

NOV 30 1987

*Official*

Docket Nos. 50-327, 50-328  
License Nos. DPR-77, DPR-79

Tennessee Valley Authority  
ATTN: Mr. S. A. White  
Manager of Nuclear Power  
5N 38A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Gentlemen:

SUBJECT: ENFORCEMENT CONFERENCE SUMMARY  
(NRC INSPECTION REPORT NOS. 50-327/87-60 AND 50-328/87-60)

This letter refers to the Enforcement Conference held at our request on October 22, 1987. This meeting concerned activities authorized for your Sequoyah facility. The issues discussed at this conference related to TVA's apparent failure to meet the requirements of 10 CFR 50.59 such that a required license amendment was not sought in support of the cavitating venturi installation associated with all four motor driven auxiliary feedwater pumps. A summary, a list of attendees, and a copy of your handout are enclosed.

It is our opinion that this meeting was beneficial and has provided a better understanding of the inspection findings, the enforcement issues, and the status of your corrective actions. We are continuing our review of these issues to determine the appropriate enforcement action.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this matter, please contact us.

Sincerely,

Original signed by S. Richardson

Steven D. Richardson, Acting Director  
TVA Projects Division  
Office of Special Projects

Enclosures:

1. Enforcement Conference Summary
2. List of Attendees
3. Handout

cc w/encs: (See page 2)

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Tennessee Valley Authority

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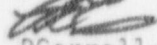
cc w/encls:

H. L. Abercrombie, Site Director  
Sequoyah Nuclear Plant  
J. A. Kirkebo, Director,  
Nuclear Engineering  
R. L. Gridley, Director  
Nuclear Safety and Licensing  
M. R. Harding, Site Licensing  
Manager  
TVA Representative, Bethesda  
Office


bcc w/encls:

S. Ebnetter, OSP  
G. Zech, OSP  
B. Liaw, OSP  
K. Barr, OSP/TVA  
W. Little, OSP/TVA  
G. Jenkins, OSP/RII  
F. McCoy, OSP/RII  
R. Carroll, OSP/RII  
J. Brady, OSP/RII  
J. Liberman, DOE  
J. Rutberg, OGC  
NRC Resident Inspector  
Document Control Desk  
State of Tennessee


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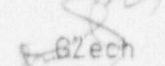
OSP/RII

  
FMcCoy  
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
OSP/RII

  
KBarr  
11/5/87

OSP/RII

  
GZech  
11/5/87

OSP

  
SEbnetter  
11/4/87

## ENCLOSURE 1

### MEETING SUMMARY

On October 22, 1987, an Enforcement Conference was held between representatives of Tennessee Valley Authority (TVA) and the Office of Special Projects - NRC, at NRC's request, at the Sequoyah site. The purpose of this conference was to discuss TVA's apparent failure to meet the requirements of 10 CFR 50.59 such that a required license amendment was not sought in support of the cavitating venturi installation associated with all four motor driven auxiliary feedwater pumps.

NRC opened the conference with a brief summary of events since the September 24, 1987 management meeting which was held between NRC and TVA to discuss concerns over operability problems related to the Hydrogen Analyzers, Essential Raw Cooling Water (ERCW) skid valves, ERCW screen wash and strainer backwash systems, Containment Spray (CS) system, and the motor driven Auxiliary Feed Water (AFW) pumps. It was explained that subsequent to the September 24, 1987 meeting, NRC review determined that: (1) a TVA plant specific analysis of the inappropriate CS orifice installation was necessary, and (2) the AFW pump cavitating venturi issue warranted treatment as a potential escalated enforcement issue. Accordingly, it was the later determination which prompted the need for the Enforcement Conference. The specifics, as addressed below, were then presented to the licensee:

- (1) In 1984, TVA implemented ECN L 5842 to replace the Unit 1 and Unit 2 motor driven AFW pumps' pressure control valves with cavitating venturis. Justification for this modification was documented in an unreviewed safety question determination dated April 25, 1983. In accordance with 10 CFR 50.59 this modification was not allowed since it resulted in increased system flow resistance which required a change to the test acceptance value specified in Technical Specification (TS) 4.7.1.2.
- (2) Related Post Modification Testing indicated that AFW pump 2A-A could not deliver 440 gpm with the increased system flow resistance. TVA accepted this degraded flow condition as documented in an unreviewed safety question determination dated November 1, 1984. This reduction in flow constituted a change in the margin of safety as defined in the basis of TS 4.7.1.2.a.1 and, therefore, constituted an unreviewed safety question as defined by 10 CFR 50.59.

Following the modifications, both of the units were returned to power operation (Unit 1 in April 1984 and Unit 2 in December 1984) without ever changing the TS or receiving prior Commission approval. Additionally, it was expressed to TVA that had it not been for NRC intervention, it appears that the above problems would not have been adequately resolved prior to restart.

TVA acknowledged that TS changes should have been made in support of the modification and subsequent degraded condition of AFW pump 2A-A. The root cause was identified as personnel judgement error caused by insufficient



guidance and compounded by a complex design issue (e.g., TS minimum pump recirculation flow D/P is derived/interpolated, not the actual system limit as is the case with most TSs). It was further indicated that because the 440 gpm flow rate was based on a Westinghouse generic analysis, TVA felt that their plant specific analysis supporting 400 gpm met the intent of the TS basis. Presented corrective actions on this specific problem included: (1) a commitment to revise TSs within 60 days after Mode 3 testing, and (2) the AFW Pump 2A-A venturi and impeller were replaced during this outage.

TVA then discussed those actions which have been implemented since plant shutdown in August 1985, to assure similar type problems haven't recurred. These actions include: (1) program enhancements such as TS training for engineering design personnel and independent reviews of the engineering safety evaluation by licensing personnel prior to the performance of related work, as well as a licensing review of the work plan after the work is complete to assure no changes, test deficiencies, etc. have occurred; (2) a review of TS related equipment, associated TS surveillance requirements, and surveillance instructions during the TS surveillance instruction review program; and (3) a review of work plans associated with TS amendments since 1985. This last review indicated that all but two work plans initially recognized the need for a TS change; however, the independent licensing review did identify such a need. The licensee felt this was conclusive proof that the program enhancements have worked, and the problem has been adequately corrected.

NRC asked whether the enhanced process had been audited by TVA and inquired as to what actions have been or will be taken to assure similar pre-1985 problems don't exist. In response to the first question, TVA indicated that an audit of the process would be conducted by Quality Assurance and Engineering Assurance. With respect to the existence of similar pre-1985 problems, TVA requested some time to look into related Nuclear Performance Plan (NPP) reviews and committed to provide the NRC with an answer.

In regard to NRC's concern that the AFW pump cavitating venturi problems would not have been resolved prior to restart without NRC intervention, TVA presented the following: (1) a TS change was submitted in August 1986 to delete the pump recirculation flow D/P value and reference the associated surveillance instruction in its place (This change request was rejected by NRC in December 1986.), and (2) TVA had always intended to return the AFW pump 2A-A flow rate to 440 gpm. They had replaced the pumps cavitating venturi, and once they were aware that NRC had concerns, they replaced the pump's impeller.

The conference was brought to a close with the understanding that NRC would review the results of the QA and EA audits, and that TVA would respond to NRC on actions to assure similar pre-1985 problems don't exist. NRC reminded TVA once again that this problem is under evaluation for potential enforcement action.

ENCLOSURE 2

MEETING ATTENDEES

U. S. Nuclear Regulatory Commission

J. G. Keppler, Director, Office of Special Projects (OSP)  
S. D. Ebnetter, Director, TVA Projects Division (TDVAPD), OSP  
G. G. Zech, Assistant Director for Inspection Programs, TVAPD, OSP  
K. P. Barr, Deputy Assistant Director for Inspection Programs, TVAPD, OSP  
W. S. Little, Technical Assistant, TVAPD, OSP  
F. R. McCoy, Section Chief, Sequoayah  
R. E. Carroll, Jr., Project Engineer, Sequoayah  
K. M. Jenison, Senior Resident Inspector, Sequoayah  
W. K. Poertner, Resident Inspector, Sequoayah

Tennessee Valley Authority

S. A. White, Manager, Office of Nuclear Power (ONP)  
C. H. Fox, Deputy Manager, ONP  
R. L. Gridley, Director, Division of Nuclear Licensing  
H. L. Abercrombie, Site Director, Sequoayah Nuclear Plant  
J. LaPoint, Assistant Site Director  
L. M. Nobles, Plant Manager  
P. R. Wallace, Assistant to Site Director  
M. R. Harding, Engineer Group Manager  
R. H. Buchholz, Sequoayah Site Representative  
L. E. Martin, Manager, Site Quality  
J. Hosmer, Division of Nuclear Engineering  
M. Burzynski, Manager, Regulatory Licensing  
J. Bynum, Assistant Manager, ONP  
R. M. Mooney, Supervisor, Systems Engineering  
R. H. Scheide, Licensing Engineer  
G. B. Kirk, Manager, Compliance Licensing  
H. R. Rogers, Plant Operations Review Staff  
M. Cooper, Site Licensing  
J. McDonald, Manager, Watts Bar Licensing  
R. Levi, Office of General Council  
M. J. Ray, Deputy Director, Division of Nuclear Licensing  
T. E. Bostrom, Manager, Project Engineering  
R. Rogers, Project Manager, Bechtel  
B. Charlson, Advisor, ONP  
R. A. Loar, Regulatory Licensing  
A. M. Qualls, Assistant to Plant Manager  
J. B. Brady, Information Manager

ENCLOSURE 3

TVA HANDOUT



## PURPOSE OF CONFERENCE

TO DISCUSS TVA'S APPARENT FAILURE TO MEET THE REQUIREMENTS OF 10 CFR 50.59 SUCH THAT A REQUIRED LICENSE AMENDMENT WAS NOT SOUGHT IN SUPPORT OF THE CAVITATING VENTURI INSTALLATION ASSOCIATED WITH ALL FOUR MOTOR DRIVEN AUXILLIARY FEEDWATER PUMPS.

# ROOT CAUSE

PERSONNEL JUDGEMENT ERROR CAUSED  
BY INSUFFICIENT GUIDANCE AND A  
COMPLEX DESIGN ISSUE.



# CORRECTIVE ACTIONS

## SPECIFIC

- \* INITIATED T/S CHANGE 71 IN MARCH, 1986
- \* SUBMITTED T/S CHANGE IN AUGUST, 1986
- \* T/S CHANGE REJECTED BY NRC IN DEC., 1986
- \* COMMITMENT TO REVISE T/S WITHIN 60 DAYS AFTER MODE 3 TESTING.

## RELATED

- \* T/S REVIEWS

# PROGRAM ENHANCEMENTS

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- \* PLANT MODIFICATIONS PROCEDURE (AI-19)
- \* CHANGE CONTROL PROCEDURE (NEP-6.1)
- \* EVALUATION OF CHANGES, TESTS, AND EXPERIMENTS PROCEDURE (PMP-0604.04)
- \* WORKPLAN REVIEW FOR *T/S* AND *FSAR* CHANGES (SIL-2)
- \* PROJECT ENGINEER IS RESPONSIBLE FOR ALL ENGINEERING FUNCTIONS

TECHNICAL SUBMITTALS DURING PREPAREDNESS REVIEW STATUS

TS #	DESCRIPTION	RESP. ENGR.	FORC. dk	NSRB dk	SUBMITTED TO NRC	STATUS
***87-29	Rev. Thermal Overload, 3.8.2	RRT	04/22/87	01/01/87	05/19/87	NRC Review
** 96(52)	NUREG-2737 UICs	RWM	12/15/83	01/25/84	01/25/84	NRC Review
**104(65)	SFP RM setpoint increase	ENW	05/20/85	06/27/85	10/22/85	NRC Review
**143(82)	RCP in Mode 3	RWM	01/13/87	02/20/87	02/27/87	NRC Review
**145(74)	UHI level switch tol.	FCM	07/10/86	07/22/86	08/03/86	NRC Review
**87-03	Add new spec (RHR spray)	MKB	02/18/87	03/17/87	04/03/87	NRC Review
**87-17	typos & discrepancies	RRT	05/17/87	06/18/87	06/24/87	NRC Review
**87-18	RCP UV set point	RWM	04/23/87	05/14/87	05/22/87	NRC Review
**87-20	RPS/ESF instrumentation	RWM	03/25/87	05/14/87	05/22/87	NRC Review
**87-28	Accident Monitoring Instr.	RWM	04/30/87	05/26/87	06/10/87	NRC Review
**87-32	D/B Rating	RRT	06/29/87	07/31/87	08/11/87	NRC Review
**87-33	Bypass Penetrations	TSA	08/04/87	09/03/87	09/17/87	NRC Review
*131(78)	Chlorine detectors	RRT	06/18/86	01/09/87	01/21/87	NRC Review
*132(72)	Molded case Crt. Rkr.	TSA	07/30/86	08/01/86	09/09/86	NRC Review
*136(80)	ABTS & EGTS heaters	RRT	01/15/87	03/25/87	04/16/87	NRC Review
*141(79)	AFW flow calibration	MKB	01/05/87	01/22/87	02/03/87	NRC Review
*87-01	Conflicting subbit. req'ts	TSA	01/21/87	02/13/87	02/27/87	NRC Review
→ *87-04	Addition of fire detectors	TSA	03/23/87	04/27/87	05/12/87	NRC Review
*87-05	Non Rad. Env. Compl.	RWM	01/27/87	03/17/87	04/17/87	NRC Review
*87-06	Delete Rr Vessel table	TSA	04/06/87	05/14/87	05/22/87	NRC Review
→ *87-07	Wrong elev./seis. mon.	TSA	02/26/87	04/09/87	04/17/87	NRC Review
*87-09	CO2 system req'ts	RWM	02/25/87	04/09/87	04/17/87	NRC Review
*87-10	HEPA and charcoal filters	MKB	03/10/87	04/09/87	04/17/87	NRC Review
*87-11	Revise Table 4.11.2/01t.samp	TSA	04/06/87	04/29/87	05/22/87	NRC Review
*87-12	Del. Iodine cleanup	MKB	03/03/87	04/09/87	04/17/87	NRC Review
*87-15	Add FCVs to LCD 3.6.3	TSA	03/27/87	04/29/87	05/12/87	NRC Review
*87-19	Del ice bed action stat.	RWM	04/10/87	05/14/87	05/29/87	NRC Review
*87-23	Secondary water chemistry	JUP	03/16/87	04/28/87	05/15/87	NRC Review
*87-24	Revise Spec Activity, 3.4.8	TSA	03/20/87	05/14/87	05/22/87	NRC Review
*87-25	Del. Ref. to sec. 4.9.1.13.b	TSA	04/06/87	06/05/87	06/19/87	NRC Review
*87-26	HPFP Minimum Pump Flow	RWM	05/21/87	06/18/87	07/02/87	NRC Review
*87-27	RHR Suction Valve Isolation	RWM	06/18/87	07/29/87	08/05/87	NRC Review
*87-31	Add vacuum relief isol. req.	RWM	04/24/87	05/26/87	06/02/87	NRC Review
*87-35	Add UHI FCVs to Table 3.4-1	RWM	04/30/87	05/26/87	06/10/87	NRC Review
*87-36	CS Pump Discharge Pressure	RWM	06/17/87	07/31/87	09/14/87	to be withdrawn
*87-37	Add req'ts for cont. cooling	RWM	08/19/87	09/03/87	09/14/87	NRC Review
*87-38	CVI Response time	RRT	08/04/87	09/03/87	09/15/87	NRC Review
*87-39	Typos II	RRT	09/17/87	09/03/87	09/14/87	NRC Review
*87-40	AFW transfer setpt.	RRT	10/03/87	/ /	/ /	NSRB Review
*87-41	Heavy loads over SFP	KAT	08/18/87	09/03/87	09/15/87	NRC Review
*87-42	Add MDVs to Table 3.8-2	RRT	10/16/87	/ /	/ /	NSRB Review
*87-43	CS Pump Discharge Pressure	RWM	10/07/87	/ /	/ /	NSRB Review

\* - SUBMIT TO NRC PRIOR TO SU = 30  
 \*\* - PRIORITY SUBMITTAL = 11  
 \*\*\* - NRC APPROVAL REQUIRED FOR SU = 1

REMAINING = 4  
 REMAINING = 0

NRC Review 33  
 Concurrence 0  
 NSRB Review 2  
 FORC Review 0  
 Preparation 0  
 DNE Input 0

c.c. A.T. Perry O&PS-3  
 C.L. Wilson BR 14 71B  
 M.E. Frye SB-2

41 total