FEB 18 1992

Docket No. STN 50-482
License No. NPF-42
EA 91-161

Wolf Creek Nuclear Operating Corporation
ATTN: Bart D. Withers
President and Chief Executive Officer
P.O. Box 411
Burlington, Kansas 66839

Gentlemen:

SUBJECT: MOTOR-OPERATED VALVE OPERABILITY EVALUATIONS (NRC INSPECTION REPORT NO. 50-458/91-34)

This documents the telephone conference call on February 3, 1992, between representatives of Wolf Creek Generating Station, NRC Region IV, and the NRC Office of Nuclear Reactor Regulation. The purpose of the conference call was to provide a forum to discuss your staff's operability evaluations of Valves EM HV-8807A and -B (centrifugal charging pump/safety injection (SI) cross-tie isolation) and EM HV-8923A and -B (reactor water storage tank/SI suction isolation) during different design basis accident scenarios. In the cases where the valves may not have performed as expected, your staff provided an evaluation of the safety significance of each potential failure. On the basis of the review, your staff found the safety significance of each potential failure to be low. The results of these evaluations and a summary of the safety significance, that your staff provided, are included as an enclosure. A list of participants in the conference call is also included in the enclosure.

During the conference call, your staff identified two principle reasons for the valves being inoperable. These were degraded valve operator motors and inadequate control of torque switch settings. We understand that your staff is continuing to evaluate other motor-operated valve operability concerns and that the results of these evaluations will be provided to the NRC by March 27, 1992. It is our intent to discuss the results of these evaluations with you in a forum to be established later.

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 will be placed in the NRC's Public Document Room.

RIV:DRP/D	C:DRP/D	D:DRS	D:DRP
WBJones:df	ATHowell	SJCollins	ABBeach
2/14/92	2/14/92	2/18/92	2/18/92

IE45
1/1

Should you have any questions concerning this matter, we will be pleased to discuss them with you.

Sincerely,

Original Signed By:
A. B. BEACH

A. Bill Beach, Director
Division of Reactor Projects

Attachment:
Participant List w/enclosure (NRC distribution only)

cc w/enclosure:
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Bureau of Air Quality & Radiation
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Division of Environment
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Kansas Department of Health and Environment
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DRSS-RPEPS
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MIS System
Project Engineer (DRP/D)
DRS
Resident Inspector
DRP
Section Chief (RIII, DRP/3C)
SRI, Callaway, RIII
RSTS Operator
Lisa Shea, RM/ALF

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RSTS Operator
Lisa Shea, RM/ALF

ATTACHMENT

Conference Call Participants

Name	Affiliation
J. Bailey	WCNOC
F. Rhodes	WCNOC
R. Holloway	WCNOC
J. Weeks	WCNOC
L. Ratzlaff	WCNOC
C. Sprout	WCNOC
J. Pippin	WCNOC
T. Garrett	WCNOC
D. Hseu	WCNOC
S. Wideman	WCNOC
D. Chamberlain	NRC - RIV
A. Howell	NRC - RIV
T. Westerman	NRC - RIV
W. Jones	NRC - RIV
G. Sanborn	NRC - RIV
C. Paulk	NRC - RIV
L. Gundrum	NRC - RIV
T. Gody	NRC - NRR
W. Reckley	NRC - NRR
S. Black	NRC - NRR

WCNOC/NRC TELECON
FEBRUARY 3, 1992

MOTOR-OPERATED VALVES

PURPOSE OF TELECON

- DISCUSSION OF OPERABILITY ON VALVES

  EM HV-8807 A&B
  EM HV-8923 A&B

- DISCUSSION OF SAFETY SIGNIFICANCE

VALVES EM-HV-8807A & B and EM-HV-8923A & B

	ORIGINAL DESIGN	GL 89-10 REQUIREMENTS
Packing Load	3000 lb	1500 lb
Coefficient of Friction	0.15	0.2
OPEN		
MEDP	200 psig	245 psig
Thrust	5009 lb	3690/4792 lb
Torque	72 ft-lb	74/90 ft-lb
CLOSE		
MEDP	200 psig	214 psig
Thrust	5802 lb	4500/5443 lb
Torque	83 ft-lb	84/102 ft-lb

	SMB-000-5 ORIGINAL DESIGN	SMB-000-5 GL 89-10 REQUIREMENTS	SB-00-10 GL89-10 REQUIREMENTS
Rated Capacity	8000 lb	8000 lb	14000 lb
Motor - 8807A	7649 lb	2748 lb	
Motor - 8807B	8465 lb	2748 lb	
Motor - 8923A	7678 lb	2748 lb	
Motor - 8923B	7877 lb	2748 lb	

SAFETY -RELATED FUNCTIONS OF THE IDENTIFIED POTENTIAL INOPERABLE MOVs

EM HV-8807 A&B: CCP/SI CROSS-TIE ISOLATION VALVE

1. TO PROVIDE A REDUNDANT SUCTION SOURCE FOR THE SI AND CCP SYSTEMS. THESE VALVES ARE REQUIRED TO STROKE OPEN DURING SWITCHOVER FROM INJECTION TO RECIRCULATION MODE OF OPERATION.

2. ISOLATE LEAKAGE FROM FAILURE OF PASSIVE COMPONENTS.

EM HV-8923 A&B: RWST/SI SUCTION ISOLATION VALVE

1. REMAIN OPEN DURING POST-LOCA INJECTIONS/RECIRCULATION PHASE.

2. ISOLATE LEAKAGE FROM FAILURE OF PASSIVE COMPONENTS.

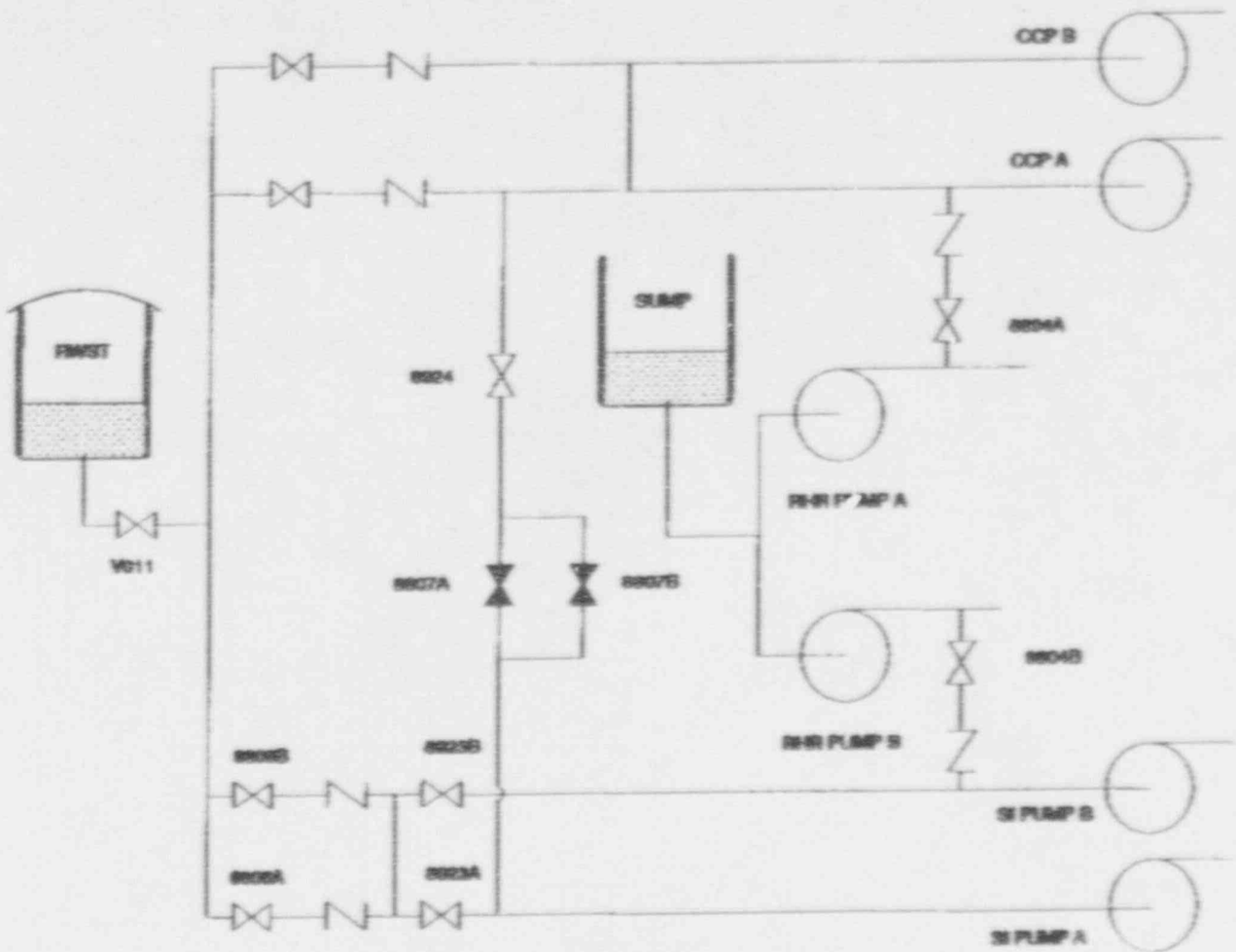

FIGURE 1

SIMPLIFIED SKETCH OF ECCS RECIRCULATION

TABLE 1

VALVES #	OPERABILITY STATUS IN OPEN DIRECTION			OPERABILITY STATUS IN CLOSE DIRECTION		
	CASE #			CASE #		
	C1	C2[1]	C3	C4	C5[2]	C6
EMHV8807A (CCP/SI Cross-tie Iso Vlv)	OP	INOP	INOP	OP	INOP	INOP
EMHV8807A (CCP/SI Cross-tie Iso Vlv	OP	OP	INOP	OP	OP	INOP
EMHV8923A (RWST/SI Suction Iso Vlv)	OP	OP	OP	INOP	INOP	INOP
EMHV8923B (RWST/SI Suction Iso Vlv)	OP	OP	OP	INOP	INOP	INOP

Notes:

(1) Effects are the same for the failure scenario in which HV-8807B failed to open when required. The remaining operable valves provide back-up flow path.

(2) Effects are the same for the failure scenario in which HV-8807B failed to close when required.

TABLE 2

CASE #	LIMITING EVENT/ SCENARIO	SAFETY SIGNIFICANT	DESIGN BASIS REQUIREMENTS MET	ACCEPTANCE CRITERIA MET
C1	LOCA	None(5)	Yes	Yes
C2	LOCA	None(5)	Yes	Yes
C3	SB LOCA	None(5)	No	Yes(4)
C4	Passive Failure	None	Yes(1)	Yes
C5	Pump Seal Failure	None	Yes(2)	Yes(3)
C6	Pump Seal Failure	None	Yes(2)	Yes(3)

Notes:

(1) Leakage from passive components such as piping, valve packing or flange gasket is covered under design-basis considerations for ECCS recirculation leakage and other means are available to isolate gross passive failures.

(2) Other means are available to terminate leakage from pump seal failure in order to preserve water inventory in the containment sump.

(3) The resulting radiological consequences for the leakage form a postulated gross failure of pump seal combined with containment & ECCS recirculation leakages remain within regulatory limits.

(4) NOTRUMP analyses have confirmed that second core uncovery does not occur and the calculated PCT < 2200°F.

(5) Redundant ECCS trains available.

SAFETY SIGNIFICANCE OF MOV HV-8807 A&B FAIL TO OPEN

DIRECT EFFECTS OF BOTH HV-8807 A&B FAILED TO OPEN:

1. LIMIT THE AMOUNT OF DESIGN BASIS ECCS FLOW DELIVERED TO THE RCS DURING COLD LEG & HOT LEG RECIRCULATION MODES.

2. REDUCE THE OVERALL DESIGN BASIS RECIRCULATION FLOW BY APPROXIMATELY 50%.

CONSEQUENTIAL IMPACT OF ECCS FLOW REDUCTION ON DBA:

1. POSTULATED PRIMARY SYSTEM PIPING RUPTURE

   - LOCA - RCCA EJECTION - SGTR

2. POSTULATED SECONDARY SYSTEM PIPING RUPTURE

   - FEEDWATER LINE BREAK
   - INADVERTENT OPENING OF SG SAFETY OR RELIEF VALVE
   - STEAM LINE BREAK CORE RESPONSE
   - STEAM LINE BREAK M/E RELEASE INSIDE & OUTSIDE CONTAINMENT

THESE POSTULATED ACCIDENTS RESULT IN ECCS OPERATION

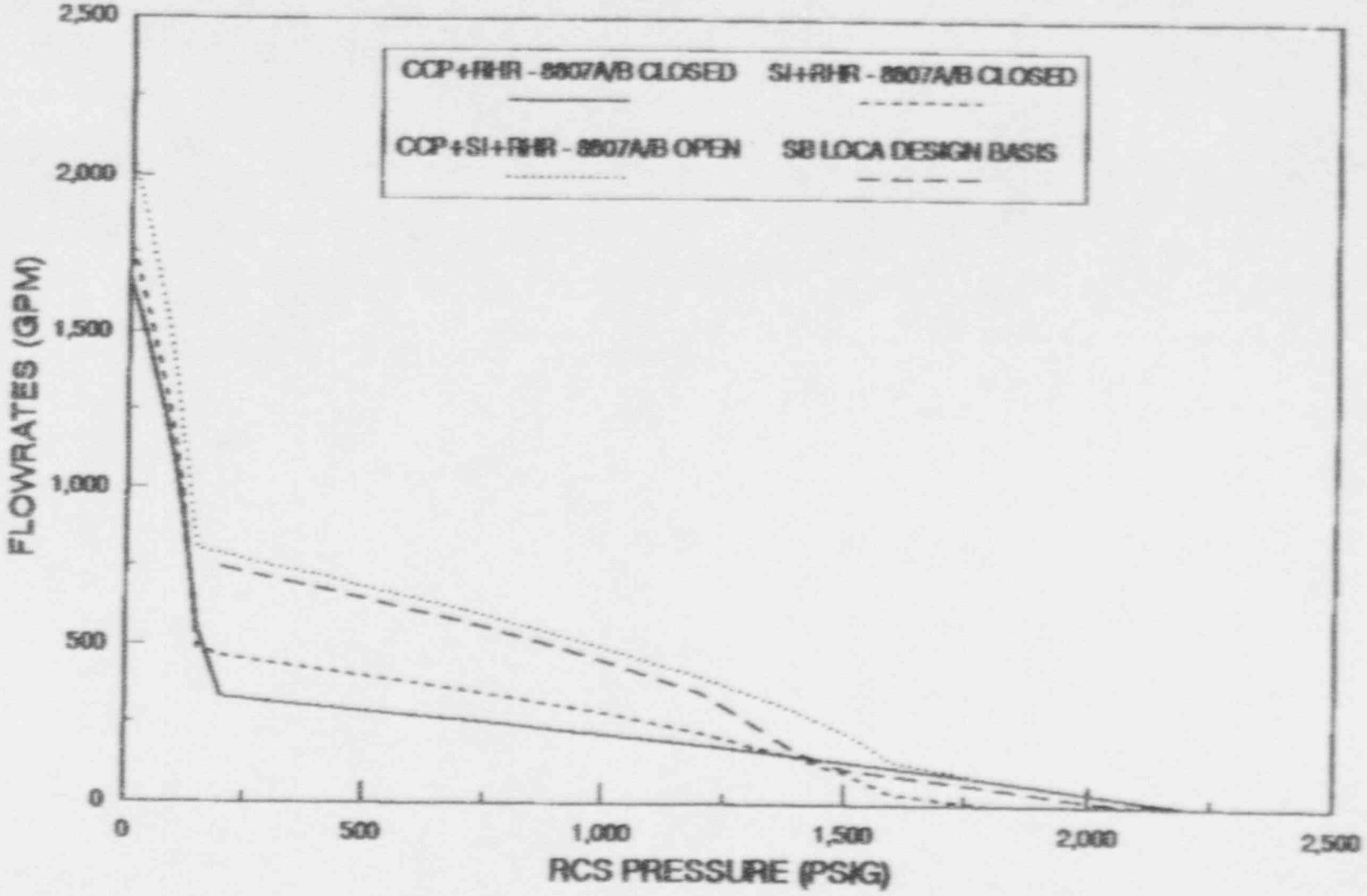

FIGURE 2: POST-LOCA ECCS COLD LEG RECIRCULATION FLOWRATES

SAFETY SIGNIFICANCE OF MOV HV-8807 A&B FAIL TO OPEN

IMPACT ON NON-LOCA ANALYSES

SECONDARY SYSTEM PIPE RUPTURE

- FEEDWATER LINE BREAK
- INADVERTENT OPENING OF SG SAFETY OR RELIEF VALVE
- STEAM LINE BREAK CORE RESPONSE
- STEAM LINE BREAK M/E RELEASE INSIDE AND OUTSIDE CONTAINMENT

STEAM GENERATOR TUBES RUPTURE (SGTR)

RCCA EJECTION

NO ADVERSE IMPACT ON THE ANALYSIS RESULTS OF THE ABOVE DESIGN-BASIS NON-LOCA ACCIDENTS.

SAFETY SIGNIFICANCE OF MOV HV-8807 A&B FAIL TO OPEN

IMPACT ON DESIGN BASIS LOCA-RELATED ANALYSES/CALCULATIONS

1. LARGE BREAK LOCA

   NEGLIGIBLE EFFECT ON PEAK CLADDING TEMPERATURE (PCT).

2. SMALL BREAK LOCA

   NOTRUMP ANALYSES FOR THE LIMITING 4" BREAK HAVE CONFIRMED THAT SECOND CORE UNCOVERY DOES NOT OCCUR. NET PCT = 1918 ^{O}F REMAINS VALID.

   NOTRUMP ANALYSES FOR THE 2" BREAK INDICATED THAT THE REDUCED ECCS RECIRCULATION CAUSED CORE UNCOVERY. HOWEVER THE CALCULATED PCT ~ 1685 ^{O}F.

3. POST-LOCA LONG TERM COOLING

   ADEQUACY OF LONG TERM EMERGENCY CORE COOLING HAS BEEN CONFIRMED.

SAFETY SIGNIFICANCE OF MOV HV-8807 A&B FAIL TO OPEN

IMPACT ON DESIGN BASIS LOCA-RELATED ANALYSES/CALCULATIONS
(Continued)

4. LONG TERM MASS & ENERGY RELEASE AND ASSOCIATED CONTAINMENT P/T RESPONSE ANALYSES.

   PEAK CONTAINMENT PRESSURE AND TEMPERATURE WILL NOT BE AFFECTED.

5. CORE DAMAGE FREQUENCY FOR SMALL-TO-INTERMEDIATE LOCA CHANGED 0.3%.

SAFETY SIGNIFICANCE OF MOV 8807 A&B AND 8923 A&B FAIL TO CLOSE

1. OFFSITE & CONTROL ROOM RADIOLOGICAL CONSEQUENCES

   THE RESULTING DOSES CONSEQUENCES FOR THE MAXIMUM CREDIBLE ECCS LEAKAGE DUE TO A POSTULATED PUMP SEAL FAILURE, COMBINED WITH CONTAINMENT AND ECCS RECIRCULATION LEAKAGE CONSIDERED IN THE DESIGN-BASIS DOSES CALCULATIONS, REMAIN WITHIN THE LIMITS OF 10 CFR 100 AND GDC 19, 10 CFR 50, APPENDIX A.

2. OPTIONS ARE AVAILABLE FOR OPERATORS TO ISOLATE THE LEAKAGE FROM A PUMP SEAL.

   NO ADVERSE IMPACT IS EXPECTED ON INTERNAL FLOODING, SUBCOMPARTMENT PRESSURIZATION AND RHR PUMP OPERABILITY.