

FINAL REPORT 10CFR PART 21 REPORT OF A POTENTIAL SAFETY HAZARD

PREPARED BY: Ed Grandway 4/16/98

APPROVED BY: Robert M. Laughlin 4/16/98

PART NAME: Governor Valve Stem

File No: Various
Serial No: Various
Type: GS & ZS
Ref: N/A
D-R Part No: pg 3
DR Dwg No: pg 3
Rev Level: pg 3

1. Description of Defect or Non-Compliance

Inconel 718 material was used in place of 410 stainless steel for the new spray coated valve stems. The Material selection process did not fully evaluate the impact of a higher coefficient of thermal expansion in the steam seal arrangement using carbon washers for steam seals.

2. Potential Safety Hazard or Non-Compliance:

If the cold clearance is not adequate to accommodate the stem growth, control problems will result that may prevent the turbine/pump assembly from performing it's intended function.

3. Number and Location of all components:

A total of 28 sites have purchased these stems, 23 domestic and 5 foreign.

List on page 2.

4. Corrective Action by Nuclear Product Engr. completed by 6/1/98

ECR# 10673 issued to create a new carbon spacer part number 800714-002. This carbon spacer has an inside diameter that is .0005" larger than the original spacer p/n 800714-001. This will return the running clearance at operating temperature to the values of the original nitrided 410 SS stems.

Continued on page 3

5. Advice to Effected Customer Related to This Report

a. For stock parts not assembled in a valve body assembly.

Insure the clearance between the carbon washers and the stem is at least .0015" when assembled in the valve.

b. For parts installed in an operational APW or PCIC turbine.

Perform a surveillance test that insures the control characteristics of the turbine are adequate after the turbine reaches its maximum operating temperature.

Handwritten: JL 19/98

Number and Location of all components:

COUNT	TURBINE S/N	LOCATION
1	T35685A T35686A T35687A	BROWNS FERRY 1 BROWNS FERRY 2 BROWNS FERRY 3
2	T35690A	MONTICELLO
3	T35693A	PILGRIM 1
4	T35939A	COOPER
5	T36546A	MAINE YANKEE
6	T36555A T38492A	BEAVER VALLEY 1 BEAVER VALLEY 2
7	T36565A T36566A	DIABLO CANYON 1 DIABLO CANYON 2
8	T36691A	EDWIN I. HATCH
9	T36683A	BRUNSWICK 2
10	T37008A & B	PRAIRIE ISLAND 1 & 2
11	T37009A	CRYSTAL RIVER
12	T37273A	MILLSTONE 2
13	T37476A	HANFORD 2
14	T37549A T40230A	ST. LUCIE 1 ST. LUCIE 2
15	T37858A & B	FARLEY 1 & 2
16	T37948A	McGUIRE 1
17	T38171A	NINE MILE POINT 2
18	T38677A & B	WATTS BAR 1 & 2
19	T38765A	SUMNER 1
20	T39622A	COMANCHE PEAK
21	T41062A T41063A	SEABROOK 1 SEABROOK 2
22	T41173A & B	ALVIN W. VOGTLE 1 & 2
23	T41812A, B & C	TURKEY POINT 3&4
24	T38174A	LEIBSTANT
25	T40366A	KRSKO
26	T41925A	VANDELLOS 2
27	T37476C	TOKAI 2
28	T38848A	ANGRA

Corrective Action by Nuclear Product Engr. completed by 6/1/98

The failure to adequately evaluate the potential effects of the thermal expansion characteristic of the new material was a design oversight that occurred even though procedures for controlling the design process are currently in place. These procedures include:

EA-001 Engineering Design Control

- Section 5 part B item number 2 places the control of Nuclear units and repair orders under Product Engineering.
- Section 5 part C item 4 identifies EA-025 as the Process Control Procedure for New Concepts and Development Programs.
- Section 8 gives guidance for Design Verification and New Drawing Approval.
- Section 9 gives guidance for Design Validation.

EA-025 Design Control for New Concepts And Development Programs.

- Section 4 Project Planning and Authorization establishes objective, scope and time/cost estimates.
- Section 5 Execution and Control defines a project leader, review requirements and reporting format.
- Section 8 Verification & Completion gives guidance for Design review and verification.
- Section 9 Final Report defines minimum requirements for the documentation in the report, required signatures and storage location.

NNSOP 1.2.004 Drawing Approval referenced in EA-001

- Section 4.0 states design engineering must satisfy all the requirements of ED-1-018.
- Section 4.1.2 requires checker to verify all interface requirements and have drawing reviewed by other groups if necessary.
- Section 4.1.3 requires a Supervisor to review drawing against ALL DESIGN REQUIREMENTS.
- Section 4.1.4 requires the Nuclear Product Engineer to review drawing against ALL DESIGN REQUIREMENTS and proper material and processing.

Per our procedure NNSOP 1.1.001, a Corrective Action Request (form QC-5), CAR NO.: 0953 has been initiated to address this design oversight issue. In response to this Corrective Action Request existing procedures will be thoroughly reviewed with special focus on paragraphs with potential relevance to this design oversight experience. Then procedures will be revised and/or supplemented, e.g. by check lists and/or personnel training, as judged necessary to maximize the probability that all potentially relevant factors will be considered and adequately evaluated in future executions of our design process. Similar design projects performed since the formation of Dresser-Rand will also be reviewed for compliance to these design requirements. As noted above this Corrective Action will be defined and fully implemented by June 1, 1998.

D-R Part Numbers and Drawings for Governor Valve Stems:

800743-001	800743	rev n/a
800744-001	800744	rev n/a
800745-001	800745	rev n/a
800746-001	800746	rev n/a
800768-001	800768	rev n/a
800768-002	800768	rev n/a
800777-001	800768	rev n/a

QC-5
2/19/90

DRESSER-RAND (WELLSVILLE, NEW YORK PLANT)

CAR NO.:

CORRECTIVE ACTION REQUEST

0953

Pg. 1 of 2

TO: ED GRANDUSKY
NAVY/NUCLEAR PRODUCT
ENGINEER.

FROM: MICHAEL SCHMIDDEL
MGR. QUALITY ASSURANCE

REQUEST DATE: 4/15/98

REPLY DUE DATE: 4/29/98

CC: Quality Assurance Manager _____
Plant Superintendent _____
Other Copies to ROBERT LOUGHLIN

SUBJECT: DR - 10CFR PART 21 - REPORT NO. 40

AUDITS: INTERNAL CHECKLIST #: _____ DATED: _____
EXTERNAL REPORT #: DRW. DATED: _____

PRODUCT: D-R ORDER # _____ NMR # _____ QTY. _____
CSTG. # _____ GOVT. ORDER # _____
DWG. # _____
PC # _____ DCAS DISPOSITION: _____

The nonconformance frequency of this piece number is recorded in Computer Run No. J-1221.

GUIDELINES FOR COMPLETING CORRECTIVE ACTION REQUEST FORM:

- A) Sections 1, 2, 6 and 7 to be completed by originator (or his delegate).
- B) Sections 3, 4 and 5 to be completed by the addressee and returned to the individual who identified the finding by the reply due date.

1. Program/Product Specification Requirements:
(Quote or paraphrase document by Section, Paragraph)

10CFR 50 App. B,
SECTION III DESIGN CONTROL
"DESIGN CONTROL MEASURES SHALL PROVIDE FOR VERIFYING OR CHECKING THE ADEQUACY OF DESIGN".

2. Finding/Nonconformance:
(Describe deficiency in detail; i.e. What? Numbers? Where? Impact on quality of activity or equipment?)

INCONEL 718 WAS SUBSTITUTED FOR 410 STAINLESS STEEL. DESIGN REVIEW DID NOT EVALUATE THE IMPACT OF THERMAL EXPANSION.

Identified by: Michael F. Schmidel

Date: 4/15/98

3. Cause of condition: (What contributed to the nonconformance.)

Evaluation by: _____ Date: _____

4. Corrective Action:

Proposed completion date _____ Condition corrected by _____ Date _____

5. Action taken to prevent recurrence:

Signature: _____ Date: _____ Completion Date: _____

6. Reply Review: proposed corrective action is:

Satisfactory Unsatisfactory Incomplete

Remarks: _____

Evaluation by: _____ Date _____

7. Corrective Action Verified: Yes No Comment: (Describe specific details of follow-up where possible.)

Audit Finding Closed

Verification by _____
Date _____

3. Cause of condition: (What contributed to the nonconformance.)

Evaluation by: _____ Date: _____

4. Corrective Action:

Proposed completion date _____ Condition corrected by _____ Date _____

5. Action taken to prevent recurrence:

Signature: _____ Date: _____ Completion Date: _____

6. Reply Review: proposed corrective action is:

Satisfactory Unsatisfactory Incomplete

Remarks: _____

Evaluation by: _____ Date _____

7. Corrective Action Verified: Yes No Comment: (Describe specific details of follow-up where possible)

Audit Finding Closed

Verification by _____
Date _____