UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

JAN 5 1995

Wolf Creek Nuclear Operating Corporation
ATTN: Neil S. Carns, President and
Chief Executive Officer
P. O. Box 411
Burlington, Kansas 66839

SUBJECT: ENFORCEMENT CONFERENCE DOCUMENTATION

This refers to the enforcement conference conducted in the Region IV office on December 16, 1994. This enforcement conference was conducted to discuss the apparent violations associated with the loss of reactor coolant inventory event that occurred at Wolf Creek Generating Station on September 17, 1994. The meeting attendees are listed in Attachment 1 and the subjects discussed during your presentation are included as Attachment 2.

We found the discussions beneficial and believe that they provided us with a better understanding of the event and the circumstances associated with the event. This information will be factored into our final decision regarding this enforcement matter.

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.

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

Sincerely,

for A. B. Beach, Director
Division of Reactor Projects

Docket: 50-482
License: NPF-42

Attachments:
1. Attendance List
2. Licensee Presentation

cc:
Wolf Creek Nuclear Operating Corp.
ATTN: Vice President Plant Operations
P.O. Box 411
Burlington, Kansas 66839

190012

IE01

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Missouri Public Service Commission
ATTN: Assistant Manager
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Topeka, Kansas 66612

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bcc distrib. by RIV:

L. J. Callan
Branch Chief (DRP/B)
Section Chief (RIII, DRP/3C)
SRI (Callaway, RIII)
Project Engineer (DRP/B)
Branch Chief (DRP/TSS)
Resident Inspector
DRSS-FIPB
RIV File
MIS System
Leah Tremper (OC/LFDCB, MS: TWFN 9E10)

DOCUMENT NAME:

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01/ /95	01/5 /95	01/5 /95	01/ /95	01/ /95

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DMB

bcc distrib. by RIV:

L. J. Callan
Branch Chief (DRP/B)
Section Chief (RIII, DRP/3C)
SRI (Callaway, RIII)
Project Engineer (DRP/B)
Branch Chief (DRP/TSS)
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ENFORCEMENT CONFERENCE ATTENDANCE

LICENSEE/FACILITY	Wolf Creek Nuclear Operating Corporation
DATE/TIME	December 16, 1994, 10:30
MEETING LOCATION	Region IV, Arlington, Texas
EA NUMBER	EA 94-251

NAME (PLEASE PRINT)	ORGANIZATION	TITLE
LICENSEE ATTENDEES		
Neil S. Carns	Wolf Creek Nu Op Corp	President & CEO
Otto L. Maynard	Wolf Creek Nuc Op Corp	Vice President Plant Ops
BRITT McKINNEY	"	Mgr Ops
LARRY STEVENS	"	Supervisor NSE
Dave Dees	"	Shift Supervisor
Rick Hubbard	"	Shift Supervisor
PETER MARTIN	"	SUPERINTENDENT OPS
Dennis Moseby	"	Supervisor of Operations Training
Michael Peterson	"	Supervising Operator
JAMES KURAS	"	SUPERVISING OPERATOR
BRAD NORTON	"	MANAGER NUCLEAR ENGINEERING
MARK BARBEE	"	SUPERVISOR ENGINEER
Forrest Rhodes	"	Vice President Engineering
Robert Kopecky	"	Shift Supervisor
James E. Gilmore		Supervising Operator
Casey A. Hurbsei[illegible]		Shift Supervisor

ENFORCEMENT CONFERENCE ATTENDANCE

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NAME (PLEASE PRINT)	ORGANIZATION	TITLE
NRC ATTENDEES		
Gary Shiffman	NRC Region 4	Enforcement Officer
J. F. Ringwald	NRC RIV	Senior Resident Inspector
D. D. CHAMBERLAIN	NRC RIV	BRANCH CHIEF
L. J. CALLAN	NRC RIV	REGIONAL ADMINISTRATOR
A. B. BEACH	NRC RIV	DIVISION DIRECTOR
M. A. Shuaibi	NRC RIV	Intern
J. C Stone	NRC/NRR/PDIV-2	Senior Project Manager
John Pellet	NRC RIV DRS	Chief, Operations Branch
David Graves	NRC RIV	Project Engineer
Richard Flannigan	Wolf Creek Nuclear Corp	Manager, Regulatory Services

Wolf Creek Nuclear Operating Corporation

RCS Draindown Event Of September 17, 1994

Enforcement Conference

December 16, 1994

Attachment 2

Agenda

- **Opening Remarks**
  - Otto Maynard
- **Discussion Of Event**
  - Britt McKinney
  - Richard Hubbard
  - Michael Peterson
- **Emergency Plan Determination**
  - Richard Hubbard
  - David Dees
- **Safety Consequences**
  - Peter Martin
- **Similar Issues**
  - Jim Kuras
- **Narrow Focus Of IIT**
  - Larry Stevens
  - Otto Maynard
- **Closing Remarks**
  - Otto Maynard

Outage Preparation

Discussion Of Event:

- **Outage Preparation:**
  - Double Crews (Two crews per shift): Operating, Support
  - Questioning attitude stressed
  - Conservative decisions re-enforced
  - Management expectations reviewed with crews
    - Nuclear safety foremost goal
    - Daily risk assessments / time to boil
    - Reviewed significant areas of risk

Outage Preparation

Discussion Of Event:

- **Conditions Prior To Event:**
  - Both emergency diesel generators operable
  - RCS :
    - MODE 4
    - 300 °F
    - 350 psig
    - Two RCPs running providing forced circulation
    - Four Steam Generators operable and available

Outage Preparation

Discussion Of Event:

- **Conditions Prior To Event:**
  - Both RHR Trains operable
    - One providing shutdown cooling
    - One in standby - being prepared for system recirculation
  - Additional Reactor Operators in the Control Room to assist with activities

Discussion Of Event

Apparent Violations #1 and #2

- **Operations Activities**
  - RHR System description - Apparent Violation # 1
  - Work in progress was well controlled
  - Scheduled work window supported activities
  - Use of "NA" - STS EJ-202 - Apparent Violation # 2

Discussion Of Event

Apparent Violations #1 and #2

- **Operations Activities**
  - Corrective Actions (Inappropriate "NA")
    - STS EJ-202: Mode requirements clarified
    - Use of "NA" re-enforced during crew briefings
  - Corrective Actions (Draindown Event)
    - Thoroughly discussed at the Management Meeting the morning of the event
    - SYS EJ-120, Enhanced guidance for RHR boron concentration and control of BN 8717
    - Final IIT recommendations will be evaluated and implemented as appropriate

E-Plan Determinations

Apparent Violation #3

- **OFN BB-031 Review**
- **Emergency Action Level (EAL) Review**
- **Review Of EALs By Other Personnel**
  - Operations Outage Coordinator
  - Outage Manager
  - Manager Operations

E-Plan Determinations

Apparent Violation #3

- **Why No Classification Was Required**
  - Terminated event very quickly
  - No radioactive release occurred
  - Water volumes contained within plant systems
  - RCS remained subcooled
  - No impact on the health and safety of public
  - Supported by NEI methodology
- **Corrective Actions**
  - Management expectations re-enforced
  - Training on event

Safety Consequences

- **No Loss Of RWST Suction Header For ECCS Pumps For The Actual Event**
  - Operator quickly diagnosed event
  - Operator actions decisive
  - Operator had mulitiple success paths identified
  - RELAP Computer Model showed action of securing RCPs was proper
- **Options If EJ HV-8716A Did Not Close**
  - Close BN 8717
  - Close either RCS loop suction valves (BB PV-8702A or EJ HV-8701A)
  - Close RHR heat exchanger outlet and bypass valves (EJ FCV-618 and EJ HCV-606)
  - Close the RHR pump manual isolation valve (EJ 8724A)
  - Trip the RHR pump (EJ-HIS-1)

Safety Consequences

- **Options If BN 8717 Did Not Close**
  - Close EJ HV-8716A
  - Close either RCS loop suction valves (BB PV-8702A or EJHV-8701A)
  - Close RHR heat exchanger outlet and bypass valves (EJ FCV-618 and EJ HCV-606)
  - Close the RHR pump manual isolation valve (EJ 8724A)
  - Trip the RHR pump (EJ-HIS-1)
- **Actions Of OFN BB-031 For A Long Term Event**
  - Protects ECCS pumps
  - Isolates Letdown
  - Ensures charging path and aligns charging pump to RWST
  - Sets containment isolation
  - Establishes ECCS flow from Safety Injection and RHR pumps
  - Secures RCPs
  - Verifies cold overpressure protection

Similar Issues

Identified in Inspection Report 94-18

- **Eleven of Twelve Violations Were 1993, Prior To Our Last Meeting With The NRC**

- **Recent Events**
  - Radiation monitor bypass
  - Improper ALR procedure actions
  - Pressurizer draindown
  - RWST sample line
  - NK Charger issue

Similar Issues

Identified in Inspection Report 94-18

- **Greatly Improved Performance In 1994**
- **Continued Efforts By SS/SO/Crew**
  - Ownership of problems
  - Strong corrective actions
  - SS/SO developed Operations Standards
    - Watchstanding practices
    - Communications
    - Turnovers
    - PIR awareness
    - Board awareness
- **Continued Support Of Operations By Plant Management**

Narrow Focus Of IIT

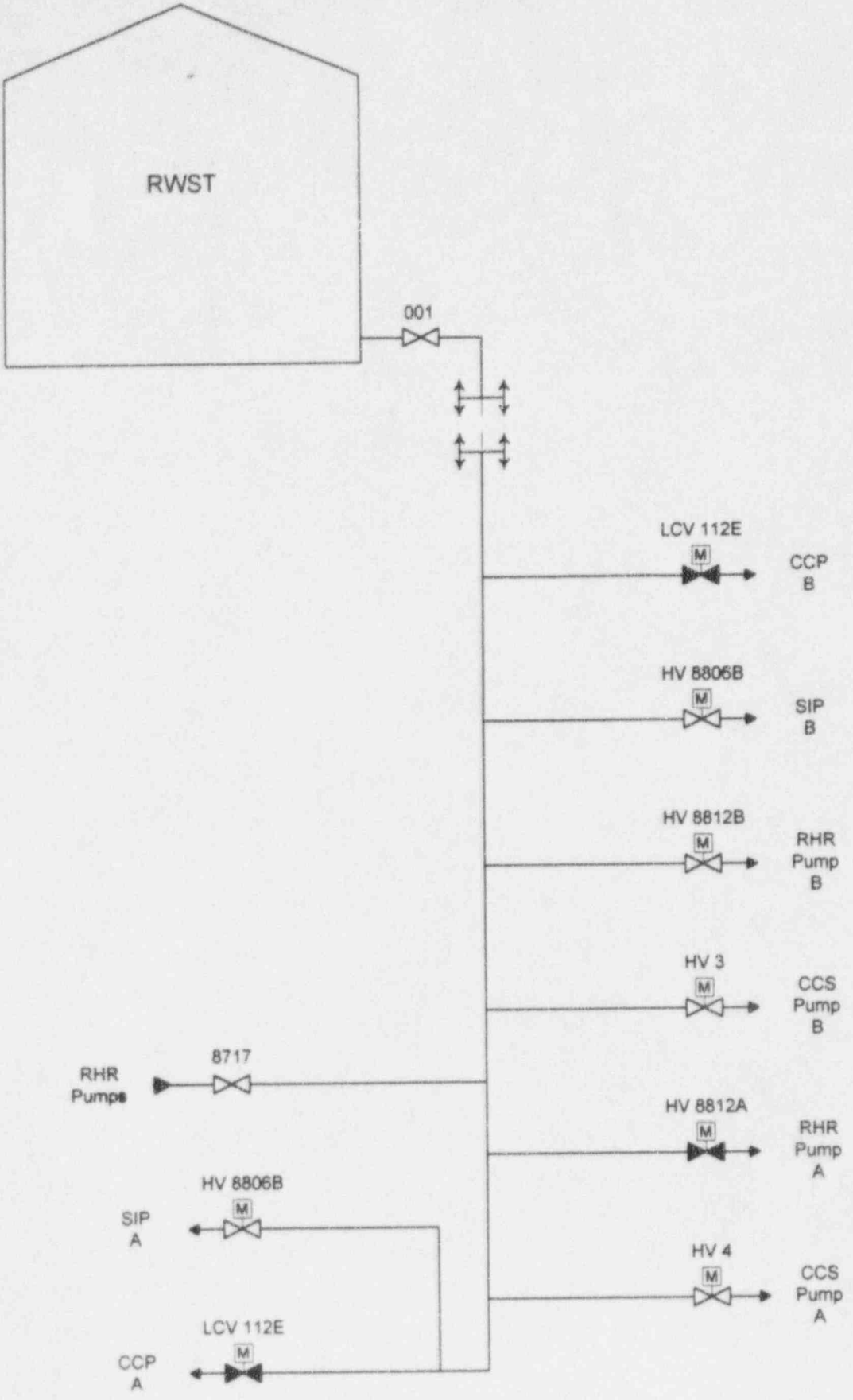
- **Focus Concerns - IIT Did Not Clearly Evaluate:**
  - The failure of the SS to ensure that BN 8717 and EJ HV8716B remained shut while stroking EJ HV8716A despite the SS and SO discussion which established this as a requirement for stroking EJ HV8716A while the RHR Train A was in service
  - The potential safety impact of performing non-essential work on the only available safety system train
  - The inappropriate omission of the mode verification
  - The failure to draw any conclusions regarding procedure use from the failure to review the emergency plan and off normal procedure
  - The potential consequences if problems had been encountered in promptly closing EJ HV8716A
  - The failure to document an assessment of the reported water hammer event

Narrow Focus Of IIT

- **IIT Enhancements**
  - New instruction
  - Mandatory Initial IIT Membership
    - Operations
    - Engineering
    - Nuclear Engineering
    - Maintenance
    - Plant Support
    - Quality Evaluations
    - Nuclear Safety Engineering
    - Training
    - Emergency Planning
  - Meeting with Initial IIT Members
  - Investigation Coordinator
  - Checklist for Team Leader and Investigation Coordinator
  - Utilized instruction on trial basis

Additional Actions

- **Meeting With Managers And Supervisors**
  - 1995 Expectations
  - Reduce personnel errors
  - Follow procedures
  - Take time to do job right
- **Conservative Outage Activities**
  - Check valve work
  - Torsional test
  - Rod Drive Motor Generator
- **Stand down day in January 1995**
- **Topic of the week**


RWST
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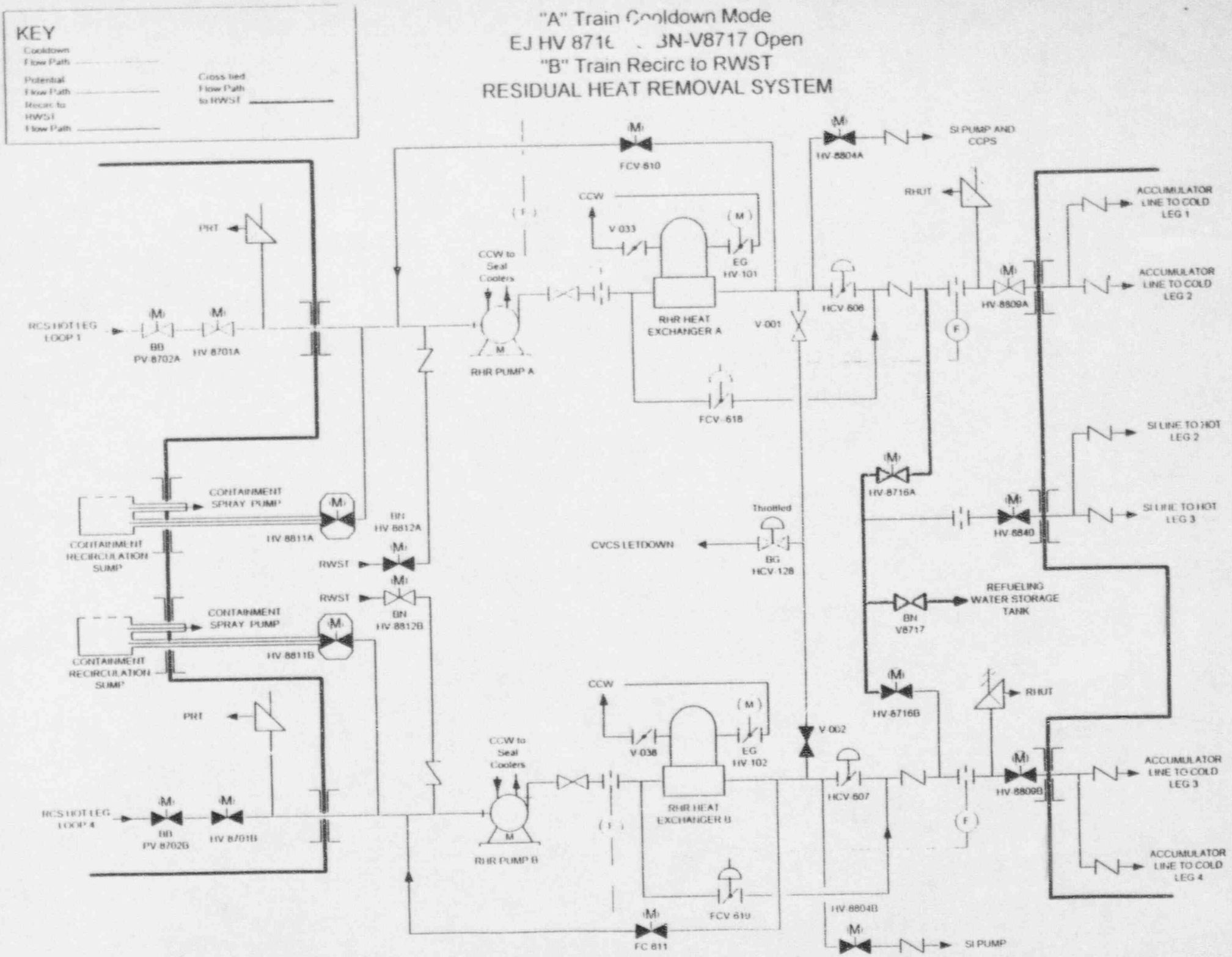
KEY
Cooldown Flow Path
Potential Flow Path
Recirc to RWST Flow Path
Cross tied Flow Path to RWST
"A" Train Cooldown Mode
EJ HV 871(. 3N-V8717 Open
"B" Train Recirc to RWST
RESIDUAL HEAT REMOVAL SYSTEM
FCV-610
HV-8804A
SI PUMP AND CCPS
RHUT
ACCUMULATOR LINE TO COLD LEG 1
ACCUMULATOR LINE TO COLD LEG 2
CCW
V-033
EG HV-101
CCW to Seal Coolers
PRT
RCS HOT LEG LOOP 1
BB PV-8702A
HV-8701A
RHR HEAT EXCHANGER A
V-001
HCV-606
HV-8809A
RHR PUMP A
FCV-618
SI LINE TO HOT LEG 2
HV-8716A
SI LINE TO HOT LEG 3
HV-8840
CONTAINMENT SPRAY PUMP
HV-8811A
BN HV-8812A
CONTAINMENT RECIRCULATION SUMP
RWST
Throttled
CVCS LETDOWN
BG HCV-128
REFUELING WATER STORAGE TANK
BN V8717
CONTAINMENT SPRAY PUMP
HV-8811B
BN HV-8812B
CONTAINMENT RECIRCULATION SUMP
RWST
HV-8716B
RHUT
CCW
V-038
EG HV-102
CCW to Seal Coolers
PRT
V-002
RCS HOT LEG LOOP 4
BB PV-8702B
HV-8701B
RHR HEAT EXCHANGER B
HCV-607
HV-8809B
ACCUMULATOR LINE TO COLD LEG 3
ACCUMULATOR LINE TO COLD LEG 4
RHR PUMP B
FCV-619
HV-8804B
FC-811
SI PUMP

RFVII SUPPORT ENHANCEMENTS FOR OPERATIONS

Wolf Creek made many changes prior to Refuel 7 which had a very positive affect on the ability of the operators to perform their outage duties. Key areas targeted for improvement were the pre planning and the company organization area. Specifically, changes were made to remove administrative burdens, control and normalize the amount of work in process at any point of time, inclusion of operations evolution performance times in work schedules, assignment of sufficient staff personnel for work evolution's, improvements in communication with other company organizations and in management of information.

The implementation of these changes proved to be very beneficial during RFVII. The following table lists the changes made and the intent of the change, relative to our effort to improve the Main Control Room (MCR) working conditions. The list is broken down into two parts those item which were completely new and those which were enhanced from the past outage.

New items for refuel VII	Intent of Enhancement:
- Outage Control Center	Improve timeliness of requests for support and a focal point for information and communication between WC Management and all work groups.
- Outage Managers that were previously licensed to SRO level. (Trainee in license class. on shift back up by Sr. Lic. personnel.	Provide Operations expertise to daily outage implementation / work controls.
- Operation shift change to 3 sections.	Provide two operating crews per shift.
- Additional signs and barrier protection for significant safety equipment.	Maintain defense in depth for configurations that were dependent on single trains of safety related equipment and or to prevent challenges to the MCR via induced work related plant transients.
- Shift engineers	Provide constant technical support and design basis knowledge in the MCR and to evaluate the acceptability of proposed plant configurations and evolution's
- New MCR Layout.	Provide a better more efficient work environment for the MCR operator's.
- Procedure upgrades and change production support.	Provide timely support of necessary procedure changes without impacting operating crew work load.
- Levelization of field work between day and night activities.	Prevent large work load peaks in the MCR during day shift.
- Infrequent Performed Evolution briefing by licensed or exlicensed personnel	Provide personnel who can provide a more detailed briefing and better relate industry experiences to Wolf Creek systems and designs.

RFVII SUPPORT ENHANCEMENTS
FOR OPERATIONS

- Application on Project management for significant emergent work by the OCC.	Development of a plan of action and time for activities that had operations input and provided information to the MCR relative to emergent work control in the field.
- Development of new schedule products.	Reflect current work activities , the duration, the work groups involved; the support required; the proposed time of sequenced work and the logic that was part of the planning process. Provide Operations expertise to daily outage implementation / work controls .
- OCC operations representative.	. Provide Operations expertise to daily outage implementation / work controls, provide a single point of contact to direct all on site personnel and to provide timely communications between the MCR and all site groups without having to impact the person loading in the MCR. Provide instant access to on site Sr. Outage Management .
- Definition and control of discretionary Emergent work.	Prevent unplanned uncoordinated jumpup work from impacting the control room activities.
- Assignment of Lic. Operations personnel to Outage management's Outage Schedule preparation effort.	To allow the inclusion of appropriate operations support of planned evolution's and to ensure sufficient schedule time for operations work. i.e. Sufficient time to hang C.O. drain or fill system , Mode changes etc.
- Assignment of other clerical and technical support personnel to operations during the outage.	Provide more person power for the operations and to prevent large workload peaks during high operations activity
- Provided remote monitoring CCTV and communication equipment (computer / radio / beepers) for critical areas and work processes.	Provide more tools for the operators to use to maintain defense in depth. Increase the timelines of information to the operator and to provide instant direction of field evolution's by the MCR.
Enhancement of past practices	Intent of Enhancement:
- Support Crew SS worked out of SS office.	Manage Clearance Order process / Evaluation of CWA duties.
- Support Crew SO coordinated support crew evolution's.	Ensure the direction of the on shift SS to the extra support operators was implemented in the field.
- Daily work Risk Assessments.	Evaluate the acceptability of proposed plant configurations and evolution's.
- Risk assessments of emergent work.	Evaluate the acceptability of proposed plant configurations and evolution's

RFVII SUPPORT ENHANCEMENTS
FOR OPERATIONS

- Outage schedule risk assessment review.	Development of necessary contingency plans and to evaluate the acceptability of proposed plant configurations and evolution's
- Assignment of specific operations personnel to coordinate and direct critical plant evolution's. i.e. STS-KJ-001A&B, RCS Fill and Vent and Slave Relay Testing / Overview of Fuel Movement/inspections.	Evaluate the acceptability of proposed plant configurations and evolution's, to provide Operations expertise, better coordination and review, and a focal point for the evolution.
- Use of Expert Vendor support. i.e. Westinghouse fuel movement/ inspections.	Reduction of demands on operations person power requirements.
- Assignment of Company personnel to outage windows or key evolution's	To enhance the communications by having a single point of contact for Major plan configuration changes for the MCR / Job management.
- Preplanned problem identification contingency plan development. i.e. Noise monitoring program.	Preparation for enhancements for the operators during demanding attention times i.e. Plant heat up etc.
- Use of simulator by operating crews for training of duties for infrequent performed evolution's.	Condition operators for responses for infrequent performed evolution's. Strengthen knowledge of operators on what to expect and watch for during plant cool down , start up, Turbine overspeed testing, etc.
- PreOutage training on past events.	Strengthen knowledge of operators on what to expect and watch for. To Learn from past experiences so as not to repeat mistakes.
- Window manager assignments for major outage work evolution's.	Single point of contact for direction or information for the MCR staff.
-Schedule operator training course breaks during the scheduled outage time.	Provide more person power for the operations staff.
- Use of operations training experts for major system restoration.	Provide more person power for the operations and to prevent large workload peaks during high operations activity periods.
- Provided a "Quite Time" for MCR turnovers.	Prevent interruptions during the shift turnovers between operating crews.
- Moved the plant work group shift turnover meetings to the Admin. Bldg.	Prevent interruptions during the shift turnovers between operating crews.
- Development of contingency plans (containment closure back up power supply) for periods when the "defense in depth" philosophy could be challenged.	Provide more tools for the operators to use to maintain defense in depth.
- Assignment of Building coordinators. (Containment / Turbine Hall)	Provide the MCR with the ability to direct or communicate with all of the evolution's within a building through a single point of contact.

Examples of Good Operator Actions

- Coming out of Refuel VII the Turbine Driven Auxiliary Feed Water Pump packing, which was new, swelled causing heating of the packing gland. The packing was loosened and the surveillance testing was completed satisfactory. The Operators were concerned with the condition of the packing and wanted it replaced. Maintenance repacked the pump. The replaced packing rings showed signs of deterioration from heating. Operations questioning attitude and insistence on replacing the packing resulted in a more reliable pump.

- During surveillance testing on GG RE 27, the RO noticed that an annunciator light was out which should have been on. There was no audible alarm associated with the change in alarm status. He promptly stopped the testing and prevented a Fuel Building Isolation Signal.

- While hanging a clearance on Containment Spray, the Operator heard a popping noise while closing the manual valve inside Containment. Maintenance was contacted and they assisted in closing the valve and assuring the valve was closed. It was determined that the noise was caused by broken teeth on the gears. If he had not questioned the noise and obtained Maintenance support, there was a strong potential that water could have sprayed into Containment when the pump was run.

- During the ESW flow balance, the Shift Engineer noticed a deficiency in the test results and the testing was stopped until the deficiency was resolved. The Shift Engineer was checking up on the testing on his own initiative.

- While performing a clearance to remove power from the Chlorine Bistables, the Operators questioned whether or not the Bistables should to be bypassed. The Chlorine monitors were previously removed but the Bistables were still in the CRVIS circuit. The original plan did not include bypassing the Bistables. It was only after more questioning by one of the Operators that the plan was changed to bypass the Bistables. This prevented an inadvertent CRVIS.

- During the Outage, the Shift Supervisor caught and prevented work from being performed on a B Train component while the A Train was inoperable. This was especially noteworthy since it was not obvious from the component ID as to which Train the component was in.

- While restoring North Electrical Penetration Room Halon, the watch noticed one of the detectors was lit. He contacted the Control Room and Their alarm was in. This prevented a possible actuation of the Halon System in that area.