



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

SEP - 1 1995

Southern California Edison Co.
San Onofre Nuclear Generating Station
ATTN: Harold B. Ray
Executive Vice President
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: DISCUSSION OF LICENSEE ACTIONS IN RESPONSE TO WKM VALVE PROBLEMS AND
THE ROOT-CAUSE ANALYSIS OF REACTOR COOLANT PUMP BAFFLE BOLT FAILURES

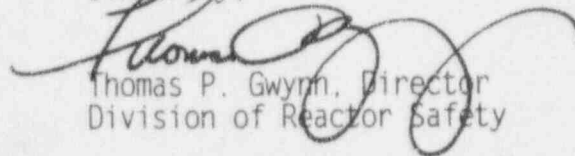
This refers to the meeting conducted in the Region IV office on August 23, 1995. This meeting related to discussion of licensee actions in response to WKM valve problems and the root-cause analysis of reactor coolant pump baffle bolt failures. A copy of the Southern California Edison Co. presentation material is provided as Enclosure 1. The attendance list for this meeting is provided in Enclosure 2.

We found the presentation to be both informative and of value in our inspection planning process.

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,



Thomas P. Gwynn, Director
Division of Reactor Safety

Dockets: 50-361
50-362
Licenses: NPF-10
NPF-15

Enclosures:
1. Licensee Presentation
2. Attendance List

cc w/enclosures:
County of San Diego
ATTN: Chairman, Board of Supervisors
1600 Pacific Highway, Room 335
San Diego, California 92101

9509060239 950901
PDR ADOCK 05000361
P PDR

IE 45
11

Rourke & Woodruff
ATTN: Alan R. Watts, Esq.
701 S. Parker St. No. 7000
Orange, California 92668-4702

Public Utilities Department
City of Riverside
ATTN: Sherwin Harris, Resource
Project Manager
3900 Main Street
Riverside, California 92522

Southern California Edison Company
San Onofre Nuclear Generating Station
ATTN: R. W. Krieger, Vice President
P.O. Box 128
San Clemente, California 92674-0128

California Department of Health Services
ATTN: Dr. Harvey Collins, Chief
Division of Drinking Water and
Environmental Management
P.O. Box 942732
Sacramento, California 94234-7320

Bechtel Power Corporation
ATTN: Richard Kosiba, Project Manager
12440 E. Imperial Highway
Norwalk, California 90650

San Diego Gas & Electric Company
ATTN: Richard Krumvieda, Manager
Nuclear Department
P.O. Box 1831
San Diego, California 92112

Radiological Health Branch
State Department of Health Services
ATTN: Mr. Steve Hsu
P.O. Box 942732
Sacramento, California 94234

City of San Clemente
ATTN: Mayor
100 Avenida Presidio
San Clemente, California 92672

bcc to DMB (IE45)
bcc distrib. by RIV

L. J. Callan
DRSS-FIPB
Branch Chief (DRP/F, WCFO)
RIV File
Leah Tremper (OC/LFDCB, MS: TWFN 9E10)

Resident Inspector
MIS System
Senior Project Inspector (DRP/F, WCFO)
Branch Chief (DRP/TSS)
M. Hammond (PAO, WCFO)

DOCUMENT NAME:

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:TA	D:DRS	D:DRP	D:DRS
IBarnes/lmb*	TPGwynn	JEDyer	TPGwynn
08/30/95	08/31/95	08/1/95	08/1/95

*Previously concurred

OFFICIAL RECORD COPY

000027

bcc to DMB (IE45)
 bcc distrib. by RIV:

L. J. Callan	Resident Inspector
DRSS-FIPB	MIS System
Branch Chief (DRP/F. WCFO)	Senior Project Inspector (DRP/F. WCFO)
RIV File	Branch Chief (DRP/TSS)
Leah Tremper (OC/LFDCB, MS: TWFN 9E10)	M. Hammond (PAO, WCFO)

DOCUMENT NAME:

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:TA	D:DRS	D:DRP	D:DRS	
IBarnes/lmb*	TPGwynn	JEDyer	TPGwynn	
08/30/95	08/31/95	09/1/95	09/1/95	08/ /95

*Previously concurred

OFFICIAL RECORD COPY

ENCLOSURE 1

Licensee Presentation

"SONGS WKM VALVE ASSESSMENT (3HV9339)

SONGS
WKM VALVE ASSESSMENT
(3HV9339)

AUGUST 1995

PRESENTATION OUTLINE

- INTRODUCTION
- WKM MODEL D-2 POW-R-SEAL DESIGN /OPERATION
- WKM FAILURE HISTORY /EVALUATION SUMMARY
- WKM RAIL FAILURE MECHANISM /MODIFICATIONS
- AS FOUND CONDITIONS OF 3HV9339
- WKM VALVE OPERABILITY /SAFETY SIGNIFICANCE
- REASSESSMENT OF WKM MODIFICATION PLANS
- SUMMARY

INTRODUCTION

- APPROACH FOR WKM GATE VALVES PRIOR TO 3HV9339 FAILURE
- AS A RESULT OF 3HV9339 FAILURE, REASSESS WKM APPROACH
- SAFETY SIGNIFICANCE IS LOW (PRELIMINARY ASSESSMENT)
- KEY INFORMATION ABOUT WKM GATE VALVE
 - FAILURE FREQUENCY IS ACCEPTABLE
 - FAILURE IS NOT A SAFETY CONCERN
 - PRA SHOWS SAFETY SIGNIFICANCE LOW
 - ROOT CAUSE NOT KNOWN
 - 3HV9339 WAS NOT YET TESTED BY GL 89-10 PROGRAM

WKM MODEL D-2 POW-R-SEAL DESIGN /OPERATION

- MODEL D-2 POW-R-SEAL
- TWO PIECE GATE CONSTRUCTION
- LEV-R-LOC ASSEMBLY
- GATE/SEGMENT, SKIRT, GUIDE RAILS

**SAFETY RELATED WKM
VALVE SUMMARY**

VALVE TYPE GROUP	TOTAL NUMBER	SPEED (IPS)	EST. TOTAL STROKES PER GROUP	EST. USAGE STROKES PER CYCLE	COMMENTS
1) MSIV	4	6-8	320	10	ALL MODIFIED
2) MFIV, MFBV, 20X16X20	8	2-3	640	10	1 INSPECTED
3) CCW 10X8X10	16	<1	3840	20-30	2 MODIFIED
4) SDC 12X8X12 16	12	<1	60	<6	1 MODIFIED
5) SIT	8	<1	24	<6	NGNE
TOTAL	48		~5000		

WKM FAILURE HISTORY AND CORRECTIVE ACTIONS SUMMARY

- **MAY 1988:** SONGS MSIV'S 3HV8204 & 3HV8205 INSPECTED
 - BROKEN AND LOOSE CAPSCREWS
 - GALLING
- **AUGUST 8, 1988:** NRC ISSUED IEN 88-59
 - WATERFORD 3 MSIV FAILURE
 - RECOMMENDED CORRECTIVE ACTIONS
- **JANUARY 19, 1989:** SONGS MSIV 2HV8204 INSPECTED
 - ALL CAPSCREWS INTACT
 - SOME GALLING
- **AUGUST 25, 1991:** SONGS UNIT 2 MSIV
 - 2HV8205: SATISFACTORY
 - 2HV8204: BROKEN CAPSCREWS AND GALLING
- **NOVEMBER 5, 1991:** KALSI REPORT NO.1719 "ANALYSIS FOR DESIGN MODIFICATION OF MSIV GATE GUIDE"

**WKM FAILURE HISTORY AND
CORRECTIVE ACTIONS SUMMARY
(CONT)**

- **NOVEMBER 6, 1991:** SCE LETTER TO NRC : MSIV FAILURE
 - ROOT CAUSE ASSESSMENT (RCE 91-025)
 - COMMITS TO REVIEW OF WKM VALVES IN SAFETY APPLICATIONS

- **MAY 11, 1993:** KALSI REPORT NO.1788, REV.1, "EVALUATION OF WKM GATE VALVE OPERABILITY"
 - REVIEWS MAINTENANCE HISTORY /OPERABILITY PROBLEMS OF SONGS WKM VALVES
 - IDENTIFIES FACTORS WHICH AFFECT OPERABILITY

- **NOVEMBER 4, 1993:** KALSI REPORT NO.1802, FAILURE ANALYSIS OF A 20X16X20 WKM GATE VALVE

- **GENERIC LETTER 89-10 TESTS IN CYCLE 7 & 8**

- **MAY, 1995:** EPRI MOV PERFORMANCE PREDICTION PROGRAM FOR WKM VALVES ISSUED

**SONGS
CORRECTIVE ACTIONS
(CURRENT)**

- BASED ON KALSI ANALYSIS RESULTS
- WKM VALVES INSPECTED DURING MAINTENANCE
- MODIFY RAIL /SHOES WHEN WEAR MECHANISM INDICATED
- VALVES MODIFIED
 - 2HV6369 - ECU/CCW
 - 2HV8204 - MSIV
 - 2HV8205 - MSIV

 - 3HV6371 - ECU/CCW
 - 3HV8204 - MSIV
 - 3HV8205 - MSIV
 - 3HV9339 - SDC

**SAFETY RELATED WKM
VALVE SUMMARY**

VALVE TYPE GROUP	TOTAL NUMBER	SPEED (IPS)	KALSI CONTACT STRESS (KSI) @COF = 0.4	KALSI SPEED (IPS)
1) MSIV	4	6-8	430 W/O MODS 61 WITH MODS	10 10
2) MFIV, MFBV, 20X16X20	8	2	200	2
3) CCW 10X8X10	16	<1	40/130	0.1 /1.0
4) SDC 12X8X12 16	12	<1	40/130	0.1 /1.0
5) SIT	8	<1	40/130	0.1 /1.0

**AS FOUND CONDITION
OF 3HV9339**

ACTIONS IN PROGRESS

- DATA REVIEW
 - GL 89-10 SIGNATURE ANALYSIS
 - NPRDS REVIEW
 - AS-FOUND REVIEW OF 3HV9339

- TEST
 - 8" WKM STROKE TEST W/WO RAILS
 - VALVE OPENING ASSESSMENT

- EVALUATION
 - FAILURE MODES ASSESSMENT (OPEN/CLOSE)
 - PRA
 - CAPSCREW SHEAR ANALYSIS
 - FLOW CAPABILITY OF PARTIALLY OPENED VALVES
 - WEAK LINK ASSESSMENT

WKM VALVE OPERABILITY SAFETY SIGNIFICANCE

- FAILURE MECHANISM IS PROGRESSIVE AND CAN BE MONITORED BY GL 89-10 PROGRAM FOR MOVES AND/OR INSPECTION
- RAIL FAILURE WOULD NOT PREVENT CLOSURE OF A WKM VALVE
- RAIL FAILURE WOULD NOT PREVENT SUFFICIENT OPENING

REASSESSMENT OF WKM MODIFICATION PLANS

BASED ON 3HV9339 RAIL FAILURE, REASSESS WKM MODIFICATION PLANS:

- CONTINUE TO INVESTIGATE
- REPRIORITIZE THE VALVE POPULATION FOR FUTURE MODIFICATION
- CONSIDERING ACCELERATING VALVE MODIFICATIONS
- PLAN UPGRADE OF FWIV / FWBV's

SUMMARY

- PRIOR TO 3HV9339, APPROACH IN ADDRESSING THE "KALSI" MECHANISM WAS APPROPRIATE
- BECAUSE OF 3HV9339, SCE WILL REASSESS OUR WKM APPROACH
- THE SAFETY SIGNIFICANCE OF THIS WKM FAILURE IS VERY LOW (PRELIMINARY ASSESSMENT)

ENCLOSURE 2

Southern California Edison Co.
Meeting August 23, 1995

Attendance List

