3 HRS.	SEE DETAILS BELOW	No	N/A	N/A	No	Yes	UTILITY	UTILITY
MILESTONE 2																
OCONEE 1 2 3	WILEY LAB	150°F	1200 LB STEAM + HYDRO-SET	2486	No	2250 EQUIVALENT	STEAM	3 HRS	SEE DETAILS BELOW	No	N/A	N/A	No	Yes	VENDOR	UTILITY
PRAIS	HOT SHOP	AMBIENT	N_2	2450±1(0)%	No	2100	N_2	NOT SPECIFIED	<5 BUBBLES/MIN	No	N/A	N/A	YES	No	UTILITY	UTILITY
SAN ONOFRE 2	CONTAINMENT	AMBIENT	N_2 + HYDRO ASSIST	2485 ± 1%	No	2100?	He_2 + HYDRO ASSIST	15 MIN	ZERO	YES	2085	FOUND SATISFY INTER TEST	YES	No	UTILITY	UTILITY
SHUD	MAIN SHOP	250°F	N_2	2500±25 PSI	COLD TO HOT - YES	2300 PSI	N_2	10 MIN	ZERO	YES	1500	GOOD	YES	No	UTILITY	UTILITY
TMI-2	CONTAINMENT	AMBIENT	N_2	2435	No	2290 PSI	N_2	NO SPEC	ZERO BUBBLES	NO	N/A	N/A	Yes	No	VENDOR	VENDOR

NOTES: CALVERT CLIFFS 1 - SET POINT DEVIATION IS NOTED ON FIRST LIFT CHECK - IN ONE CASE, MANUAL ACTUATION REQUIRED, HOWEVER, SUBSEQUENT LIFT CHECKS ARE OK. VALVES ARE NOT COMPLETELY VERTICAL AT ALL TIMES DUE TO PIPING ARRANGEMENT OBSTRUCTIONS DURING INSTALLATION

OCONEE & MAINE YANKEE - LEAK TEST SPECIFICATIONS: ZERO CONDENSATION ON MIRROR HELD AT DISCHARGE. NEGLIGIBLE CHANGE IN MANOMETER WATER LEVEL AFTER 3 HRS AS A CLOSED SYSTEM DISCHARGE.

OPERATING HISTORY:

1. Do you have machinery history on the valves?
   If yes, may I obtain a copy?

2. Can you discuss the operating history and any items which may not appear in machinery history?
   Include:

   A.) Description of malfunction:

   1. Downstream temperatures
   2. Quench tank temperature
   3. Time from installation to malfunction
   4. Calculated or known leak rates
   5. Plant conditions or transients which may have contributed to malfunction such as lifting of the electromagnetic relief valve.

   B.) Any opinion on cause of malfunction?

   C.) Any unusual conditions noted on disassembly or subsequent testing?
   Including:

   1. Wire drawing, cutting, visual appearance + ability to lap clean.
   2. Foreign matter in seat area?
   3. Internal misalignment?
   4. Scratches and/or cracks in seat or disk?
      Description and size.
   5. Set point OK on re-assembly?
   6. Leak test OK after testing?
   7. Have valves been cause for plant shutdown?

3. What model Number valve do you have?
   Inlet size: Outlet size:

4. Has there been a difference in performance between one valve installation and the other? If so, what do you attribute this performance to? Briefly describe any difference in downstream piping arrangements.

PLANT OPERATIONS:

5. Have the code safety valves ever lifted as protective action (overpressurization)? If so, describe plant conditions and results.

6. What is plant operating pressure?
Electromagnetic relief set press? Code relief set press?

7. Has there ever been a change in the specified normal plant op rating pressure? If so, state the approximate date of change; state what the change was, and any noted change in code valve performance.

CRAFTSMANSHIP:

8. Who actually performs valve lapping? (Utility - Vendor)

9. What type and grit number of lapping compound is used for final polish?

10. Are any mechenical aides used to provide uniformity in lapping? If yes, please describe.

11. Are lapping blocks checked for optical flatness prior to use? If yes, what is the required specification for acceptable use?

12. Are lapping blocks re-used? Do you change lapping blocks when changing from a low to a higher grit number lapping compound?

13. Are lapping blocks visually inspected prior to use? If yes, is a magnifying glass used?

14. Describe your cleanliness procedures and lapping compound removal techniques.

15. Are lapping blocks checked for flatness after lapping. If yes, what is acceptable? Is a visual inspection of lapping blocks conducted after final polishing?

(3)

16. Is the valve seat and/or disk checked for optical flatness after lapping? If yes, what is the flatness required?

17. Do you conduct a visual inspection of the valve seat and disk after final polish? Describe the technique used.

18. Who supervises lapping/assembly? (Utility - Vendor)

19. Who performs the assembly and adjustment of the valves? (Utility - Vendor)

20. Is dirt or other foreign matter a problem?

21. Are any special techniques used for assembly? Is verticality maintained throughout assembly?

22. Are the optical flats used for maintenance of these valves in good conditions and calibrated?

TESTING:

23. Where are the valves tested? (Containment, shop, off-site).

24. How often are valves disassembled and tested?

25. How are the valves tested? (Hydro-assist, N_2 Press, steam, in place etc.)

26. Lift pressure specification?

27. Are the valves heated during testing?
State temperature. Any set-point drift noted?

28. Leak testing pressure: Temp:
Medium (H_2O, N_2, steam): Leakage specification:
Success?

29. Have the valves ever been tested in place?
Primary press: Temperature: Success?

30. Are there any decontamination problems with these valves?

31. Who supervises the testing?

HANDLING:

32. Are the valves ever shipped by air or freight?
Opinion of handling? Re-work requried?

33. What method of handling is used on site?
(Sling, verticality maintained, crate to fork lift used, prevention of bumping and jolting).

34. Who supervises handling? (Utility - Vendor - supervisory personnel)

PROCEDURE:

35. Do you have a written maintenance procedure for these valves? If yes, may I obtain a copy?

PIPING ARRANGEMENT:

36. May I obtain a copy of code valve discharge piping drawings including isometrics?

27. Describe your discharge piping arrangement including the following:

A.) Bellow expansion
B.) Spring hangers
C.) Hydraulic snubbers
D.) Gimbal expansion joints
E.) Distance from inlet flange to pressurizer?
F.) Describe any cold spring noted during installation or removal.

38. Have you ever installed:

A.) Thermocouples

B.) Strain measuring equipment

C.) Vibration monitoring equipment

D.) Pipe displacement measuring equipment

If yes, what were the results and what is the opinion with regard to data reliability?

39. State your opinion of your code valve piping arrangement including the following:

A.) Designed well?

B.) Eliminates excessive stress?

C.) Has valve Vendor commented on it?

D.) Opinion of A/E who designed + installed system?

40. Have there been changes in discharge piping and/or support system since initial installation? If so,when? Why? What is your opinion of before and after such modifications?

41. What is your opinion on the H_2 erosion theory?

42. What is your opinion of inlet loop seals?

QUESTIONS ABOUT THE VALVE VENDOR:

43. What is your opinion of valve performance?

44. Do you receive good parts support?

45. What Vendor representatives have you been associated with?

46. What is your opinon of their craftsmanship and technical competance?

47. What is your opinion of their availability and co-operation?

48. Has the Vendor made any modifications or material changes? Why? Did this affect performance? Did you agree with the changes made?

49. What is your opinion of the other Vendor? (Crosby-Dresser)
What experience have you had with Crosby-Dresser?

50. Have you ever requested or acquisitioned new valves as spares or replacements? If so, why? What time-lag resulted from such requests?

51. Do you notify the Vendor each time you have a problem? If yes, what are the results of such notification?

MISCELLANEOUS

52. Have you discussed code valve problems with other utilities. Who? Problems? Co-operation? Scope of discussion?

53. If you have discussed code valve problems with other utilities, do you believe such discussion and/or visits are usefull?

Hdine

ATTACHMENT 6

SCHEDULE OF EVENTS

ACTIVITY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.& DEC.
1. Inst. & Maint. Man. Draft to B&W Review by B&W	Dresser will be late Plant on Strike							
2. Testing Recomm. Draft to B&W Review to Dresser								
3. Temp Amb & Profile to Dresser ASAP	Complete 3/3/76							
4. CK Power Ramps for Press Trans on B&W Op. Plants ASAP	Complete 3/3/76							
5. Method for Early Leak Detection Pre. Info. to Dresser								

TRANSMITTAL SLIP

PLANT STARTUP SERVICE SITE PROBLEM REPORT

ORIGINAL

**** CLEARED ****

FILE: 12MC

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 04

SPR 222

TITLE LEAKING PRESSURIZER RELIEFS & BLOCK VALVES

DATE: 1/29/75

The attached, cleared SPR is submitted for your information.

TO: _____ J. L. Hollis - FLORIDA _____

_____ E. L. Logan - SMUD _____

_____ B. L. Day - TOLEDO _____

_____ R. J. BAKER - OCONEE _____

_____ L. C. ROGERS - MET ED _____

J. A. BAILEY - ARKANSAS

Attached is one copy of Site Problem Report No. 222 which was processed on Contract 620-00 04. Future contracts have been reviewed for the potential of a similar problem. This problem (is) is not considered applicable to other contracts N55-3 → 14.

REMARKS: _____

cc: R. E. Kosiba

G. K. WANDLING

NUCLEAR SERVICE SUPPORT ENGINEER

NSSE

CLEARED

PDS-21091-2 (9-73)

SITE PROBLEM REPORT

BABCOCK & WILCOX

CUSTOMER Duke Power Co. CONTRACT NO 620-0004 SPR NO. 222 REV. NO. 0

VENDOR Dresser P.O. NO. TASK NO. 28 GROUP NO. 41 SEQ. NO. 2-5

SITE ENGINEER R S Baker, Jr. | REQ'D. RESOL. DATE NA | REQ'D. COMP. DATE NA

TITLE Leaking Pressurizer Reliefs and Block Valves

DESCRIPTION OF PROBLEM

See attached

STATUS - ACTION TO DATE INCLUDING PERSONS CONTACTED

See attached

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL

Duke is handling this problem - No B&W action required at this time.

ORIGINATOR SIGNATURE | DATE | S.O.M. SIGNATURE R M Baker | 1/28/75

RESOLUTION

RESOLUTION

APPROVED BY	SIGNATURE	DATE
N.S. SUPPORT ENGINEER	[signature]	1-27-75
TASK ENGINEER	No Eng. Action Required	
PROJECT MANAGER	C. A. Creasy	1-30-75

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

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

COMPLETION

SITE COMPLETION REPORT

See attached

☐ RECOMMENDED STDS. CHANGE

DEVIATIONS ☒ NONE ☐ SEE SPR REV. NO. _____

DATE COMPLETED | SIGNED BY

S.O.M./CONSTR. REP. APPROVAL R M Baker | DATE 1/24/75

FINAL DISTRIBUTION

PROJECT MANAGER
S.O.M./CONST. REP.
QA DOC. FILE
CENT. ENGR FILE 1 OF 2

INSTRUCTIONS FOR FDS-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)

BABCOCK & WILCOX

NSS-4/SPR-222

Description of Problem

With reactor power at about 100% from the first of the year, the plant had to be shutdown and cooled down on 1/18/75 due to the quench tank temperature being at 230°F.

On 1/7/75 the temperature was at about 230°F and so broke about the electromatic relief valve block (2RC-V2). the tank temperature dropped to 195°F by the next day but slowly started increasing again. Between 1/9/75 and 1/13/75, Duke succeeded in keeping the tank temperature below 215°F (DF-1101-01 limit) by using the Unit 1 and 2 A blast header up stream as a source of water to block and feed with. This cooled the quench tank to about 205°F but raised the "B" BHUT temperature to about 195°F on Unit 1 and 2. On 1/18/75 the quench tank temperature went to 230°F despite all efforts and the plant had to be shut down.

BABCOCK & WILCOX

NSS-4/SPR-222

Status - Action to Date

Nuclear Service in Lynchburg (R.J. McDowell, J.P. Kennedy) informed on morning phone call each day from 1/7/75 until 5/10 on 1/18/75.

Duke made a complete check of all piping leading to the guard tank while the plant was still at hot condition and the following is the results:

1. the thermocouple mounted on the discharge pipes of the three pressurizer relief valves were not reading correctly due to not being installed properly or not installed at all.
2. One or both of the pressurizer code relief valves were leaking through to the vent (2).
3. the electromatic relief (2RC-RV3) was also leaking through to vent.
4. 2RC-V2 was also leaking through vent because it was not shut completely tight.

BABCOCK & WILCOX

NSS-4/SPR-222

Site Completion Report

Since Unit I was shutdown and Duke's spare code relief are at the factory, the Oconee I code relief (RC-RV4 A+B) were removed and installed on Oconee II. the spare relief are to be shipped back to the site before Oconee I needs them.

the electromatic relief (2RC-RV2) was inspected and found to have two steam cuts on the disc of the valve. Duke replaced the disc with spares.

the electromatic relief valve block valve (2RC-V2) would not shut tightly because of the old continuing problem of this valve on all B&W units sticking shut at hot conditions (See NSS-9/SPR-91). In an attempt to prevent this valve from sticking in the shut position, Duke, sometime in the past, reduced the torque switch setting. Because of this the valve did not shut tightly enough to prevent leakage. Duke is

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increasing the torque switch setting on this valve and writing a letter to B&W outlining all the problems they are having with this valve on Unit.

The thermocouples have been installed properly on the discharge pipe of the relief and the plant is presently starting up with no leakage past the relief noted yet.