
Data Summaries of Licensee Event Reports of Valves at U.S. Commercial Nuclear Power Plants

Volume 3, Appendices O-Y
January 1, 1976 to December 31, 1978

Prepared by Warren H. Hubble, Charles Miller

EG&G Idaho, Inc.

Prepared for
U. S. Nuclear Regulatory
Commission

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ABSTRACT

This report consists of three volumes; Volume 1 contains the main report, and Volumes 2 and 3 contain the complete Appendix.

The report describes the creation of a computer-based data file from Licensee Event Reports (LERs) of valves at commercial nuclear power plants for the period January 1, 1976, to December 31, 1978. In addition to creation of the file, summaries of the data contained in the file were made to obtain data for risk and statistical purposes. Gross constant failure rates were estimated for major valve types in selected safety systems. Explanations and summary tables of the results are provided.

FOREWORD

This report is one in a series summarizing the statistics of Licensee Event Reports (LERs) as recorded by the U.S. Nuclear Regulatory Commission. The goal of the report is twofold: (a) to summarize the data for risk and statistical analyses, and (b) to obtain gross constant failure rate estimates and gross categorizations of the failures.

Because subjective judgments had to be made regarding population sizes and pertinence of recorded events, and because some component failures may not be recorded in the LERs, the component failure rates estimated in this report should be interpreted as being only tentative gross indicators of the true failure rates. The analyst himself must validate the applicability of the LER-derived failure rates for his own particular use. Furthermore, because LER reporting requirements can differ from plant to plant, comparisons of plant-to-plant failure rates should be interpreted with care; a higher failure rate may simply be because of stricter reporting requirements. As more data are collected and more analyses are performed in the future, improved failure rate estimates will be produced.

The failure rates given in the report are only one of many kinds of information presented. The tables and discussions give important information on failure classifications, according to failure modes, failure causes, and systems affected. Gross time trends are examined. Human errors are identified as are common cause failures and recurring failures. Each LER analyzed is presented in a useful, summarized form, and all evaluations are presented such that you can modify the authors' calculations or perform your own evaluations if you so desire.

William E. Vesely
Project Manager
November 16, 1979

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NOMENCLATURE

Terms and acronyms used in this report are defined herein.

Terms

1. Component - A component is the largest entity of hardware for which data are most generally collected and expected to be available (for example, pump with motor, valve with operator, amplifier, pressure transmitter). It is generally an off-the-shelf item procured by the system designer as a basic building block for his system. It would be distinguished from seals, bearings, nuts, bolts, and other piece parts from which the component is manufactured.
2. System - A system is a collection of components arranged so as to provide a desired function (for example, Containment Spray System, Residual Heat Removal System, High Pressure Coolant Injection System).
3. Fault - A fault is any undesired state of a component or system. A fault does not necessarily require failure (for example, a valve might be closed when it should be open because of some other component input or human error--a "command fault").
4. Failure - A failure is a subset of a fault and represents an irreversible state of a component such that it must be repaired in order for it to perform its design function. Failures are sometimes classified as primary or secondary failures. However, in classifying failures for this report, no distinction has been made between these two classifications:
 - a. A primary failure is the so called "random failure" found in the literature. It results from no external cause.

- b. A secondary failure results when the component is subject to conditions that exceed its design envelope (for example, excessive voltage, pressure, shock, vibration, temperature).
5. Common Cause Failure - Common cause failures are two or more redundant components failing together because of a single cause. The common cause events that cause multiple failures are usually secondary failures. Human errors are a special type of command fault that are considered common cause for multiple failures.
 6. Failure Mode - The description of the manner in which a component ceases to perform its intended function.
 7. Failure Mechanism - The identified cause that prevented the component from performing its intended function.
 8. Demand Failure Rate - The probability (per demand) that a component will fail to operate when required to start, change state, or function.
 9. Standby Failure Rate - The probability (per hour) of failure for those components that are normally dormant or in a stand-by state until tested or required to operate or function for a period of time.
 10. Operating Failure Rate - The probability (per hour) of failure for those operating components required to operate or function for a period of time.

Acronyms

ADS	-	Automatic Depressurization System
AOV	-	Air-Operated Valve
BWR	-	Boiling Water Reactor
ESF	-	Engineered Safety Features
FSAR	-	Final Safety Analysis Report
HPCI	-	High Pressure Coolant Injection

- LER - Licensee Event Report
- LPCI - Low Pressure Coolant Injection
- MOV - Motor-Operated Valve
- NPRDS - Nuclear Plant Reliability Data System
- NRC - Nuclear Regulatory Commission
- NSSS - Nuclear Steam Supply System
- P&ID - Piping and Instrumentation Diagram
- PORV - Power-Operated Relief Valve
- PPS - Plant Protection System
- PSAR - Preliminary Safety Analysis Report
- PWR - Pressurized Water Reactor
- RHR - Residual Heat Removal
- SOV - Solenoid-Operated Valve

APPENDIX O

VALVE REPORTS SORTED BY FAILURE MODE

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CODES USED IN LER ONE-LINE DESCRIPTIONS

FAILURE MODE
DESCRIPTION
 A - FAILED TO OPEN
 B - FAILED TO CLOSE
 C - INTERNAL LEAKAGE
 D - EXTERNAL LEAKAGE/RUPTURE
 E - REVERSE LEAKAGE (CHECK VALVES)
 F - FAILED TO OPERATE AS REQUIRED
 G - PLUGGED (FAILS TO REMAIN OPEN)
 H - PREATURE OPEN (RELIEF VALVES)
 I - MAINTENANCE/REPLACEMENT
 J - TECHNICAL SPECIFICATION VIOLATION
 K - IMPROPER VALVE CONFIGURATION

FAILURE MECHANISM
DESCRIPTION
 00 - UNKNOWN
 01 - PERSONNEL (OPERATION)
 02 - PERSONNEL (MAINTENANCE)
 03 - PERSONNEL (TESTING)
 04 - DESIGN ERROR
 05 - FABRICATION/CONSTRUCTION/QUALITY CONTROL
 06 - PROCEDURAL DISCREPANCY
 07 - NORMAL WEAR
 08 - EXCESSIVE WEAR
 09 - CORROSION
 10 - FOREIGN MATERIAL CONTAMINATION
 11 - EXCESSIVE VIBRATION
 12 - MECH. CONTROLS/PARTS; FAILED/CUT OF ADJUST.
 13 - SEAL/GASKET FAILURE/PROBLEM
 14 - PACKING FAILURE/PROBLEM
 15 - GELLS/BOOTS FAILURE/PROBLEM
 16 - ELECTRICAL INPUT FAILURE/PROBLEM
 17 - BEARING/BUSHING FAILURE/PROBLEM
 18 - WELD FAILURE
 19 - LACK OF LUBRICATION
 20 - ELECTRIC MOTOR OPERATOR FAILURE/PROBLEM
 21 - SOLENOID FAILURE/PROBLEM
 22 - CRACKING/RUPTURED DIAPHRAGM
 23 - CONTROL SWITCH FAILURE/PROBLEM
 24 - FAILURE OF COMPONENT SUPPLY SYSTEM
 25 - FAILURE OF SC FAILURE/PROBLEM
 26 - LIMIT SWITCH FAILURE/PROBLEM
 27 - PILOT VALVE FAILURE/PROBLEM

EVENT CLASSIFICATION
CODE DESCRIPTION
 D - CHANGE OF STATE
 T - AGE
 U - UNKNOWN

COMPONENT
DESCRIPTION
 MV - MOTOR OPERATED VALVE (ELEC.)
 AV - PNEUMATIC OPERATED VALVE
 SV - SOLENOID OPERATED VALVE
 HW - HYDRAULIC OPERATED VALVE
 RM - REMOTE OPERATED VALVE
 MM - MANUAL OPERATED VALVE
 CM - CHECK VALVE
 RV - RELIEF VALVE
 DV - DAMPER VALVE
 UV - OPERATOR TYPE OR FUNCTION NOT STATED

ACTIVITY RESULTING IN DISCOVERY
CODE DESCRIPTION
 D - DEMAND ON COMPONENT
 M - MAINTENANCE
 N - NORMAL OPERATION
 RP - RECORDS REVIEW
 T - TESTING
 U - UNKNOWN

TYPE OF EVENT
DESCRIPTION
 B - RECURRING COMMON CAUSE
 C - COMMON CAUSE
 R - RECURRING
 S - COMMAND FAULT
 T - RECURRING COMMAND FAULT

NUMERICAL KEY WORDS
CODE DESCRIPTION
 V - VALVES
 A - SOME
 S - SEVERAL
 Z - OTHER

NSSS VENDOR
CODE DESCRIPTION
 B - BABCOCK & WILCOX
 C - COMBUSTION ENGINEERING
 G - GENERAL ELECTRIC
 W - WESTINGHOUSE

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE	PWR
----	----
A	-
B	-
C	-
D	-
E	-
F	-
G	-
H	-
I	-
J	-
K	-
L	-
M	-
N	-
O	-
P	-
Q	-
R	-
S	-
T	-
U	-
V	-
W	-
X	-
Y	-
Z	-

- AUXILIARY FEED
 - CONTAINMENT ISOLATION (INCL PENETRATIONS)
 - ELECTRIC POWER
 - CONTAINMENT SPRAY INJECTION
 - CHEMICAL VOLUME CONTROL (MAI) --UP)
 - HIGH PRESSURE COOLANT INJECTION
 - COMPONENT COOLING WATER
 - REACTOR COOLANT
 - LOW PRESSURE COOLANT INJECTION (RHR)
 - REACTOR PROTECTION (CONTROL RODS)
 - NONSAFETY-RELATED
 - SYSTEM UNKNOWN/NOT APPLICABLE
 - CONTAINMENT FAN COOLING SYSTEM
 - SERVICE WATER
 - CONDENSATE AND FEED
 - MAIN STEAM
 - REACTOR PROTECTION (PPS)
 - CONTAINMENT AIR/EFFLUENT, PURIF./SAMPLE.
 - FAILED FUEL ELEMENT DETECTION

CODE	BWR
----	----
A	-
B	-
C	-
D	-
E	-
F	-
G	-
H	-
I	-
J	-
K	-
L	-
M	-
N	-
O	-
P	-
Q	-
R	-
S	-
T	-
U	-
V	-
W	-
X	-
Y	-
Z	-

- AUTOMATIC DEPRESSURIZATION
 - CONTAINMENT ISOLATION (INCL PENETRATIONS)
 - LOW PRESSURE CORE SPRAY
 - ELECTRIC POWER
 - CONTAINMENT SPRAY INJECTION
 - STANDBY LIQUID CONTROL (SBCRN)
 - HIGH PRESSURE COOLANT INJECTION
 - COMPONENT COOLING WATER
 - REACTOR COOLANT RECIRC
 - LOW PRESSURE COOLANT INJECTION (RHB)
 - CONTROL ROD DRIVE HYDRAULIC (SCRAM)
 - NONSAFETY-RELATED
 - SYSTEM UNKNOWN/NOT APPLICABLE
 - REACTOR CORE ISOLATION COOLING
 - SERVICE WATER
 - STANDBY GAS TREATMENT
 - CONDENSATE AND FEED
 - MAIN STEAM
 - REACTOR PROTECTION (PPS)
 - CONTAINMENT AIR/EFFLUENT, PURIF./SAMPLE.
 - FAILED FUEL ELEMENT DETECTION

FAILED TO OPEN

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>CUM P</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON MUM</u>	<u>PH</u>	<u>MARK</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	CR3	018562	071577	L	MV	A00	R	U				DECAY HEAT VLV DHV-4 WOULD NOT OPEN FROM CONT.ROOM	CAUSE OF FAILURE UNKNOWN
B	CR3	021775	062178	L	RM	A00		U				DECAY HEAT REMOV.VLV DHV-111 WOULD NOT OPEN REMOT.	CAUSE OF EVENT IS UNDETERMINED
B	RS1	014306	020776	L	MV	A00		U				RHR MOV FAILED TO OPEN DURING TESTING(HV-26106)	TIGHT PACKING /POSS STICKING SEAT
C	FC1	016025*	100176	W	RV	A00	R	U	05			5 RELIEF VALVE SETPOINTS DRIFTED FROM TECH SPEC	UNDER INVESTIGATION
C	FC1	019401*	093077	W	RV	A00	R	U	03			3 RELIEF VALVE PRESS. SETTINGS DRIFTED OUT OF SPEC	CHANGE IN ENVIRONMENTAL CONDITIONS
C	FC1	019551	102677	K	RV	A00	R	U				VALVE RC-142 RELIEF PRESSURE OUT SPEC HIGH	COULD NOT BE DETERMINED
C	MY1	022141	081578	K	RV	A00		U				PRESSURIZER RV PR-S-13 SETPOINT OUT OF SPEC	CAUSE UNKNOWN,SETPOINT ADJUSTED
C	PA1	021962	062776	C	RM	A00		U				CONT.PURGE SUP. VLV (CV-1808) FAILED TO OPEN	NO APPARENT REASON FOUND FOR FAILURE
C	PA1	020164*	010678	W	RV	A00		U	05			SETPOINTS ON 5 RVs OUTSIDE OF T.S.BANDS,STM.SYST	CAUSE OF S.P. DRIFT UNKNOWN
C	SL1	019504	081777	F	RM	A00		U				CONTAINMENT SPRAY VALVE FAILED TO OPEN/TESTING	UNKNOWN/ LOCKED OPEN HANDWHEEL
C	SL1	019509	092577	F	RM	A00		U				CONT.SPRAY HDR.ISC.VLV FCV-07-18 NOT FULLY OPEN	UNKNOWN (CONT.SPRAY VLV,STICKING)
G	BF3	016055	082476	H	CV	A00		U				CHECK VALVE IN HPCI TURB.EXH.LINE WAS BINDING	CAUSE OF CHECK VLV BINDING NOT STATED
G	BR1	017330	030677	L	MV	A00		U				RHR PMP 1D TORUS SUC.VLV E11-F004D WOULD NOT OPEN	CAUSE OF FAILURE UNKNOWN
G	BR1	021488	052378	C	CV	A00		U				CAC VACUUM BREAKER CAC-X18-A WOULD NOT OPEN	CAUSE OF FAILURE NOT GIVEN
G	BR1	022218	080878	H	MV	A00		U				HPCI FEED INJ VALVE E41-F006 FAILED TO OPEN AUTO	UNKNOWN/TESTING COULDNT DUPLICATE FAILURE
G	BR2	020970	032878	Q	MV	A00		U				R.C.I.C. INJECTION VLV E51-F013 WOULD NOT OPEN	NO CAUSE FOR FAILURE.FOUND
G	BR2	021403	050278	Y	CV	A00		T				SAMP.PMP.DISCH.CV FOUND STUCK IN CLOSED POSITION	CAUSE OF CHECK VLV STICKING NOT GIVEN
G	BR2	021663	060378	L	MV	A00		U				RHR VLV E11-F009 WOULD NOT OPEN FROM CONTROL ROOM	CAUSE OF VLV NOT OPENING, NOT GIVEN
G	DA1	017632	040577	P	RV	A00		U				SAFTEY VALVE PSV 4404 LIFTING PRESSURE OUT OF SPEC	CAUSE UNKNOWN
G	DA1	021169*	040378	H	RV	A00		U	04			SETPOINTS OUT OF SPEC ON 1 SAFTEY+3 RELIEF VALVES	CAUSE UNKNOWN

FAILED TO OPEN

<u>V</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>C</u> <u>O</u> <u>M</u> <u>P</u> <u>S</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>R</u> <u>O</u> <u>L</u> <u>M</u> <u>P</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
G	DR2	018934	081977	L	MV	AOO	U		SUCTION VALVE MD-2-1501-5A FAILED TO OPEN	CAUSE UNKNOWN
G	DR2	019985	120977	M	RV	AOO	R	U	ELECTROMATIC RELIEF VALVE 38 FAILED TO OPEN	CAUSE UNKNOWN
G	DR3	017652	041277	C	CV	AOO	U		VACUUM BREAKER A03-1601-20A DID NOT OPEN	CAUSE UNKNOWN
G	DR3	019996	121677	F	MV	AOO	R	U	LPCI HX DISCH VALVE M03-1501-3A FAILED TO OPEN	CAUSE UNKNOWN
G	DR3	020602	020778	L	MV	AOO	R	U	VALVE MD-3-1501-5C FAILED TO OPEN	CAUSE UNKNOWN
G	DR3	023363	113078	E	SV	AOO	U		FUEL OIL TRANS PUMP OUTLET VALVE FAILED TO OPEN	SOV WAS STUCK, VALVE REPLACED
G	EN1	015555	061976	H	MV	AOO	R	U	HPIC VALVE E41-F006 DID NOT FULLY OPEN	CAUSE UNKNOWN
G	EN1	018649	080977	M	RV	AOO	U		SAFETY RV 1C FAILED TO OPEN AT HIGH REACTOR PRESS.	CAUSE UNKNOWN
G	EN1	020019*	100677	A	RV	AOO	R	U	04 FOUR RELIEF VALVES FAILED TO OPEN FOLLOWING SCRAM	CAUSE UNKNOWN, VALVES BEING EXAMINED
G	FP1	017956	061177	H	MV	AOO	U		VALVE 23 MOV 98 FAILED TO OPEN ON TEST SIGNAL	CAUSE UNKNOWN
G	M11	019326	101277	F	RM	AOO	U		TORUS SPRAY VLV FAILED TO OPEN ON SIGNAL	CAUSE OF OCCURRENCE IS UNKNOWN
G	OC1	016486	111176	F	RM	AOO	U		VALVE V-21-5 FAILED TO OPEN/CKT BRKR TRIPPED	CAUSE UNKNOWN / VLV OPENED HARD MANUALLY
G	QC2	020582	020178	G	RV	AOO	U		SBLC RELIEF 2-11058 FAILED TO OPEN/AT SET PRESSURE	UNKNOWN/SETPOINT DRIFTED HIGH/1940 VS1990
G	VY1	015855	092076	L	MV	AOO	U		LPCI MOV (RHR-258) FAILED TO OPEN DURING TESTING	UNKNOWN/WALWORTH AND LIMITORQUE INVESTIG.
G	VY1	020910	041278	K	RV	AOO	U		RV (67HH13) SET TOO HIGH	SETPOINT DRIFT/RESET TO LOWER LIFT PRESS
M	IP2	018788A	051377	K	RV	AOO	R	U	RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIF.
M	IP2	021333	050278	S	SV	AOO	U		SERVICE WATER VLV FCV-1276A DID NOT FULLY OPEN	CAUSE OF EVENT; COULD NOT BE DETERMINED
M	IP3	021703	060878	M	RV	AOO	U		NO.5 RV ON NO.34 SG. OUTSIDE OF REQD. TOLERENCE	CAUSE UNKNOWN
M	KE1	020788	030278	H	MV	AOO	R	U	CNTNMNT SUMP ISO VAL WOULD NOT FULLY OPEN	CAUSE UNKNOWN
M	PR2	019284	100477	H	MV	AOO	U		SAFETY INJ PUMP SUPPLY VLV MV-32183 FAILED TO OPEN	UNKNOWN/ STEM WAS LUBRICATED/NEXT TRY OK

 FAILED TO OPEN

ITEM	PLANT	CCNT. NO.	EVENT DATE	SYM	CODE	FAIL CODE	TYPE	LOCATION	FAILURE MODE	FAILURE MECHANISM
M R02	017540	032677	B	RM	A00	U	U	VALVE V2-1A	FAILED TO OPEN	INCREASE IN TENSION BETWEEN SEATING SURF.
M S01	016882	111376	K	RV	A00	R	U	PRESS SAFETY VLV (SV1518)	OPENED AT HI PRESS	UNKNOWN/ "SETPOINT DRIFT" UP
M S01	017056*	012077	M	RV	A00	R	U	SV-MS-1018	AND 1028 FAILED TO OPEN AT SETPOINT	UNKNOWN/"SETPOINT DRIFT"
M S01	021900*	070578	M	RV	A00	R	U	PV'S (SV-MS-101A/1058)	FAILED TO OPERATE +/- 3%	UNKNOWN/"SETPOINT DRIFT"
M S02	015524	060776	N	MV	A00	U	U	CHEMICAL ADDITION MOV-CS-2028	FAILED TO OPEN /TEST	UNKNOWN
M S02	019109*	091077	M	RV	AGC	R	U	SV-MS-201A,201B,201C,2028,202C	FAI... TO OPERATE	UNKNOWN/DRIFTED >+OR- 3% FROM SETPOINTS
M TR1	018587*	070677	M	RV	A00	U	U	5 STEAM SAFETY VALVE	FOUND TO OPERATE OUTSIDE SET-	-POINT/UNKNOWN ("SETPOINT DRIFT")
M YR1	018419*	062777	K	RV	A00	U	U	PRESSURIZER SAFETY VALVES (181/182)	FAILED TO OPEN	UNKNOWN/SETPOINT DRIFTED HIGH/DRESSER INC
M YR1	019061	110277	G	MV	A00	U	U	MOV (PU-MOV-547)	FAILED TO OPEN DURING TESTING	UNKNOWN/SUSPECT DAMAGED MOTOR CABLE
M Z11	021337	042178	L	MV	A00	U	U	RHR IMOV-87608	FAILED TO OPEN DURING TESTING	UNKNOWN/SOMETHING CAUSED THERMALS TO OPEN
M Z12	022519	090678	G	MV	A00	U	U	RNST OUTLET VALVE 2MOV-VCL12E	FAILED TO OPEN	UNKNOWN
M KEL	014240	022076	F	RM	A01	D	D	VALVE ICS-58	FAILED TO OPEN(CONT. SPRAY DISCH. VLV)	VALVE MANUALLY TORQUED DOWN TOO TIGHT
M S41	017701	042977	C	MV	A01	D	D	MO CONT. ISOLATION VLV (ICV68)	FAILED TO OPEN	PERSONNEL/VALVE HAD BEEN JAMMED SHUT
G BR1	019677	110577	L	MV	A02	D	D	RHR VALVE E11-F004A	FAILED TO OPEN(M. TOR PROBLEM)	PERSONNEL ERROR/COVER LEFT LOOSE/WATER LK
G BR2	015408	062076	N	SV	A02	D	D	CAC-PV-3441 SERIES EFFLUENT VLV	WOULD NOT OPEN	SCLENCID WAS DAMAGED. DURING LAST OUTAGE
M DC1	022332*	082878	N	RM	A02	C	D	T&O VALVES TO MAIN COND AIR EJECTORS	FAILED CLOSED	IMPROPER REPAIRS PERFORMED ON THE VALVES
M S01	021802	062278	L	MV	A02	D	D	MOV-RH-100	FAILED TO OPEN	MAINT ERROR/STEM WAS NOT ENGAGED TO DISC
M PF2	014348	031576	N	MV	A03	D	D	CONTAINMENT SPRAY 2MOV-8608	FAILED TO OPEN / TEST	PERSONNEL ERROR/TERMINAL SLIDER UPEN
G BR1	021557	052778	O	MV	A04	D	D	RCIC COND. STOR. TK. SUC. VLV E51-F010	WOULD NOT OPEN	DESIGN/MTR. DID NOT HAVE SPACE MTR.NEED. IT
G C01	023483	120878	S	MV	A04	D	D	SM CROSS CONNECT VLV SW 888	MV FAILED TO OPEN	DESIGN ERROR/IMPRCPER TROUQUE SWITCH USED

FAILED TO OPEN

V	P	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CON	M	PH	K	YR	FAILURE MODE		FAILURE MECHANISM	
G	DR2	018965	091077	H	MV	A04	D							HPCI VALVE 2-2301-8 FAILED TO OPEN, VAL DAMAGED	OVER SIZED MTR OPERATORS OVERSTRESS STEM		
G	FP1	022329	090378	D	MV	A04	D							CORE SPRAY INJECTION VALVE 14-MOV-128 FAIL TO OPEN	DESIGN ERROR, NORMAL D.P. TOO SEVERE ON VAL		
W	RO2	015570	081776	B	RM	A04	R	D						VALVE V2-16A FAILED TO OPEN	LIMITORQUE OPER FAILED TO OPEN VALVE		
W	DC2	023030*	112178	F	CV	A05	C	D	02					CHK. VLV'S. CTS-127E6M TO THE LOWER CONT. SPRAY NOZZL-	-ES INSTALLED BACKWARDS//FABRICATION ERR.		
B	DB1	023568*	121678	W	RV	A06	C	D	13					13 MN. STM. SAFE. RV NOT WITHIN LIMITS OF SETPOINT	PROCEDURAL DISCR. (PROC. DOESN'T ACC FOR T)		
B	RS1	021198	050978	W	RV	A06	D							4 MS SAFETY VALVES FOUND SET WRONG/NON-CONSERVATIV	MAIN PROCEDURE INADEQUATE/REVISED		
C	CC1	021656*	033078	W	RV	A06	R	D	09					9 MN. STM. SAFE-REL. VLV SETTINGS OUT OF TOLERANCE	PROCEDUR. CHG. CAUSED RV SETPOINTS TO BE WR		
C	CC2	022637*	102378	W	RV	A06	R	D	12					12 MN. STM. SAFE-REL. VLV SETTINGS OUT OF TOLERANCE	PROCEDUR. CHG. CAUSED RV SETPOINTS TO BE WR		
G	CO1	015873	081376	W	RV	A06	D							SETPOINT OF MS-RV-71E ADJUSTED INCORRECTLY	INCORRECT MAINTENANCE PROCEDURE		
G	NY1	022130*	073178	G	RV	A06	D	02						TWO RV'S (SR-39A/B) FAILED TO OPEN AT DESIGN SETPNT	PROCEDURAL DISCREPANCY/SET W NITROGEN		
C	CC2	021991	080178	S	SV	A08	D							#21 DG SER. WTR. SUPPLY VALVE FAILED TO OPEN	BADLY WORN PLUNGER SEAT CAUSED SOL. TO STK		
G	QC2	019759	111477	D	MV	A08	D							CORE SPRAY MOV 2-1402-24B FAILED TO OPEN / TEST	STEM AND BONNET BADLY GALLED		
W	IP3	021388	050678	W	RM	A08	D							LP STM DMP VAL NO 3 FAILED TO OPEN FULLY	PLUG AND CAGE WAS SCORED		
C	PA1	019461	092077	S	CV	A09	R	T						CV FOR SERV WATER PUMP P-7B FAILED CLOSED	CORRODED HINGE PIN		
C	PA1	021326	042878	S	CV	A09	R	T						P-7B SER. WTR. PMP. DISC. CK. VLV. STUCK SHUT	CV HINGE PIN CORRODED		
G	BR2	016399	111176	E	CV	A09	T							DIESEL GEN. #2 AIR REC. CV 2-05A-V70 FAILED TO OPEN	CHECK VALVE WAS RUSTED SHUT		
G	PB3	018684	090277	H	MV	A09	T							HPCI SYS. VLV MC-3-23-41 FAILED TO FULLY OPEN	CORRODED VLV STEM DUE TO VLV PACKING LEAK		
B	DB1	021178A	040878	Y	CV	A10	T							SUCT. CH. VLV ON HYD. DILUTION BLWR. WOULD NOT OPEN	VLV INTERNALS DIRTY, CAUSING STICKING		
B	DB1	021178B	041878	Y	CV	A10	T							DISC. CK. VLV ON HYD. DILUTION BLWR. WOULD NOT OPEN	VLV INTERNALS DIRTY, CAUSING STICKING		
G	BR2	014642	020376	M	AV	A10	T							VAR. LEG ISO. VLV 2-B21-F046B DID NOT OPEN	VLV OPER. WAS STICKY/MOIS. IN INST. AIR LNS		

 FAILED TO OPEN

P L A N N	CONT. NO.	EVENT DATE	S P	C S P	FAIL CODE	Y A P S E	C O N K M V E
G DR3	018376	061377	M	RV	A10	R	T
G DR3	019721	111077	N	MV	A10	T	I
G FPI	020107	011378	Y	CV	A10	T	T
G NM1	022029*	080878	G	XV	A10	T	O2
G QC1	018111*	042677	G	RV	A10	C	T O2 V
M PR1	013995	010976	E	DV	A10	T	T
M Z11	016046	091476	N	MV	A10	T	T
B AR1	015243	062876	R	RM	A12	D	D
B CR3	018566	072977	X	MV	A12	D	D
B DB1	021957	071678	L	MV	A12	D	D
B DB1	023002	100978	S	AV	A12	D	D
B DB1	023007	103176	E	DV	A12	D	D
B TI1	013950	010676	J	RM	A12	D	D
C CC1	017743	042577	J	CV	A12	D	D
C CC2	022307	011176	S	UV	A12	D	D
C MI2	013338	072476	B	MV	A12	D	D
G BF1	022459	091378	K	IV	A12	D	D
G BR2	014646	020476	Q	CV	A12	R	D
G DA1	019967	121577	L	MV	A12	D	D
G EN1	021723*	060978	A	RV	A12	D	O2

 FAILURE MECHAN

 FAILURE MODE

SOLENOID OPERATING LEVER FOR 203-3C STICKING
 VALVE MG3-1201-1 FAILED IN CLOSED POSITION
 BALL FLOAT CHECK VALVE IN COND POT STUCK SHUT
 DRAIN VLVs ON AEB LIQUID POISON PMPs FROZEN SHUT
 RELIEF VALVES LIFTED AT MUCH HIGHER THAN SETPOINT
 OUTSIDE AIR TO DIESEL ROOM DAMP FAILED TO OPEN
 MOV-CS0005 FAILED TO OPEN DURING TESTING
 VALVE CV-3912 FAILED TO OPEN ON COMMAND
 HPI VLV MUV-25 FAILED TO OPEN AUTOMATICALLY
 DECAY HEAT COOL-1-2 OUTLET VLV OH-14A WOLOMPT OPEN
 SER.WTR.OUTLET VLV SW-1424 FAILED TO OPEN
 DIESEL GEN.1-2 OUTSIDE AIR DAMPER WOULD NOT OPEN
 RIVER PUMP DISCHARGE VALVE (NR-V1A) FAILED TO OPEN
 #12 SALT WTR.PMP-DISCH.CK.VLV WOULD NOT OPEN
 #21 SER.WTR.MT.XCHG.SLT.WTR.CUT.VLV FAILED TO OPEN
 INLET STEAM TRIVALVE WOULD NOT OPEN
 FCV-68-3 WOULD NOT OPEN FULLY;DEC.R.FLOW RECIR.LP.A VLV STEM SEPARATED FROM THE GATE
 ACIC TURB.DISCH.CK.VLV E91-F04D WOULD NOT OPEN
 RHR CROSS TIE VALVE FAILED TO OPEN
 TWO RELIEF VALVES FAILED BENCH CHECK

RUST BUILDUP ON GUIDE PINS
 DRIED GREASE ON LIMIT SWITCH
 DIRT ON VALVE AND SEAT
 BUILD-UP OF BCRON CAUSED FAILURE
 BCRON PRECIPITATED IN VALVE
 ICE BUILDUP ON PARTS OF DAMPER
 BORIC ACID ON VALVE STEM
 BINDING IN VALVE BETWEEN STEM AND BUSHING
 MECH.BINDING OF THE REVERSING INTERLOCKS
 ACTUATOR ARM HAD BECOME MISALIGNED
 NUT MISSING FROM VLV ACTUATOR LINKAGE
 DAMP.LINK-OUT OF ADJ.G. BOUND IN A GUIDE
 16 IN BUTTERFLY BINDING/OPERATOR DAMAGED
 DISC SLAMMED SHUT AND WEDGED IN THE SEAT
 DAMAGED SEAT RINGS/CLAMPS JAMMED SEAT DISK
 VALVE OPERATOR SPINDLE FAILED

PROBLEMS WITH PLUNGERS AND SPRINGS

FAILED TO OPEN

V E M	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	M O D E	C L A S S	C O M M O N	K E Y	FAILURE MODE	FAILURE MECHANISM
G	MI1	015154	071476	Q	MV	A12	D				VALVE 1-IC-1 WOULD NOT OPEN	YOKE NUT ADAPTOR & BEVEL GEAR HOUS FAILED
G	NM1	014980	031476	N	SV	A12	D				VLV BV202-37 IN #11 EMERG.VENT.SYS. FAILED TO OPEN	SCL.HAD CRACKED NYLON TIP ON PLUNGER
G	DC1	018671	080277	A	RV	A12	D				ELECTROMATIC RV C FAILED TO OPEN	ACTUATOR PLATE BOUND AGAINST A RIVET
G	PB2	013990	011576	L	MV	A12	D				RHR INJECTION VALVE MD-10-25A FAILED TO OPEN	MTR SHAFT TO PINION GEAR KEY SHEARED
G	PB2	015274	082076	F	RM	A12	U				CONDENSATE CONT. VLV FAILED IN CLOSED POSITION	DEFECTIVE POSITIONER ON CONTROL VALVE
G	PB2	015518	082476	N	AV	A12	D				PURGE EXHAUST VLV AD-2507 FAILED TO FULLY OPEN	ALIGNMENT KEY BTWN. ACTU. & VLV SHEARED
G	PI1	017419	031177	F	XV	A12	D				SSW PUMP E DISCHARGE VALVE FAILED IN CLOSED POSIT	BROKEN HINGE PIN ON BUTTERFLY VALVE
G	PI1	021639	061378	T	DV	A12	D				B DAMPER TO STDBY.OIL.FAN AT MAIN STACK FAILD SHUT	LOOSE SET SCREW IN ACTUATOR LINKAGE
G	QC1	020532	032077	A	RV	A12	D				MAIN STEAM ELECTROMATIC RELIEF FAILED TO OPEN/TEST	INTERNAL PARTS FOUND LOOSE AND MISSING
G	QC1	020636	020678	A	RV	A12	R D				ELECTROMATIC RELIEF 1-203-3E FAILED TO OPEN / TEST	WORN INTERNAL PARTS/VALVE WAS REPLACED
G	QC2	016473*	110176	A	RV	A12	B D 02				TWO ELECTROMATIC RELIEFS FAILED TO OPEN ON TESTING	INTERNAL BINDING DUE TO CORROSION PROBLEM
G	QC2	020533	032377	A	RV	A12	R D				ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	LOOSE INTERNAL PARTS BOUND/EXCESS VIBRAT
G	QC2	019223	092377	A	RV	A12	R D				ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	RINGS CUT GROOVES IN DISC GUIDE/STEAM CUT
M	PR1	015215	062976	S	RM	A12	D				PUMP DISCHARGE VALVE FOUND CLOSED AND INOPERABLE	PIN FELL OUT OF REMOTE OPERATOR LINKAGE
M	RO2	022626	122177	B	MV	A12	R T				AUX FEED PUMP DISCH VALV VZ-16A FAILED TO OPEN	EXCESS SEATING PRESS CAUSED BY OVERHEAT
M	SA1	022422	082478	B	AV	A12	D				AUX FEED PUMP STEAM VLV (1SM132) FAILED TO OPEN	STEM WAS FOUND DISENGAGED FROM ACTUATOR
G	QC1	016472*	110176	A	RV	A13	D 02				ELECTROMATIC RELIEF VALVES FAILED TO OPEN/TESTING	EXCESSIVE INTERNAL STEAM LEAKAGE
G	VY1	014584*	051076	L	MV	A14	C T 02				TWO 24 INCH MOV5 (RHR-27A/B) FAILED TO OPEN / TEST	PACKING MAINTENANCE PROBLEM
M	KE1	021077	040478	H	MV	A14	R T				CNTNMNT SUMP ISD VAL WOULD NOT FULLY OPEN	VAL PACKING AT END OF USEFULL LIFE
M	NA1	022269	081778	L	MV	A14	T				VALVE MOV-1860B FAILT TO OPEN DURING TEST	DRY VALVE PACKING CAUSED LIM SW TO TRIP

FAILED TO OPEN

<u>PLANT</u>	<u>EVENT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	CR3	021166	040578	N	RM	A16	S	D			FSV-240 FAILED TO OPEN	CONTROL CKT BOARD SHORTED
B	DE2	016201	101476	L	MV	A16	S	D			VLV LPSW-5 COULD NOT BE OPENED REMOTELY	DIRTY ELEC.CONTACT IN MOTOR CONTROL CENTR
B	DE3	021047	032078	H	MV	A16	S	D			VALVE HP-24 FAILED TO OPEN	DIRT ON VAL OPER CONTACTS
C	AR2	023481	122078	J	MV	A16	S	D			FLOW CONTROL VLV 2CV-1025-1 FAILED TO OPERATE	LOOSE MOTOR POWER CONNECTION
C	MI2	014461	030976	B	RM	A16	S	D			AUX.FEEDPMP.STM.INLET VLV.CYCLED;WOULD NOT REOPEN	FAILURE OF VALVE OPERATING CIRCUIT
C	PA1	018274	061577	H	MV	A16	S	D			MOV-3011 FAILED TO OPEN	CONTACT FOR "SEAL-IN" CKT ON RELAY FAILED
C	SL1	015162	052176	B	MV	A16	T	D			NO AUX FEED PUMP STEAM SUPPLY VALVE FAILED TO OPEN	NO SIGNAL TO VALVE/COMMAND FAULT/ELECT
C	SL1	015507	070976	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/POOR DES
C	SL1	016880	120876	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/DESIGN
G	BR1	016858	120376	Q	MV	A16	S	D			E51-F007(RCIC STEAM ISO.VLV) FAILED TO OPEN	LOOSE WIRE ON VLV MOTOR OPEN CONTACTOR
G	BR1	017600	021077	D	MV	A16	S	D			CGRE SPRAY VALVE FAILED TO OPEN AT REQUIRED PRESS	SETPOINT ON CONTROLLING INST DRIFTED HI
G	BR1	019394	101877	Y	RM	A16	S	D			VLV NP-CV-2713,NITROGEN INLET TO LOOP A WLDN'T OPN	CIRCUIT BRKR CONT.VLV FOUND IN OFF POSITN
G	BR1	023632	020578	K	MV	A16	S	D			VALVE 832-F031A FAILED IN CLOSED POSITION	FUSES BLOWN IN CONTROL CKT(DESIGN=ROOT)
G	BR1	022092	072878	L	MV	A16	T	D			VALVE F0688 FAILED TO OPEN	BLOWN FUSE
G	BR1	022092A	080278	L	MV	A16	T	D			VALVE F0688 FAILED TO OPEN	BLOWN FUSE/FOUND GRND WIRE IN LOGIC CKT
G	BR2	014624	030976	C	RM	A16	T	D			PENET VALVE X70F FAILED TO OPEN DURING TEST	REMOTE SWITCH STUCK/NO POWER TO VALVE
G	BR2	015423*	070976	C	RM	A16	T	D	OZ		TWO CONT VALVES(PENETS X5706X 2E)FAILED TO OPEN	TWO PUSHBUTTON SWITCHES STUCK ON TESTING
G	BR2	015939	081376	C	RM	A16	T	D			CONT VALVE FOR PENETRATION X76C FAILED TO OPEN	PUSHBUTTON SW FAULTY DURING TEST
G	BR2	023034	111278	L	RM	A16	S	D			RHR VLV E11-F008 WOULD NOT OPEN AT REQ. SETPOINT	FAIL. OF RX.STM.DOME HIGH PRESS.SWITCH
G	CO1	016658	102876	L	RM	A16	S	D			VALVE RHR MO-17 FAILED TO OPEN	BROKEN RELAY COIL KEEPER LODGED IN CONT.

 FAILED TO OPEN

PLANT	COMP. NO.	EVENT DATE	TYPE	CODE	FAILURE MODE	FAILURE MECHANISM
6	CO1 020800	011778	J	MV A16 S D	COOLING VALVE REC-711MV DID NOT OPEN	
6	DA1 014736	052076	W	RM A16 S D	MSIV 84030 FAILED TO CYCLE OPEN DURING TEST	FAILURE OF VALVE ELECT-INTERLOCK SWITCH
6	DR3 016695	031376	H	RM A16 S D	HPCI STEAM SUPPLY VALVE 2-2301-4 FAILED TO OPEN	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
6	EN1 022113	101276	L	MV A16 S D	VALVE 3-1501-27A FAILED TO OPEN ELECTRICALLY	DIRTY CONTACTS IN BREAKER SUPPLYING VALVE
6	EN2 022207*	070276	L	MV A16 S D	RMR MOV E11-F024A FAILED TO OPEN	LOOSE TERMINAL IN VALVE CONTROL CIRCUIT
6	FPI 021022	081778	C	RM A16 S D	RMR ISOLATION VALVE 10MOV18 IMPERABLE (CLOSED)	DIRT IN INTERLOCK ON BREAKER CAUSED BIND
6	MO1 018094	040678	L	MV A16 S D	RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	INCORRECT WIRING FROM SWITCH CONNECTIONS
6	MO1 018955	082877	L	MV A16 T D	RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTROLLER AUXILIARY CONTACT FAILURE
6	NM1 017401*	030977	A	RV A16 S D	3 OUT OF 6 ADS RELIEF VLVs WOULD NOT HAVE OPERATE	CONTACTER IN CONT. CIRCUITRY DID NOT CLOSE
6	OC1 014413	040176	F	MV A16 S D	TCRUS SPRAY VLV V-21-15 FAILED TO OPEN ON AUTO SIG	CONTACTER IN CONT. CIRCUITRY DID NOT CLOSE
6	OC1 015375	082076	F	MV A16 S D	VLV V-21-18 FAILED TO OPEN ON AUTO START SIGNAL	CONTACTER IN CONT. CIRCUITRY DID NOT CLOSE
6	OC1 016479	120176	D	MV A16 S D	CORE SPRAY 150.VLV V-20-15 FAILED TO OPEN ON SIGNAL	-D IF NEEDED//RESET SWITCH FAILURE
6	OC1 018623*	072777	D	MV A16 S D	CORE SPRAY 150.VLV V-20-40 E V-20-15 FAILED TO OPEN ON SIGNAL	DEFECT. SWITCH IN VLV MOTOR CONTROL
6	OC1 023144	120478	F	MV A16 S D	CORE SPRAY VALVE V-21-78 FAILED TO OPEN ON TESTING	INTERMIT. GRND. SHRT. IN VLV. MTR. OPER. PAR. FD
6	P82 019097	091077	N	RM A16 S D	STOBY GAS TREATMENT "A" FILTER TRAH INL.VLV. AD--	ULLY OPEN//IMP. CKT. BRKR. OVERLOAD SETTING
6	P83 014032	010576	D	MV A16 S D	MO-3-14-128(B CORE SPR. LP. INJ. VLV) FAILED TO OPEN	PROBLEM WITH MAGNET. TRIP DEVICE MTR. BRKR
6	P83 014475	021776	L	MV A16 S D	RHR INJ. VLV. MO-10-25A FAILED TO FULLY OPEN	BROKEN WIRE TC OPENING TORQUE SWITCH
6	P83 014655	050876	K	MV A16 T D	RECIRC. PMP. DISCHG. VLV MC-53B FAILED TO OPEN	GROUNDING CABLE AT MTR CSING. DUE TO VIBRAT
6	BV1 018090	101476	S	MV A16 S D	"B" HDR. DISC. VLV TO RIVER MTR. PMP. DID NOT OPEN	DIRTY ELEC. CONT. ON OPER. LINE STARTER

FAILED TO OPEN

PLANT	CONT. NO.	EVENT DATE	SUMMARY	FAILURE CODE	STATUS	LOCATION	FAILURE MECHANISM
W PR1	020123	120977	C RM A16	S D		011	CONT. VAC. BRKR. ISO. VLV. FAILED TO OPEN ON DEMND FAILURE OF BARTON DIFFER. PRESS. SWITCH
W PR2	020125	122377	B MV A16	S D		022	TURB. DRIVEN AFM PUMP STM. SUP. VLV. FAILED TO OP--EN/MOTOR LEAD GROUNDED TO JUNCTION BOX
W R02	020093	120377	L MV A16	S D			RHR VALVE 7448 FAILED TO OPEN CIRCUIT THERMAL OVERLOAD DEVICE TRIPPED
W S01	014871	031876	B MV A16	S D		031	AUX. FEEDTR. PUMP DISC. VLV. MOV-FW-151A FAILED TO O--PEN/TIMING RELAY FAILURE
W TR1	016250	102876	H MV A16	S D			RNST SUCTION VALVE (MO-1120) FAILED TO OPEN/DEMAND BREAKER SUPPLYING POWER FAILED/COMMAND
W Z11	017640	012677	H MV A16	T D			VALVE IMOV-S18808A FAILED TO OPEN COMMAND/AUX CONTACTS IN CNTRL CKT STUCK
W Z11	017223	012877	H MV A16	T D			VALVE IMOV-S18808B FAILED TO OPEN COMMAND/AUX CONTACTS CONTROL CKT, STUCK
W Z11	017251	012877	H MV A16	T D			VALVE IMOV-S18800C FAILED TO OPEN/COMMAND AUX CONTACTS IN CONTROL CIRCUIT STUCK
W Z12	014253	021376	H MV A16	T D		28	SI PMP. SUC. VLV 2MOV-S189238 FAILED TO OPEN DIRTY CCNT. ON CKT. BRKR. TO MTR. OPERATOR
W Z12	018212	060477	L MV A16	S D			RHR VALVE (2MOV-RH87008) FAILED TO OPEN DURING TEST COMMAND/AUX CONTACTS STUCK IN MCC
G Q01	021468	042478	A RV A18	D			ELECTROMATIC RV 1-203-3C FAILED TO OPERATE / TEST WELD FAILURE BETWEEN BODY AND CAGE/VIBRAT
G DR3	018936	081177	L MV A19	T			VALVE MO-3-1501-208 FAILED TO OPEN VALVE STEM NOT ADEQUATELY LUBRICATED
G F01	016972*	020377	W RM A19	T 02			MS1V 808 AND 80C FAILED TO OPEN FULLY VALVEGUIDE RODS REQUIRED LUBRICATION
W TR1	020516	010478	H MV A19	T			MOV-88807A FAILED TO OPEN DURING TESTING VALVE STEM LACKED LUBRICATION
W Z11	017154	012177	N MV A19	T			CONTAINMENT SPRAY IMOV-C50002 FAILED TO OPEN STEM STICKING DUE TO LUBRICATION PROBLEM
W Z11	021397	050378	F MV A19	T			CONTAINMENT SPRAY VALVE IMOV-C50002 FAILED TO OPEN LACK OF LUBRICATION
B CR3	017168A	020377	L MV A20	R U			DECAY HEAT VLV OHV-4 WOULD NOT OPEN REMOTE ACTUATN MTR. OPERATOR WOULD'N'T OVERCOME VLV. DRAG
B CR3	017168B	020377	L MV A20	R U			DECAY HEAT VLV OHV-4J WOULD'N'T OPEN REMOTE ACTUATN MTR. OPERATOR WOULD'N'T OVERCOME VLV. DRAG
C FC1	015268	071076	U MV A20	D			VALVE MOV-A-04 FAILED TO OPEN ELECTRICALLY FAILURE VALVE OPERATOR, WORM+WORM GEAR
G BF1	018126	050977	H MV A20	D			HPCI TURB. STM. SUP. ISO. VLV. FCV 1-73-16 FAIL. TO OPN BROKEN TEETH ON MTR PINION/CLUTCH GEAR

 FAILED TO OPEN

PLANT	COMP. NO.	EVENT DATE	CD	FAIL CODE	Y	MO	DAY	TIME	FAILURE MODE	FAILURE MECHANISM
G BR1	016861	112176	Q	MV A20	T				E41-F001HPCI STM-SUP.VLV) WOULD NOT OPEN	BRUSHES ON VLV MOTOR WERE STICKIN
G BR2	017327	022377	Q	MV A20	T				E51-F045(STM-INL.TO RCIC TURB.)WOULD NOT OPEN	MTR OPER. FAILED DUE TO MOIST-IN WINDINGS
G BR2	020513	040378	L	MV A20	D				SHUTDOWN COOL.OUT6.SUC.VLV E11-F008 WOULDN'T OPEN	ELECTRO-MECHANICAL BRAKE ON VLV-OP.FAILED
G C01	016668	090776	D	MV A20	D				VALVE CNS-MV-128 FAILED TO OPEN	THE REPAIR CLUTCH AND COMPONENTS FAILED
G C01	023649	091878	L	MV A20	D				VALVE RHR-MO-668 FAILED TO OPEN	SET SCREW ON VALVE OPERATOR LOOSENED
G FP1	015058	042076	H	MV A20	U				HPCI TORUS SUCTION VALVE FAILED TO OPEN	SHORT IN OPERATOR MOTOR
G FP1	015237	070376	L	MV A20	D				RHR VALVE 10 MOV 25A FAILED TO OPEN	SUSPECT OPEN CIRCUIT IN MOTOR WINDINGS
G FP1	016269	102676	L	MV A20	D				RHR SYSTEM VALVE 10-MOV-24A WOULD NOT OPEN	VALVE MOTOR OPERATOR BURNED OUT
G FP1	016497	111976	H	MV A20	D				HPCI VALVE 23-MOV-57 FAILED TO OPEN	FAILURE OF VALVE MOTOR WINDINGS
G FP1	023590	042478	N	MV A20	D				12-MOV-15 INOPERABLE(A TORQUE SW PROBLEM CAUSED---	BURNED UP MOTOR AND BROKEN GEARS)
G M11	016690	121876	C	MV A20	U				VALVE 1-CU-3 DID NOT OPEN	BURNED OUT MOTOR
G NM1	014666	051576	L	MV A20	U				SHUTDOWN COOL SYST ISO VALVE 38-02 FAIL TO OPEN	OPEN MOTOR WINDINGS
G P82	013992	010776	L	MV A20	U				MC-10-258 RHR INJECTION VLV FAILED TO OPEN	MOTOR ON VLV OVERHEATED AND DAMAGED WINDNG
G P83	023062	111678	L	MV A20	D				RHR VALVE M01548 FAILED TO OPEN ON TESTING	MOTOR & SEVERAL OPERATOR PARTS REPLACED
M R02	019350	081677	B	MV A20	D				VALVE V2-168 FAILED TO OPEN AS REQUIRED	LIMITORQUE VALVE OPERATOR FAILED
M R02	019352	081777	B	MV A20	R				VALVE V2-16A FAILED TO OPEN	LIMITORQUE VALVE OPERATOR FAILED
M R02	019667	102677	L	MV A20	U				RHR VALVE 7598 FAILED TO OPEN	MOTOR WINDINGS WERE SHORTED
M SAI	021910	052378	H	MV A20	D				MOV 13J1 (HPIS) FAILED TO OPEN DURING TEST	WINDING FAILED/INCORRECT MOTOR SIZE/PERISM
M SAI	022425	082278	C	MV A20	U				MOV 11CC190) FAILED TO OPEN	MOTOR OPER FAILED / SERVICE H2O FLOODED
M TP1	015723	082676	R	MV A20	D				CCW SYS MOV-3293 FAILED TO OPEN DURING TESTING	VALVE MOTOR OPERATOR COIL SHORTED OUT

FAILED TO OPEN

ZMW	PLANT	CONT. NO.	EVENT DATE	SYS	CUM P	FAIL CODE	TYPE	CLASS	CUM PM	K	FAILURE MODE		FAILURE MECHANISM	
W	ZI2	017861	051977	H	MV	A20	D					VALVE 2MOV-S18800D FAILED TO CLOSE	LIMITORQUE MOTOR OPERATOR FAILURE	
G	BR1	021491	051578	Y	SV	A21	T					SOLENOID VLV CAC-SV-1263-1 FOUND IN STUCK SHUT POS	DEFECTIVE PLUNGER IN SOLENOID	
G	BR2	015400	061176	N	SV	A21	R	D				AIR SUPPLY VLV 2-CAC-PV-3442 FAILED TO OPEN	BROKEN RETAIN-RING ON SOLENOID COIL	
G	BR2	015409	062076	N	SV	A21	R	U				CAC-PV-3442 SERIES EFFLUENT VLV WOULD NOT OPEN	VLV SOLENOID WAS STICKING/SEATS WERE LEAK	
G	BR2	017589*	021777	N	SV	A21	C	T	02			CONT.SAMPLE VLVS CAC-PV-3441&3442 FAILED TO OPEN	SOLENOIDS ON VLVS WERE STICKING	
G	DR2	022974	111578	C	SV	A21	R	T				AD 1601-56 FAILED TO OPEN	SHORTED CUT COIL ON SOLENOID	
G	P82	014351	030976	Y	SV	A21	U					ISO VAL ON RET TO DRYWELL LINE CLOSED	DEFECTIVE SOLENOID COIL	
W	SA1	023317	121178	N	SV	A21	U					SOV 155W57 FAILED TO CONTROL SER H2O FLOW	SOLENOID COIL OPEN CIRCUIT	
C	CC1	015124	052776	G	AV	A22	D					THE VCT MAKE-UP STOP FAILED TO OPEN	RUPTURE OF VLV CONTROL DIAPHRAGM	
G	BR1	020774	022678	C	AV	A22	D					RX-INSTR-PENE. VLV B21-X54-C FAILED CLOSED	VLV.CLOSED DUE TO SMALL LEAK IN DIAPHRAGM	
G	MY1	015184*	070676	A	RV	A22	C	T	03			3 TARGET ROCK RV\$ FAILED TO OPERATE(SIGNAL/MANUAL)	DIAPHRAGM IN AIR OPERATORS FAILED/HEAT	
W	ZI2	019499	081177	G	UV	A22	R	D				DIAPHRAGM GATE VALVE (2VC8469) FAILED TO OPEN	DIAPHRAGM FAILED(GRINNEL CORP)	
B	AR1	020607	011378	B	MV	A23	D					VALVE CV-2667 FAILED TO OPEN REMOTELY	TORQUE SWITCH DEFECTIVE	
B	CR3	017653	032277	X	RM	A23	U					MAKE-UP VLV MUV-24 FAILED TO OPEN ON MAN.HPI INITI	TORQUE SWITCH SETTING TOO LOW	
B	CR3	018561	071577	L	MV	A23	R	T				VLV DHV-41 WOULD NOT OPEN FROM CONTROL ROOM	CAUSED BY SHIFT IN TORQUE SWITCH SETTING	
B	DB1	019530	102577	B	SV	A23	D					VLV AF3872 FAILED TO STROKE WHEN GIVEN OPEN SIGNAL	OPEN TORQUE SWITCH WAS DEFECTIVE	
B	DE2	017225	011377	C	MV	A23	U					VALVE 2BS-2 FAILED TO OPEN	TORQUE & LIMIT SWITCHS OUT OF ADJUSTMENT	
B	DE3	020592	020378	F	MV	A23	U					VALVE BS-3 FAILED TO OPEN	TORQUE SWITCH FAILURE	
B	DE3	022307	082378	R	SV	A23	T					VALVE 3LPSW-24 INCOPERABLE IN THE CLOSED POSITION	TORQUE SWITCH FAILED DUE TO CORROSION	
B	RS1	016558*	111176	L	MV	A23	B	T	02			TWO DECAY HEAT MOV\$ FAILED TO OPEN FOR MONTH TEST	TORQUE SWITCHS NEEDED RESET/TESTED WEEKLY	

FAILED TO OPEN

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
C	CC1	016463	111776	H	MV	A23	R	D			AUX.HI.PRESS.LP.ISO.VLV SI-617 FAILED TO OPEN	DEFECTIVE TORQUE SWITCH;BURNED CONTACTS
C	SL1	023141	112178	H	MV	A23		D			MOV 07-18 IN I8 ECCS TRAIN FAILED TO OPEN ON TEST	TORQUE SW FAULTY,REPLACED SWITCH
G	BF2	016807	111676	H	MV	A23	R	D			HPCI TURB.STM.SUP.VLV 2-FCV-73-16 FAILED TO OPEN	TOR.SWT.GEAR ASS.PIN FOR VLV OPER.SHEARED
G	BF3	018637	070577	H	MV	A23	R	D			HPCI TURB.STM.SUP. 3-FCV-73-16 FAILED TO OPEN	TOR.SWTM.GEAR ASS.SHEARED;CAUS.OVLD ON MT
G	BR2	020729	030678	Q	MV	A23		U			RCIC VALVE E51-F045 FAILED TO OPEN	TORQUE SW FAILED
G	DA1	016445	110476	M	MV	A23	R	U			MSIV LEAKAGE CONTROL VALVE MOV8401A FAILED TO OPEN	OPEN TORQUE SWITCH,TS-1,FAILED
G	DA1	019210	071877	M	MV	A23		D			MOV 8401C FAILED TO OPEN ON TEST	TORQUE SW SETTING WRONG
G	DR2	018508	080277	H	MV	A23		U			HPCI VALVE 2-2301-8 FAILED TO OPEN	SUSPECT PROBLEM WITH TORQUE SWITCH
G	FP1	019169	092877	Q	MV	A23		D			RCIC TURBINE STEAM SUPPLY MOV 131 FAILED TO OPEN	TORQUE SWITCH NEEDED RESET
G	FP1	021142	100477	L	MV	A23		D			LPCI MOV 25A FAILED TO OPEN ON TEST	LOW TORQUE SWITCH SETTING
G	FP1	021225	042978	H	MV	A23		D			HPCI 23-MOV-15 WOULD NOT OPEN	TORQUE SWITCH WAS RESET
G	DC1	022576	091478	L	MV	A23		T			VALVE V-14-37 WOULD NOT OPEN,BKR TRIPPED	SET SCREW ON TORQUE SW LOOSTENED,SET DRFT
G	PB2	016779	122876	Q	MV	A23		U			RCIC STM SUPPLY ISO VAL FAILED TO OPEN	TORQUE SWITCH FAILURE
G	PB3	014470	030276	K	MV	A23		U			RECIRC.PMP.DISCHG.VLV BYPASS(MO-54A)FAIL.TO OPEN	DEFECTIVE TORQUE SWITCH CAUSED FAILURE
G	OC1	020264	111877	H	MV	A23		D			HPCI MOV 1-2301-4 FAILED TO OPEN DURING TESTING	MOV HAD DEFECTIVE TORQUE SWITCH
M	BV1	018725	072877	B	RM	A23		D			AUR. FEEDWATER CONT VLV WOULD NOT OPEN ELETRIC.	BINDING TORQUE SWITCH
M	KE1	015968	092376	N	MV	A23		D			SERV WAT VAL FOR FAN COIL UNIT DID NOT OPEN	BROKEN TORQUE SWITCH
M	PR1	014753	051376	L	MV	A23	R	T			MOV FAILED TO OPEN DURING TEST (MV-32065)	TORQUE SW PROBLEM/ADJUSTED IT(LIMITORQUE)
M	PK2	016284	102576	H	MV	A23	R	D			MOV/BORIC ACID SUPPLY MV-32184 FAILED TO OPEN	TORQUE SW MALFUNCTIONED/WAS REPLACED
M	PT1	014949	061676	S	MV	A23	R	T			MOV-SW2869 FAILED TO OPEN ELECTRICALLY DURING TEST	TORQUE SW CORRODED FOLLOWING WETTING

FAILED TO OPEN

V E N T	P L A N T	C O N T. N O.	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C U M M P	K E Y	FAILURE MODE		FAILURE MECHANISM	
											FAILURE MODE	FAILURE MECHANISM		
W	PT1	020062	122177	S	MV	A23	R	T			MOV-2907 FAILED TO OPEN DURING TESTING	TORQUE SW SETPOINT WRONG/ADJUSTED		
W	PT2	015186	070176	B	MV	A23	R	T			MOV-2MS-2019/STEAM TO AUX FEED PUMP FAILED TO OPEN	TORQUE SW SETPOINT CAUSED TIGHT CLOSING		
W	TR1	016250A	102876	H	MV	A23		U			RWST SUCTION VALVE(MC-112)FAILED TO OPEN/DEMAND	TORQUE SW SET TOO LOW/VAL. WOULDNT UNSEAT		
B	AR1	020883*	030878	N	DV	A24	S	D	05		DAMPERS CV2102,2111-2113,22116 FAILED TO ACTUATE	PROBABLE CAUSE, STICKY AIR SUPPLY		
B	AR1	022099	081778	N	DV	A24	S	D			DISCHARGE DAMPER CV7903 FAILED TO OPEN/SEC. FAULT	DEFEC. SOL.VLV IN AIR SUPPLY LINE(SV7807)		
B	CR3	019525	102877	C	AV	A24	S	D			VALVE MSV-130 WOULD NOT OPEN	FOREIGN PARTICLES IN ACTU. OF AIR SOL.VLV		
C	CC2	020628	010477	N	RM	A24	S	D			VLV 2-CV-5291 IN CONT. ATM. SMPL. LN. COULD NOT BE OP	SOLENOID VLV IN SUPPLY LN FAILED		
C	FC1	016606	112076	N	AV	A24	T	D			RAW WATER VALVE HCV-401E WOULD NOT OPEN ON TEST	ELECTRIC TO PNEUMATIC CONVERTER FAILED		
C	FC1	022469	092178	B	RM	A24	S	D			VAL YCV-1045 FAILED TO OPEN(AUX.FD.PMP.STM.INL.)	INSTRUMENT AIR SUPPLY TO VAL CLOSED		
C	PA1	020231	010878	L	AV	A24	S	D			VALVE CV-3025 FAILED IN CLOSED POSITION	WATER IN AIR LINE TO VALVE OPERATOR		
C	SL1	022227	073178	C	AV	A24	S	D			ADV (FC-25-8) FAILED CLOSED/AIR TO VALVE SECURED	SOV DIAPHRAGM LEAKED/COMMAND FAULT		
G	BF3	018945	090777	N	AV	A24	S	D			PRI. ISO.VLV 3-FCV-24 WOULD NOT OPERATE	FAIL. OF SOL.FSV-77-3A IN AIR SUP. LINE		
G	BR2	014645*	021476	N	AV	A24	S	D	02		TWO VALVES FOUND CLOSED(2-CAC-PV-344163442)	INST AIR LINES TO VALVES CLOGGED W WATER		
G	MO1	015100	061476	K	RV	A24	S	D			SAFETY RELIEF VLV 2-71A FAILED TO ACTUATE	AIR LEAK IN AIR SUPPLY SYSTEM		
G	OC1	022970	101778	N	AV	A24	S	D			GAS SYSTEM 11 DISCHARGE VALVE FAILED TO OPEN	STUCK SOLENOID IN AIR SUPPLY TO OPERATOR		
G	PI1	017674	051077	W	RV	A24	S	D			RV 203-3C DID NOT OPEN FROM REMOTE CONTROL SWITCH	DETERI OF THE REMOTE AIR ACTUATOR DIAPH		
G	PI1	019736	111477	W	RV	A24	S	D			RELIEF/SAFETY VALVE 203-3B COULD NOT BE MAN OPENED	FAIL OF 3-WAY SOLENOID VAL TO PORT PROPER		
G	QC1	020425	111677	A	RV	A24	S	D			RELIEF VALVE 1-203-3B FAILED TO OPEN ON DEMAND	COMMAND/WIRE TIE IN ELECT CONTACTOR		
G	QC2	022815	092978	W	RV	A24	S	D			RV 2-203-3A FAILED TO OPEN(MANUAL) / COMMAND	AIRLINE TO MANUAL AIR OPERATOR BROKE		
G	QC2	023383	111678	C	AV	A24	T	D			RX CONT VALVE 2-1601-20A FAILED TO OPEN ON TEST	SOV(2-1601-50A)FAILED; NO AIR TO AIR-OP VL		

 FAILED TO OPEN

PLANT	CONT. NO.	EVENT DATE	SYM	SP	FAIL CODE	TYPE	CAUSE	FAILURE MODE	FAILURE MECHANISM
G	QC2 62346G	112578	C	AV	A24	T	D	DRYWELL VENT AD 2-1601-23 FAILED TO OPEN	SOVISO 2-1601-52A FAILED TO SUPPLY AIR
M	SAL 016738	122976	W	HV	A24	T	D	MSIV (12MS167) FAILED TO OPEN / COMMAND	OIL LINE TO OPERATOR FRACTURED
M	Z12 014215	012176	W	RV	A24	S	D	MAIN STEAM RV(2 MOV-MS0017) WOULD NOT OPERATE / FAIR COMMAND/RELAYS FAILED IN CONTROLLER AMP	COMMAND/RELAYS FAILED IN CONTROLLER AMP
M	SAL 019250	091277	R	RM	A25	T		VALVE (115W98) WOULD NOT OPEN DURING ROUTINE TEST	BINDING OF DISC ON RUBBER SEAT GASKET
B	DB1 020989A	031678	B	MV	A26	D	D	AUX.FDPMP.1-1 STOP VLV AF3870 FAILED TO OPEN	LIMIT SWITCH ON VLV MTR NOT ADJUSTED PROP.
C	CC2 019740	111577	H	MV	A26	T	T	MOV-627, AUX HI PRESS HDR STP LP 118, MOULDON AT OPEN	OPEN LIMIT SWITCH CONTS. WERE DIRTY
G	BR1 019950	120977	Y	RM	A26	D	D	VALVE NP-2713 FAILED TO OPEN	OPEN LIMIT SW OUT OF ADJUSTMENT
G	BR2 014618	031076	H	RM	A26	D	D	VALVE 2-E41-PV-12190 FAILED TO OPEN DURING TEST	LIMIT SW WAS CUT OF ADJUSTMENT
G	DAL 014728*	052076	V	RM	A26	T	O4	MSIV VALVES 8401A,B,C,D DID NOT FULLY OPEN	LIMIT AND TORQUE SWITCHES OUT OF ADJUST
G	DAL 016451	102076	W	MV	A26	R	D	MSIV-LCS MOV8401A FAILED TO OPEN DURING TEST	INSUFFICIENT LIMIT SWITCH CONTACT PRESS
G	DAL 016361	112776	W	MV	A26	R	U	MSIV LEAKAGE CONTROL VALVE MOV8401B FAILED TO OPEN FULLY	LIMIT SWITCH CUT OF ADJUSTMENT
G	DAL 020155	122777	N	MV	A26	T		VALVE MOV 2700 FAILED TO OPEN FULLY	LIMIT SWITCHES OUT OF ADJUSTMENT
G	DR2 017162	021777	L	MV	A26	U		LPCI CROSS-TIE VALVE M02-1901-328 FAILED TO OPEN	LIMIT SWITCH OPENED BEFORE VALVE OFF SEAT
G	EN1 014792	050176	H	MV	A26	R	T	HPCI DISCHARGE VALVE E41-F006 FAILED TO OPEN	FAILURE OF A SNAP LOCK LIMIT SWITCH
M	RO2 022523	082578	S	MV	A26	D	D	VALVE V6-12D FAILED TO OPEN	LIMIT SWITCH FAILURE
M	SAL 021373*	041177	K	RM	A26	R	O2	SAMPLE ISO.VLVS 1551076104 WOULD NOT OPEN	VLV.POSITION LIMIT SWITCHS.CUT OF ADJUST.
B	T12 021277	040478	L	AV	A27	U		RHR ADV (MS-V838) FAILED TO OPEN DURING TEST	FAILURE OF SOLENOID OPERATED PILOT VALVE
G	CO1 014936	051476	N	RV	A27	D	D	MAIN STEAM SAFETY RELIEF VALVE MALFUNCTIONING	CRACK IN BELLOWS TO BASE WELD
G	DAL 017631*	032877	W	RV	A27	U	O6	6 MAIN STEAM RV DID NOT LIFT AT PROPER PRESSURE	FAILURE OF PILOT VALVE TO OPERATE
G	EN1 018547	022677	C	RM	A27	U		VACUUM BREAKER 648-F3288 FAILED TO OPEN	LIMIT SW REPLACED AND A SOLENOID VALVE

FAILED TO OPEN

<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>STATUS</u>	<u>COMP</u>	<u>FAIL INT</u>	<u>REPAIR</u>	<u>REMARKS</u>	<u>CONC</u>	<u>PR</u>	<u>DATE</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G QC1	022189	080278	N	AV	7	T	AD PURGE VALVE 1-1601-56	FAILE	TO	OPEN	SOLENOID PILOT VALVE DIRTY/REPLACED SOV	
G VY1	017127	012877	N	AV	A27	D	ADV (SB-3A)	FAILED	TO	OPEN DURING LEAKRATE TEST	ASCO SOLENOID PILCT VALVE FAILED	

FAILED TO CLOSE

<u>V</u>	<u>P</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>S</u>	<u>C</u>	<u>FAIL</u>	<u>CLAS</u>	<u>CON</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>	
<u>EN</u>	<u>L</u>			<u>S</u>	<u>OMP</u>	<u>CODE</u>	<u>S</u>	<u>NUM</u>	<u>KEY</u>			
B	CR3	019013	083177	L	RM	800				U	CORE FLOOD SAMP. ISO. VLV CFV-11 WOULD NOT CLOSE	CAUSE OF FAILURE UNKNOWN
B	CR3	020752A	021078	C	SV	800	R	U		U	VLV CAV-2 FAILED TO CLOSE; VIOLATED T.S. REQ.	CAUSE OF FAILURE NOT GIVEN
B	DB1	019380	092477	K	RV	800				U	PRESSURIZER POWER RELIEF VALVE FAILED TO RESEAT	CAUSE NOT STATED
B	DE1	018295	061577	U	RM	800	R	U		U	CONT. ISO. VLV IFDW-108 FAILED TO CLOSE	NO DEFINITE REASON FOUND FOR FAILURE
B	DE2	019686	041977	C	MV	800				U	ISO VAL 2CS-5 WOULD NOT CYCLE FROM OPEN TO CLOSE	CAUSE UNKNOWN / REQUIRED EXC. TORQUE
B	T12	021273*	042378	W	RV	800		02	V	U	MAIN STEAM RELIEF VALVES FAILED TO RESEAT	UNKNOWN
B	T12	022385	090878	C	RM	800				U	CONTAINMENT ISOL VALVE (NDL-V1125) FAILED TO CLOSE	UNKNOWN/COULD NOT BE REPEATED
C	AR2	023468	122778	W	RV	800				U	MAIN STM RELIEF VLV 2PSV1053 FAILED TO RESEAT	NO CAUSE FOR FAILURE GIVEN
G	BF2	020380	020578	W	RV	800	R	U		U	RELIEF VALVE 2-1-41 OPENED AND FAILED TO RESEAT	CAUSE OF MALFUNCTION UNKNOWN
G	BF2	020469	021378	W	RV	800	R	U		U	RELIEF VALVE 2-1-5 OPENED AND FAILED TO RESEAT	CAUSE OF MALFUNCTION UNKNOWN
G	BF3	020923	041578	W	RV	800	R	D		U	RELIEF 3-1-31 FAILED TO RESEAT AT PROPER PRESSURE	CAUSE OF MALFUNCTION IS NOT KNOWN
G	BF3	022126A	081778	W	RV	800	R	D		U	A MAIN STM RELIEF VLV DID NOT CLOSE AFTER LIFTING	CAUSE OF FAILURE NOT GIVEN
G	BR2	014111	020276	N	UV	800				U	2-CRC-V49 FAILED TO FULLY CLOSE	NO CAUSE GIVEN
G	CO1	016659	111776	C	RM	800	R	U		U	VALVE PC-238 AV FAILED TO CLOSE FULLY	CAUSE UNKNOWN, BELIEVED OPERATOR RELATED
G	DA1	014408A	021476	K	CV	800				U	INSTRUMENT LINE CV XCV-4528 FAILED TO CLOSE	FAILURE REASON UNKNOWN
G	DA1	015080	070476	Q	MV	800				U	RCIC MOV 2401 FAILED TO CLOSE FOR TEST	NO REASON LISTED, NOT REPRODUCIBLE
G	DA1	016530*	112276	C	MV	800		02		U	MOV 84018 AND 84028 FAILED TO FULLY SEAL	CAUSE UNKNOWN
G	DA1	019963	112377	H	MV	800				U	HPCI INJECTION VALVE MOV 2312 FAILED TO CLOSE	CAUSE UNKNOWN
G	DA1	021864	061778	C	AV	800				U	TORUS PURGE INLET VALVE CV4308 FAILED TO CLOSE	CAUSE UNKNOWN
G	DR2	019809	112477	C	RM	800				U	ISOLATION VALVE AD2-1601-63 WOULD NOT CLOSE	CAUSE COULD NOT BE DETERMINED

FAILED TO CLOSE

<u>V</u>	<u>P</u>	<u>C</u>	<u>E</u>	<u>S</u>	<u>F</u>	<u>C</u>	<u>C</u>	<u>K</u>	<u>F</u>	<u>M</u>
<u>EN</u>	<u>L</u>	<u>ONT</u>	<u>VENT</u>	<u>YS</u>	<u>AIL</u>	<u>LA</u>	<u>ON</u>	<u>Y</u>	<u>AI</u>	<u>CH</u>
<u>Y</u>	<u>A</u>	<u>NO.</u>	<u>DATE</u>	<u>SY</u>	<u>CODE</u>	<u>SS</u>	<u>MU</u>	<u>Y</u>	<u>URE</u>	<u>ME</u>
G	EN1	016841	120976	A	RV	800	R	U	RELIEF VALVE WOULD NOT RESEAT	CAUSE UNKNOWN
G	EN1	017189	020177	A	RV	800	R	U	RELIEF VALVE B21-F0136 OPENED AND STUCK OPEN	CAUSE UNKNOWN, VALVE TO BE TESTED
G	FP1	015982	100476	M	UV	800		U	VALVE ON CONDENSER (D-1) STUCK OPEN	CAUSE NOT STATED
G	FP1	017741	042577	C	RM	800		U	FLOOR DRAIN LINE ISOLATION VALVE FAILED TO CLOSE	CAUSE UNKNOWN
G	FP1	020570	030278	L	CV	800		U	A RHR PUMP CHECK VALVE STUCK OPEN	CAUSE UNKNOWN
G	FP1	023358	122478	L	CV	800		U	RHR LOOP CHECK VALVE FAILED TO CLOSE	NO REASON FOUND FOR STICKING, REASSEMBLED
G	MO1	015316	072576	C	AV	800		U	VALVE AD-2381 FAILED TO CLOSE (CRUS PURGE INLET)	CAUSE UNKNOWN
G	MO1	021243	042178	C	MV	800		U	RX.WTR.CLEANUP OUTBD.ISO.VLV(MO-2398)FAIL.TO CLOSE	CAUSE UNKNOWN
G	OC1	016519	080576	N	RV	800		U	RV ON REGEN HOT WTR HEATER NOT SEATED	CAUSE NOT GIVEN
G	OC1	015975	101276	N	RV	800		U	RV ON REGEN HOT WATER HEATER NOT SEATED	CAUSE NOT GIVEN
G	P82	016568A	120176	C	AV	800		U	ISO VALVE AD-2-2-39 FAILED TO CLOSE	CAUSE UNKNOWN
G	P82	020074*	111377	N	XV	800		U 02	2 LAVATORY FLUSH VALVES STUCK OPEN	CAUSE UNKNOWN
G	P83	016389	111076	Q	RM	800	R	U	RCIC INBD.STM.SUP.ISO.(MO-3-13-15)FAILED TO CLOSE	CAUSED CF FAILURE NOT GIVEN
M	BV1	018088	091976	M	HV	800		U	"B" MAIN STEAM TRIP VLV FAILED TO SHUT	CAUSE IS NOT KNOWN
M	NA1	021150	042878	H	RM	800		U	STEAM DUMP VAL 408E STUCK OPEN FOLL. TRIP	CAUSE NOT GIVEN
M	PR2	016284A	102576	H	RM	800		U	HOT LEG SAMPLE LOOP VLV CV-31807 FAILED TO CLOSE	UNKNOWN/RETEST WAS OK
M	PT1	017855	022677	M	AV	800		U	MAIN STEAM STOP VALVE FAILED TO CLOSE ON SIGNAL	UNKNOWN/CONSIDERED RANDOM/30 IN AIR-OP CV
M	S01	020609	013078	F	RM	800		U	CONT SPRAY VLV (CV-517) FAILED TO CLOSE FOR TEST	UNKNOWN/POSSIBLE LUBRICATION PROBLEM
M	S01	017054*	012577	N	RM	800	R	U 02	TWO SAMPLE SAVES (TV-SS-106A/106B) FAILED TO CLOSE	UNKNOWN/COLD SHUTDOWN NEEDED FOR MAINTEN
M	S01	021245	042478	M	RM	800		U	MAIN STEAM TRIP VALVE B FAILED TO CLOSE	UNKNOWN/VALVE ACTUATOR TYPE UNKNOWN ALSO

FAILED TO CLOSE

<u>V</u>	<u>P</u>	<u>C</u>	<u>E</u>	<u>S</u>	<u>C</u>	<u>F</u>	<u>T</u>	<u>C</u>	<u>C</u>	<u>K</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
<u>N</u>	<u>L</u>	<u>ONT.</u>	<u>EVENT</u>	<u>S</u>	<u>OMP</u>	<u>FAIL</u>	<u>TYPE</u>	<u>LA</u>	<u>UN</u>	<u>KEY</u>		
<u>M</u>	<u>A</u>	<u>NO.</u>	<u>DATE</u>	<u>Y</u>	<u>P</u>	<u>CODE</u>	<u>E</u>	<u>S</u>	<u>MU</u>	<u>Y</u>		
<u>N</u>	<u>N</u>			<u>S</u>				<u>S</u>	<u>PH</u>			
W	SU2	017920	040976	N	RM	800	R	U			SAMPLE VALVE (TV-SS-201A) FAILED TO CLOSE	UNKNOWN/TESTED SAT BEFORE MAINT DONE
W	TR1	0220058	070778	U	CV	800		U			CHECK VALVE ON CONDENSATE STORE TANK STUCK OPEN	NO CAUSE FOR FAILURE GIVEN
G	FP1	017337	030377	C	RM	801		D			FLOOR DRAIN ISOLATION VALVE FAILED TO CLOSE	VALVE OPERATOR IN OPEN OVERRIDE POSITION
W	HN1	023582A	122978	N	SV	801		D			VALVE MECHANICALLY BLOCKED OPEN OVERRIDING TRIP	PERSONNEL ERROR
B	TI1	016661	120776	N	RM	802	R	D			48 INCH BUTTERFLY VALVE FAILED TO CLOSE/TESTING	PERSONNEL ERROR/INADEQUATE MAINTENANCE
C	CC1	0194798	101977	N	DV	802		D			SPENT FUEL PL.CHAR.ABS.BANK BYP.DMP.FAILED TO SHUT	60 FB DAMPER GASKETS WERE MISSING
C	SL1	015000	092476	C	MV	802		D			MOVII(MV-15-1)FAILED TO CLOSE / PREOP TESTING	PERSONNEL MAINT PROBLEM/DIRTY TORQSW CNT
G	DR2	019155	091277	K	RM	802	R	D			RECIRC SUCTION VALVE 202-48 WOULD NOT CLOSE	VALVE PACKING TOO TIGHT MAINT ERROR
W	DC2	021674	060378	N	AV	802		D			AIR-OP PZR SPRAY VALVE FAILED TO CLOSE	GASKET INSTALLED IMPROPERLY IN POSITIONER
W	IP3	016469*	121776	W	MV	802	R	D 02			TWO-28IN MSIVS FAILED TO CLOSE	SHAFT BINDING DUE TO IMPROP ADJ OF GLAND
W	YR1	018204	061177	C	RM	802		D			DRAIN VALVE (TV-209) FAILED TO CLOSE / TESTING	PERSONNEL MAINTENANCE/PACKING TOO TIGHT
B	CR3	0176568	041577	C	RM	804	R	D			VLV.CAV-2 FAIL TO CLOSE;CONTAINMENT ISOLATION VLV	CLOSURE SPRING NOT STRONG ENOUGH
B	CR3	020222	122877	N	MV	804		D			RB PURGE EXHAUST VLV AHV-18 DID NOT AUTO CLOSE	DESIGN PROB/OPEN LIMIT SWTCH NOT ACTIVATE
G	BF2	021094	032578	H	CV	804		D			CHECK VLV.2-73-603, IN HIGH-PRESS.CI.SYS, FOUND OPEN	DIMEN.ERR. IN VLV. INTERFERENCE CLEARANCE
G	BR2	015542	081176	N	AV	804	B	D			ISO.VLV 2-CMC-PV-1260 WOULD NOT CLOSE FULLY	DESIGN PROB./CLOSING SPRING NOT STRONG EN
G	BR2	023633	111178	L	CV	804		D			RHR CHECK VALVE E11-F031 WILL NOT FULLY SEAT	DESIGN ERROR/VLV.DOESN'T WORK ON LOW DP.
G	CO1	023542	122778	C	AV	804		D			DRYWELL OUTBD. VENT ISO.VLV.PC-246AV NOT SHUTTING-	-FULLY//DESIGN ERROR IN PNEUM.OPERATOR
G	DA1	0144089	021476	K	CV	804		D 02			INSTRUMENT LINE CV Xfv-4611,4612 FAILED TO CLOSE	POOR TEST LOCATION FOR VALVE
G	EN2	022500*	091078	L	RM	804		D 02			RHR VALVES 2E11-F003A,F047A FAILED TO CLOSE	VALVE GATES SAG+BIND IN FULL OPEN POSIT
G	DC1	018952	082977	C	CV	804	R	D			TORUS TO DRYWELL VAC.BRK(V-26-5) FAIL. TO RECLOSE	DESIGN ERROR / IMPROPER BUSHING USED

FAILED TO CLOSE

VEN	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N M U M	R E M A R K	FAILURE MODE	FAILURE MECHANISM
G	OC1	019198	092777	C	CV	804	R	D			VAC BKR VAL V-26-9 FAILED TO CLOSE	DESIGN ERROR / IMPROPER BUSHING USED
W	SU2	019752	111477	C	RM	804	R	D			SAMPLING VALVE TV-SS-202A FAILED TO CLOSE	DESIGN DEFICIENCY/CLOSING SPRING TOO WEAK
W	SU2	022543	092678	S	MV	804		D			CIRC H2O OUTLET MOV-CW-2000 FAILED TO CLOSE	DESIGN/TORQUE SW CAN WEDGED ON SCREW
G	DR2	014344	032476	J	MV	806		D			CCSW VAULT DRAIN VAL 4999-74 BLOCKED OPEN MECH	FUNCTIONAL TEST REQUIRE. NOT IDENTIFIED
G	FP1	015240	071376	N	RM	806		D			VALVE ON RHR PROCESS SAMPLE LINE FAILED TO CLOSE	INCORRECT PROCEDURES USED
G	BF1	017594A	032177	L	MV	808		D			VLV FCV 74-52 WOULD NOT GO COMPLETELY CLOSED	WORN BRNG.ASS, LOCKNUT, YOKE NUT, GASKETS
G	VY1	015623	082576	F	CV	808		D			CHECK VALVE(SERVICE H2O PUMP OUTLET) FAIL TO CLOSE	WEAR BETWEEN DISC & DISC ARM/SHIM INSTALL
W	ZI1	013942	010776	C	AV	808	R	D			NITROGEN GILL VLV (1S18880) FAILED TO CLOSE	GALLED VALVE INTERNALS
W	ZI1	014920	051876	C	AV	808	R	D			NITROGEN FILL VALVE(1S18880) FAILED TO CLOSE	GALLED VALVE INTERNALS/PROCEDURES REVISED
G	VY1	019853	110177	C	RM	809		T			VENTILATION SYSTEM VALVE (HVAC-10) FAILED TO CLOSE	CORROSION ON OPERATORS GUIDE RODS
W	TR1	020076	031578	W	AV	809		T			MS BYPASS VALVE CV-2279 FAILED TO CLOSE	RUST BUILDUP ON VALVE STEM/OUTSIDE VALVE
B	DB1	019819	112777	N	DV	810		T			ISO-DAMPER HV-9311A WOULD NOT CLOSE COMPLETELY	DAMPER SEAL DIRTY & NEEDED LUBRICATION
B	DB1	023006	102178	N	DV	810		T			EMER.VENT.SYS.ISO-DAMP-HV-9301A WOULD NOT CLCSE	DIRT ON SEALING SURF/NEEDED LUBRICATION
B	DE1	017497	031677	G	UV	810		T			CAUSTIC DRAIN VLV FAILED TO FULLY CLOSE	CAUSTIC DRIED ON VLV SEAT PREVENTING CLOS
B	DE3	017061	012677	C	RM	810		T			CHYMNT ISO VAL 3RC-7 FAILED TO CLOSE	PAINT ON VLV STEM PREVENT. PROP. FUNCY.
C	MY1	020762	021679	C	RM	810		T			VALVE DR-A-6 FAILED TO FULLY CLOSE	PARTICLE LODGED IN VALVE SEAT
G	BR1	019680	112377	Y	RM	810		T			LIQ.NITRO.TNK.PRESS.CONT.VLV FAILED IN OPEN POSIT.	CAUSE OF VLV FAILURE/FROZEN OPEN
G	DR2	020471*	021078	C	CV	810	R	T	02		TWO VACUUM BREAKER VALVES NOT CLOSING FREELY	EXCESS GREASE IN THE SHAFT SEALS
G	EN2	022465	092378	C	RV	810		T			RELIEF VALVE 2E11-RV-F212A STUCK PARTIALLY OPEN	DIRT ON VALVE SEAT
G	MI1	022584	091478	C	AV	810		T			DRY WELL VENT BYPASS VAL 1-AC-9 FAILED TO CLOSE	DIRT AND SCALE IN AIR OPERATOR

FAILED TO CLOSE

<u>VEN</u>	<u>PLAN</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CHUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	DC1	023299	121278	N	AV	B10	T				SGTS VALVE V-28-30 FAILED TO CLOSE DURING TEST	DIRT & CORROSION IN PISTON CYLINDER
G	PB2	016333	111476	W	RV	B10	R	I			MAIN STM RV 71F FAILED IN OPEN POSITION	DIRT UNDER PILOT DISK AND SEAT
G	QC2	014421	031976	W	AV	B10	T				MSIV AD-2-203-1C FAILED TO CLOSE / NORMAL SHUTDOWN	FOREIGN MATERIAL IN PILOT ASSEMBLY
G	YV1	015628	081676	Y	AV	B10	T				AIR SAMPLE ADV (FSO-109-75B-2) FAIL TO CLOSE	DIRT IN VALVE STEM
W	BV1	022135	080178	L	RM	B10	T				1B LOW HEAD SAFETY INJECTION PMP.HEAD.ISO.NOT CLOS	VLV FAIL TO CLOSE DUE TO BORIC CRY. IN PAK
W	DC1	018266	062477	G	MV	B10	T				CHARGING HEADER NO ISOLATION VALVE FAILED TO CLOSE	BORIC ACID CRYSTALS ON STEM
W	HN1	0140078	012276	W	SV	B10	T				MSIV NO 2 FAILED TO CLOSE IN REQUIRED TIME	LIMIT SW HAD INTERNAL CORROSION
W	YR1	021013	031478	Y	SV	B10	T				CONTAINMENT VALVE (HV-SOV-1) FAILED TO CLOSE	DIRT AND OIL BUILD-UP IN VALVE INTERNALS
W	Z11	017041	012377	C	SV	B10	R	T			CONTAIN INST AIR SOV (1FCV-1A018) FAILED TO CLOSE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
W	Z11	023355	121178	N	HV	B10	D				DAMPER VALVE FAILED TO CLOSE DURING TESTING	FROZEN(DUE TO COLD TEMP) CYLINDER
W	Z12	017962	052577	C	SV	B10	R	T			INST AIR ISOL VALVE (2FCV-1A018) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS.
W	Z12	018259	061577	C	SV	B10	R	T			INST AIR ISOL VLV (2FCV-1A018) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS
W	Z12	021451	050978	C	SV	B10	R	T			INST AIR ISOL VALVE 2FCV-1A01A FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/HEAT-VARNISH
W	Z12	021928	070378	C	SV	B10	R	T			INST AIR ISOL VALVE 2FCV-1A01B FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/RECURRING)
B	CR3	022358	090778	N	DV	B12	J				CONT.COMPLEX AIR SUP.DAMPER D-1 WOULD NOT CLOSE	MECHANICAL BINDING OF AIR SUP.DAMPER D-1
B	OE1	014869	042476	N	RM	B12	D				ES VALVE PR-7 FAILED OPEN	VLV SPIND. BROKEN/LMT & TORQ SWT. INOPER.
B	OE2	017541	040577	G	MV	B12	D				VALVE 2LP-21 FAILED TO CLOSE	LOOSE SET SCREW ON PINION GEAR OF MTR SFT
B	T12	021274	041578	N	DV	B12	D				VENTILATION DAMPER VALVE (D-4098) FAILED TO CLOSE	DAMPER LINKAGE IMPROPERLY ADJUSTED
C	CC1	014166	011976	N	MV	B12	D				MOV-3463 STUCK IN THE INTERMEDIATE POSITION	LOCK DEVICE BRASS BUSH. LOOSENED; UNCUP. STM
G	BF1	016811	010377	C	AV	B12	D				DRYWELL SUP.VAC.BKR.VLV 64-28E REMAINED OPEN AF.TE	VLV AIR ACT.CYL.PST. ROD BINDING WI. BUSHNG

FAILED TO CLOSE

PLANT	CONT. NO.	EVENT DATE	SO P	FAIL CODE	TYPE	LOCATION	FAILURE MODE	FAILURE MECHANISM
G BR1	017296	030177	Q MV	812	D	HPCI MIN. FLOW VLV E41-F012	FAILED TO CLOSE	ANTI-ROT. KEY SET SCREW HAD UNSCREWED
G BR2	014625	030976	M RM	812	T	VLV 2-CAC-PV-1260	NOT INDICATING CLOSED/NOT CL-FUL	VLV PLUG REQUIRED RESIZING/OPER. SEALS REP
G BR2	020841	031378	C AV	812	T	RX.PENET.VLV CAC-PV-1098	DID NOT INDICATE SHUT	ACTUATOR SPRING DID NOT PROVIDE POS. SEAT.
G DR2	020642	022478	C AV	812	D	TORUS VACUUM BREAKER 2-1601-208	WOULD NOT CLOSE	OPERATOR MOUNTING BOLTS SHEARED
G FPI	021924	072278	D MV	812	D	OUTBOARD INJECTION VALVE 14-MOV-118	FAILED TO CLOSE	OPERATOR SHAFT KEY SHEARED
G MI1	014477	042276	C AV	812	D	VALVE 1-AC-9	FAILED TO CLOSE	INTERVAL VALVE BINDING
G MO1	015708	090276	F MV	812	R D	VALVE MO-2008	FAILED TO OPEN	STEM CLAMP SET SCREWS SHEARED
G P82	015759	082976	Y RV	812	U	LIQ MITO TK RV	FAILED TO RESEAT	DEFECTIVE BLOWBACK RING
G P82	016390	110976	D MV	812	D	CORE SPRAY VALVE MO-26A	FAILED TO CLOSE	MTR OPER GEAR TRAIN FAILED
G P82	016489	111876	W RM	812	D	MSIV AD-22-868	FAILED TO CLOSE	GROGGED VALVE STEM
G P83	014471	030176	L RM	812	R D	B RHR OUTBOARD INJECTION VLV MO-1548	FAIL. TO CLOSE	VLV DISC SEPARATED FROM VLV STEM
G P83	018372	071377	Q MV	812	R D	RCIC OUTER ISO.VLV (MO-16)	FAILED TO CLOSE	OPER. HAD STRIPPED THREADS ON STEM NUT
G P83	020373	011378	G RM	812	D	GAS CHARG VALVE TO 3A SBLC PUMP ACCUM	FAILED OPEN	FAILURE DUE TO MECH BINDING OF VAL INTERN
G P11	018325	062077	L MV	812	R D	VALVE MO-1001-36A	FAILED TO CLOSE	RHR PUMP OPERAT KEY WHICH PREVENTS STEM ROTATION SHEARED
M BV1	018730	080277	G XV	812	D	HIGH PRI. LEAK. DUE TO 18 CHG. PMP-SUCT.	VLV NOT CLOSE	JAMMED REACH ROD ON THE VALVE
M DC1	016607	120776	C RM	812	D	S/G SAMPLE ISOLATION VALVE	FAILED TO CLOSE	LOOSE BLOCK BETWEEN STEM AND ACTUATOR
M I-3	015134	061476	N RM	812	D	VALVE 956E	WOULD NOT CLOSE	VALVE STEM HAD SLIGHT BOW
M IP3	022410	082978	E RM	812	U	CONTROL VALVE LCV-12098	FAILED TO CLOSE	ACTUATOR FAILURE
M JF1	021872	052778	N RV	812	D	B STEAM GEN SAFETY RV	FAILED TO RESEAT	BROKEN LOWER ADJ RING LOCKING PIN
M RG1	017499	022876	C AV	812	D	AD BUTTERFLY VALVE	FAILED TO CLOSE	FULLY SCORED PISTON SHAFT/EXCESSIVE FRICTION

FAILED TO CLOSE

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>UNOS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>YR</u>	<u>MO</u>	<u>DAY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	SA1	017125	020177	N	UV	B12		D						SERVICE WATER VALVE (12 SW223) FAILED TO CLOSE	BROKEN BOLT ON ACTUATING ROD
W	SU2	014194	020476	W	RM	B12		D						MAIN STEAM TRIP VALVE (TV-MS-201A) FAILED TO CLOSE	SHAFT MISALIGNED IN STUFF BOX/DISC BOUND
W	SU2	019211*	091077	N	RM	B12	R	D	02					SAMPLING VALVES (TV-SS-206A/201B) FAILED TO CLOSE	OPERATOR LINKAGE NEED ADJUSTMENTS
W	ZI2	018264*	062677	C	AV	B12		D	02					ISOLATION VALVES (2ADV-SS9354A/B) FAILED TO CLOSE	WEAK CLOSING SPRING/STEM MISALIGNMENT
B	OE1	017410	031677	U	RM	B14	R	T						VALVE 1FDW-108 FAILED TO CLOSE	VALVE PACKING FAILED (HARDENED)
B	OE3	017451	032277	C	RM	B14		T						FEEDWATER CONTNMENT ISO VAL 3FDW-106 FAIL TO CLOSE	HARDENING OF VALVE PACKING
B	OE3	020159	010578	U	RM	B14	R	T						VALVE FDW-108 FAILED TO CLOSE	VALVE PACKING FAILURE
B	Y11	014988	052176	C	RM	B14		T						CONTAINMENT ISOLATION VALVE MU-V28 FAILED TO CLOSE	BINDING OF PACKING AND/OR STEM (ROCKWELL)
G	DR2	017514	040277	K	MV	B14		T						B RECIRC PUMP SUCTION VALVE WOULD NOT CLOSE	VALVE PACKING TOO TIGHT
G	M11	018690*	080577	C	CV	B14		T	03					3 VAC BKR VALS FAILED TO FULLY CLOSE	FAILURE OF PACKING AND BUSHINGS
G	P83	023347	121278	Q	MV	B14		D						PCIC ISOL VALVE MO-13-15 FAILED TO FULLY CLOSE	COCKED PACKING FOLLOWER JAMMED STEM
G	QC1	020174	121277	C	AV	B14		T						ADV 1-1601-33E FAILED TO CLOSE DURING TESTING	DEFECTIVE PACKING BOUND UP STEM
G	QC1	021785	052778	C	AV	B14		T						VACUUM BREAKER FAILED TO CLOSE (1-1601-33E)	PACKING PROBLEM/SHAFT BINDING/NEW PACKING
G	QC1	021981	070778	C	AV	B14		T						SUMP DISCHARGE VALVE FAILED TO CLOSE (1-2001-15)	PACKING REQUIRED ADJUSTMENTS
W	IP2	022164	072878	W	RM	B14		D						MS 1 FOR LOOP 23 FAILED TO CLOSE COMPLETELY	STEM PACKING RESTRICTED VAL MOTION
W	KE1	016975	011777	C	RM	B14		T						VALVE BT-7A FAILED TO CLOSE (BLOWDOWN ISO VLV)	OVERTIGHT PACKING
W	KE1	020479	020178	W	RM	B14		T						BLOWDOWN LINE ISO VLV FAILED TO CLOSE FULLY	DRY HARD PACKING
W	ZI2	013951	010876	C	AV	B14	R	T						SAMPLE ISOL ADV (2SS9356A) FAILED TO CLOSE	STEM BINDING ON PACKING/LOOSENEED PACKING
W	ZI2	016535	112776	H	MV	B14		T						BIT OUTLET MOV (2MOV-S18801B) FAILED TO CLOSE/TEST	PACKING PROB/GLAND MISALIGN/LACK OF LUB.
B	CR3	017656A	041577	C	MV	B16	S	D						MUV-258 FAILED TO CLOSE;CONTAINMENT ISOLATION VLV.	INOPERABLE DUE TO DIRTY CONTROL CONTACTS

FAILED TO CLOSE

<u>VEN</u>	<u>PLAN</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>VER</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	CR3	017655	041677	U	RM	B16	S	D				VALVE FHV-39E40 FAILED TO CLOSE	OCC PRESS TRANSMITTER DIDNT SUPPLY SIGNAL
B	CR3	018560	071577	C	RM	B16	S	D				CONT ISOL VALVE SWV-47 FAILED TO CLOSE	LOOSE WIRE/CONTROL PWR TO LIMIT SWITCH
B	T11	015081	052676	N	RM	B16	S	D				LIQUID RELEASE VLV FAILED TO CLOSE ON AUTO SIGNAL	FAILED RELAY IN INTERLOCK CIRCUIT
B	T11	015180*	062276	Y	RM	B16	S	D	02			TWO VALVES FAILED TO CLOSE GIVEN HI RADIATION SIG	COMMAND FAULT/MAINT REMOVED RELAY
B	T12	023429*	121378	C	RM	B16	S	D	04			FOUR CONT ISOL VALVES FAILED TO CLOSE ON TEST	RELAY FAILED TO PROVIDE LOGIC SIGNAL
C	FC1	014561	041476	H	RM	B16	S	D				HCV-383-4 FAILED TO CLOSE ON TEST	BINDING CONTACT IN BREAKER TO VALVE
C	M12	019931	101477	C	RM	B16	S	D				CONT. ISO. VLV 2-RC-002 FAILED TO SHUT ON COMMAND	CONDUCTORS FOR VLV OPERATOR WERE SHORTED
C	SL1	018060	052777	U	RM	B16	S	D				"A" TRAIN FEEDWATER REG. VLV FAILED OPEN	BLOWN FUSES
G	BR1	016860	112576	C	MV	B16	S	D				MIN. FLOW VLV. (E41-F012) DID NOT CLOSE FULLY	VLV MTR CKT PRESS-SWITCH OUT OF CALIBRATION
G	BR2	014615*	031976	Q	RM	B16	S	D	02			TWO RCIC VALVES (E91-F0076/F008) FAILED TO CLOSE/TEST	TWO RELAYS CONTROLLING VALVES FAILED
G	BR2	014616	031976	Q	MV	B16	S	D				SPRAY LINE VALVE (2-E11-F022) FAILED TO SHUT/TEST	NO POWER/AUX CONTACTS FOR INTERLOCK STUCK
G	BR2	018697	071577	W	RV	B16	S	D				SAFETY REL. VLV B21-F0138 STUCK OPEN; AFTER MAN. OPEN	GRND. ON SOLENOID ASS. FOR REMOTE ACTUATOR
G	CD1	018900	081177	S	MV	B16	S	D				SERVICE H2O VALVE, SW-MO-89A FAILED TO CLOSE	RELAY CONTACTS SUPPLYING PWR FAILED
G	CD1	020343	011378	L	MV	B16	S	D				RHR INJ BLOCK VALVE FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON RELAY/WIRING ERROR
G	CD1	020806	020778	H	RM	B16	T	D				HPCI VALVE FAILED TO CLOSE DURING TEST	NO SIGNAL FROM DP SWITCH
G	DA1	021123A	040678	C	MV	B16	S	D				VALVE MOV 8402B FAILED TO FULLY CLOSE	MOTOR STARTER CONTACTOR COIL FAILED
G	DR3	014440	032476	J	RM	B16	S	D				DRAIN VALVE 2-4999-74 BLOCK OPEN, DISCON. ELECTRIC.	FUNCTIONAL TESTING NOT IDENT IN PROCEDURES
G	DR3	014750	051076	D	MV	B16	S	D				MC 3-1402-25B TRIPPED WHILE BEING CLOSED	WRONG SIZE OVERLOAD HEATER
G	DR3	022561	092278	L	MV	B16	S	D				LPCI VALVE 3-1501-20A FAILED TO CLOSE ON TESTING	STUCK CONTACTOR IN MCC
G	E	020028*	090977	N	RM	B16	S	D	02	V		RWCU PUMP SUCTION VALVES FAILED TO ISOLATE SYSTEM	JUMPER WIRE LEFT IN CONTROL PANEL

FAILED TO CLOSE

VEN	P L A N T	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TY P E	C L A S S	C O N T R O L P L U M	X M T R	FAILURE MODE	FAILURE MECHANISM
G	FP1	021712	062978	H	MV	B16	S	D			HPCI VALVE 23-MOV-15 FAILED TO CLOSE	DEFECTIVE TEMP SWITCHING SIGNAL TO CLOSE
G	DC1	017472	032377	D	MV	B16	S	D			CORE SPRAY ISO.VLV V-20-15 INOPERABLE IN OPEN POS.	VLV.MTR. OPERATOR BREAKER TRIPPED
G	DC1	019080	090877	D	MV	B16	S	D			CORE SPRAY ISO.VLV. V-20-15 FAILED TO CLOSE	DEFECTIVE CKT.BRKR. TO MOTOR
G	DC1	023117	112978	C	RM	B16	S	D			MN STEAM DRAIN VALVE V-1-106 FAILED TO CLOSE	NO POWER TO VALVE, DEFORMED FUSE HOLDER
G	P82	014154	020676	N	RM	B16	S	D			LIQ.RADWASTE DISCH.VLV AQ-20-308 FAILED TO ISO.FLM	FLOW-INDIC.XMTR.DID NOT OPERATE PROPERLY
G	P82	014925	051976	K	MV	B16	S	D			RECIRC PUMP DISCH VLV MO-2-02-53A WOULD NOT CLOSE	BROKEN WIRE, CLOSING CONTROL CIRCUIT
G	P82	020481	020678	N	RM	B16	S	D			RADWASTE DISCHARGE VALVE FAILED TO CLOSE/TESTING	COMMAND/RELAY FAILED IN CONTROL CIRCUIT
G	P83	014380	032176	K	MV	B16	T	D			3B RECIRC.PMP.DISCHG.VLV(MO3-53B) FAILED TO CLOSE	2 CONT.CKT.WIRES TO VLV OPER.WERE BROKEN
G	P83	014741	050476	K	MV	B16	T	D			3B RECIRC.PMP.DISCHG.VLV(MO3-2-53B) FAIL TO CLOSE	SEVERAL BROKEN WIRES AT TERMINAL CONNECT.
G	QC1	018109*	041977	C	MV	B16	S	D	02		CONT.ISO.VLV.S. MO 1-1001-506 63 FAILED TO CLOSE	FAILURE OF THE 595-118 RELAY
G	QC2	020300	051977	Q	MV	B16	S	D			RCIC INBOARD STM.ISO.VLV.MO-2-1301-16 WOULDNT CL-	-CSE//FAIL.OF VLV.BRKR.AUX.CLOSING CONT.
G	QC2	020544	011878	N	AV	B16	S	D			AQV AQ 2-5408 FAILED TO CLOSE / COMMAND FAULT	PERSONNEL HOOKED UP ELECTRICAL WRONG
W	BV1	015915	083076	Y	RM	B16	S	D			CONTAINMENT VALVE FAILED TO CLOSE/CNT VAC DROPPED	WIRING ERROR DURING FABRICATION
W	BV1	016279	102276	H	MV	B16	S	D			VCT DISCH VALVE FAILED TO SHUT ON SI SIGNAL	NO PWR/ALLIS CHALMER LINESTARTER FAILED
W	BV1	016356	102576	H	MV	B16	S	D			DRAIN VALVE ON ACCUMULATOR IC FAILED TO SHUT	NO PWR/THERMAL OVERLOAD OF LINESTARTER
W	DC1	020694	020878	B	MV	B16	S	D			AUX FEED MOV FAILED TO CLOSE	COMMAND/LOOSE ELEC CONNECTION/CONTROL
W	DC1	023114	112878	B	MV	B16	S	D			AFW THROTTLE VLV. WOULD NOT CLOSE ELECTRICALLY	BROKEN LEAD ON MTR OPERATOR
W	HN1	022167	080478	K	RM	B16	S	D			PRESS SPRAY VLV. STUCK IN INTERMEDIATE POSITION	FAILED TRANSISTOR IN WORTHINGTON SIGNAL.CN
W	NA1	021152	041278	W	RM	B16	S	D			TV-MS-101C FAILED TO CLOSE REMOTELY	RELAY SLENOID FOR VLV HAD AN OPEN COIL
W	RG1	014168	020776	C	AV	B16	S	D			SUMP A DISCHG. MOV FOR CONT.ISO.WOULD NOT CLOSE	FAILURE OF MG-6 RELAYS IN "A" SAFEGUARDS.

FAILED TO CLOSE

NEW	PLANT	CONT.NO.	EVENT DATE	SHEV	C	V	FAC	CODE	REMARK	S	D	C	ON	RE	K	FAILURE MODE	FAILURE MECHANISM
W	RD2	C21414	051178	S	MV	B16	S	D	VALVE V6-12D FAILED IN OPEN POSITION							VALVE V6-12D FAILED IN OPEN POSITION	BLOWN FUSE ON MTR OPERATOR CONTROL PWR
W	SA1	022720	092478	C	MV	B16	S	D	MOV(1CC131) FAILED TO CLOSE / TEST/COMMAND FAULT							MOV(1CC131) FAILED TO CLOSE / TEST/COMMAND FAULT	CONTACTS FAILED IN CONTROL POWER CIRCUIT
W	SU1	017928	101876	J	MV	B16	S	D	MOV-CW-100A FAILED TO CLOSE ON AUTO SIGNAL							MOV-CW-100A FAILED TO CLOSE ON AUTO SIGNAL	LOOSE TERMINAL SCREW AT BREAKER
W	SU1	G16254*	102676	N	DV	B16	S	D 02	TWO CONTROL RM DAMPERS FAILED TO CLOSE DURING TEST							TWO CONTROL RM DAMPERS FAILED TO CLOSE DURING TEST	COMMAND/RELAY STUCK IN ENERGIZED POSIT
W	SU1	021294	042378	S	MV	B16	S	D	CONDENSER OUTLET MOV (CW-100A) FAILED TO CLOSE							CONDENSER OUTLET MOV (CW-100A) FAILED TO CLOSE	COMMAND FAULT/WIRE DISCONNECTED/PERSONEL
W	TR1	020554	012878	C	MV	B16	S	D	CONTAINMENT ISOL MOV-5660 FAILED TO CLOSE							CONTAINMENT ISOL MOV-5660 FAILED TO CLOSE	COMMAND/LOOSE ELECTRICAL CONNECTION
W	YR1	G19477	101977	N	MV	B16	S	D	MOV FAILED TO CLOSE / COMMAND FAULT							MOV FAILED TO CLOSE / COMMAND FAULT	AN OPEN OVERLOAD HEATER IN CONTACTOR
W	Z11	021552	051878	U	RM	B16	S	D	FEEDWATER ISOLATION VALVE FAILED TO CLOSE/TESTING							FEEDWATER ISOLATION VALVE FAILED TO CLOSE/TESTING	COMMAND/DIRTY CONTACTS ON CONTROL RELAY
W	Z12	014219	021376	G	MV	B16	S	D	CHRG PUMP VALVE 2 MOV-VC8106 FAILED TO CLOSE/TEST							CHRG PUMP VALVE 2 MOV-VC8106 FAILED TO CLOSE/TEST	COMMAND/STUCK CONTACTS IN MCC BREAKER
B	TI1	021381	120877	N	MV	B17		D	PROCESS SAMPLING MOV CA-V13 FAILED TO CLOSE							PROCESS SAMPLING MOV CA-V13 FAILED TO CLOSE	BUSHING FAILED DUE TO WEAR/POSS LUB PRCB
C	CC1	016406	102276	C	MV	B17		D	WHILE DRAIN,CONT,SUMP,MOV-5463 WOULD NOT SHUT							WHILE DRAIN,CONT,SUMP,MOV-5463 WOULD NOT SHUT	STEM BUSHING INTERNAL THREADS WERE STRIP.
C	CC1	016740	121976	N	UV	B17		D	#12 S/G BOT.BLOW,OROFICE BYPASS VLV WOULD NOT SHUT							#12 S/G BOT.BLOW,OROFICE BYPASS VLV WOULD NOT SHUT	DAMAGED BUSHING CAUSED VLV NOT TO SHUT
G	MI1	014179	012676	C	CV	B17		T	VACUUM BREAKER FAILED TO CLOSE FREELY							VACUUM BREAKER FAILED TO CLOSE FREELY	TEFLON BUSHING OUT OF ROUND
G	MC1	020395	020278	C	CV	B17	R	T	TORUS TO DRYWELL VAC.BRKR AD-2382B FAILED TO CLOSE							TORUS TO DRYWELL VAC.BRKR AD-2382B FAILED TO CLOSE	EXCESS FRICTION BETW VAL BUSHING + STEM
G	OC1	015974	092876	C	CV	B17		T	VAC BKR VAL V-26-11 FAILED TO CLOSE							VAC BKR VAL V-26-11 FAILED TO CLOSE	TEFLON BUSHING FAILURE
B	OE1	019881	112977	U	RM	B19	R	T	VALVE FDW-108 FAILED TO CLOSE							VALVE FDW-108 FAILED TO CLOSE	VAL STEM NEEDED LUBRICATION
B	OE1	021320	031578	U	RM	B19	R	T	VALVE IFWD-108 FAILED TO CLOSE							VALVE IFWD-108 FAILED TO CLOSE	VAL STEM NEEDED LUBRICATION
B	OE2	019882*	111677	U	RM	B19	R	T 02	VALVES FOW-106 +108 FAILED TO CLOSE							VALVES FOW-106 +108 FAILED TO CLOSE	LACK OF VAL STEM LUBRICATION
C	CC1	019479A	101977	N	DV	B19		T	SPENT FUEL PL.CHAR.ABS.BANK BYP.DMP.FAILED TO SHUT							SPENT FUEL PL.CHAR.ABS.BANK BYP.DMP.FAILED TO SHUT	OPER.BIND. DUE TO IMPROPER LUBRICATION
G	CO1	021196*	041578	T	AV	B19	B	T 02	VALVES AR-153AV+AR-154AV FAILED TO CLOSE							VALVES AR-153AV+AR-154AV FAILED TO CLOSE	LACK OF VALVE PISTON+CYLINDER LUBE

 FAILED TO CLOSE

P L A N T
 V E N T
 C O M M I T T E E
 C O N T R O L S
 S Y S T E M
 F A I L U R E S
 C O D E S
 I N V E N T O R Y
 C L A S S I F I C A T I O N
 K E Y

 FAILURE MODE

 FAILURE MECHANISM

EVENT DATE	SYMBOL	FAIL CODE	FAILURE MODE	FAILURE MECHANISM
061076	D RM 819	I	VALVE MO2-1402-48 FAILED TO CLOSE AGAINST PUMP HEAD	INADEQUATE LUBRICATION OF VALVE STEM
101378	D RM 819	I	THE 2-1402-48 FLOW TEST VALVE FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
101878	L RM 819	I	LPCI SUCTION VALVE MO-1501-5C FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
122078	K MV 819	I	RECIRC PUMP DISCHARGE BYPASS FAILED TO CLOSE	SUSPECT STEM LUBRICATION PROBLEM
053177	C MV 819	R T	ISO VALVE MO-2076 FAILED TO CLOSE	DETERIORATED GREASE, MAIN+LIM SW GEAR TRAIN
012877	G MV 819	I	CHARGING LINE VLV(MOV-VC8106) VLV FAILED TO CLOSE	LACK OF STEM LUBRICATION CAUSED BINDING
010576	C AV 819	R T	SAMPLE VALVE (25593558) FAILED TO CLOSE	MECHANICALLY BOUND/NEEDED LUBRICATION
032578	U MV 820	O	MN-FOWTR.BLOCK VLV FM-779 DID NOT CLOSE COMPLETELY	MTR.OPERATOR NEEDED ADJUSTMENTS
070777	K MV 820	T	VALVE RC-6 FAILED TO CLOSE	FINGER ON MOTOR CONTACTOR DIRTY
092276	C MV 820	O	CONTAINMENT ISOLATION MOV (CA-V44) FAILED TO CLOSE	LOGSE LOCKNUT ON VALVE OPERATOR
020978	B MV 820	O	AUX FEED PUMP VALVE (MV-09-11) FAILED TO CLOSE	MCV MOTOR WINDING PARTIALLY SHORTED
032177	L MV 820	O	VLV FCV 74-92 WOULD NOT CLOSE/MTR TRIP/THERMAL G-L	MOTOR SHAFT WAS BENT
011977	Q MV 820	T	HPCI STM.SUP.VLV E41-FC03 WOULD NOT CLOSE	DIRTY COMMUTATOR IN VLV OPERATOR
120377	L MV 820	U	VALVE E11-FC40 FAILED IN OPEN POSITION	MOTOR FOUND TO BE OPEN(UNDETERMINED WHY)
041578	C MV 820	R O	DURING AN ACT.HI.STMLM.FLOW,VLV 241-F003 FAIL.T.O.S	DIRT.CONT.ON LIMIT SWT.MTR.MTR.HR.
021078	MV 820	R O	MOTOR OPERATED VALVE RHR-MO-34 WOULD NOT CLOSE	SHEARED KEY BETWEEN VALVE AND OPERATOR
121078	K MV 820	O	MO-2-54A FAILED TO CLOSE	DECLUTCH SHAFT PROBLEM,MOTOR WONT ENGAGE
090276	F MV 820	O	MOV FAILED TO CLOSE DURING TESTING(MO-1-1001-26-A)	EXCESS GREASE/COMPACTION/HYDRAULIC LOCK
010878	N MV 820	R U	CIRC H2O OUFLET MCV-CS-2008 FAILED TO CLOSE	MOTOR WAS GROUNDED
080978	N MV 820	O	CIRC H2O OUTLET MCV-CW-200C FAILED TO CLOSE	KEY SLIPPED OUT OF MOTOR OPER DRIVE TRAIN

 FAILED TO CLOSE

PLANT	CONT. NO.	EVENT DATE	SYM S P	CO S P	FAIL CODE	STATUS	DESCRIPTION	FAILURE MODE	FAILURE MECHANISM
W	SU2 022647	100778	S MV	820	D	D	MV-2A-202B FAILED TO CLOSE GIVEN A TEST SIGNAL		MOTOR DAMAGED DUE TO FLOODED PIT
G	BR2 014994	053176	N SV	821	T	T	DRYWELL NITRO. INLET VLV 2-CAC-V6 WOULD NOT CLOSE		4-WAY SOLENOID VLV LEAKING AIR
G	DR3 622775	672678	C SV	821	T	T	ISOLATION VALVE 3-2001-8 WOULD NOT CLOSE		DETERIORATED SEALS IN SOLENOID VALVE
G	FPI 014687	042476	C SV	821	U	U	CONTAINMENT ISOLATION VALVE FAILED TO CLOSE/TEST		DEFECTIVE SOLENOID
G	FPI 015064	062276	N SV	821	U	U	SAMPLE STREAM E VALVE 2750V1238 FAILED TO CLOSE		BURNED OUT COIL
G	FPI 015239	071376	N DV	821	T	T	DAMPER 66 ADV 100B DID NOT FULLY CLOSE		SOLENOID NOT IN PROPER ADJUSTMENT
W	BV1 016943	010477	U SV	821	U	U	MAKE-UP TRIP VLV FAILED TO TRIP ON HIGH CONDUCTIV.		VLV SOLENOID WAS DEFECTIVE
W	PR1 017487	031677	C RM	822	T	T	VACCUM BREAKER ISOLATION VALVE FAILED TO CLOSE		DIAPHRAGM DETERIORATED IN VALVE
B	CR3 019610	082777	L MV	823	T	T	CORE FLOOD DR. VLV FOR B CORE FL. TK. WOULD NOT CLOSE		DRIFT OF TORQUE SWITCH SETTING/ VLV CFV-12
B	CR3 019306	091477	C AV	823	T	T	CONT. ISO. VLV CAV-126 WOULD NOT CLOSE		SHIFT IN TORQUE SWITCH SETTING
B	CR3 020728	021078	C MV	823	D	D	VLV CAV-1 FAILED TO CLOSE/ VIOLATED T.S. REQ.		VLV HAD INCORRECT TORQUE SWITCH SETTING
B	CR3 022359	090778	C RM	823	U	U	CORE FLOOD VALVE CFV-15 FAILED TO CLOSE ON TEST		FAULTY TORQUE SWITCH
B	DE3 014927	050476	L RM	823	U	U	VALVE 3CS-5 WOULD NOT CLOSE REMOTELY		TORQUE SWITCH FAILURE
B	DE3 020488	020278	C MV	823	U	U	VALVE 3PR-9 FAILED TO CLOSE		TORQUE SWITCH FAILURE
B	T11 016529	052076	C MV	823	D	D	CONTAINMENT ISOLATION MOV FAILED TO CLOSE (W06-V3)		TORQUE SW PROBLEM (POSS TIGHT PACKING)
B	T11 017343	030977	C MV	823	D	D	MO SPRAY PUMP SUCTION VALVE FAILED TO CLOSE/TEST		GREASE IN SPRING PREVENTED TORQUE SW OPER
B	T12 021611	041978	C RM	823	D	D	CONT. ISO. VLV CA-V3 FAILED TO FULLY CLOSE ON AUTO -		--SIGNAL//INCORRECT TORQ. SWITCH SETTING
G	BR1 018864	081477	N MV	823	D	D	CONT. ISO. VLV CAC-V23 WOULD NOT CLOSE FULLY ELECT.		CLOSING TOP-SMTH FOR CAC-V23 FAILED
G	BR2 014617	031176	N RM	823	D	D	PRI. ISO. VLV 2-CAC-V22 COULD NOT BE CLOSED REMOTELY		TORQUE SWITCH IMPERFERABLE/REPLACED SWITCH
G	DA1 0211238	040678	C MV	823	T	T	VALVE MOV 8402C FAILED TO FULLY CLOSE		MOTOR OPERATOR TORQUE SWITCH CONT. DIRTY

FAILED TO CLOSE

W	P L A N T	C O N T. N O.	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O M M P H	K E Y	F A I L U R E M O D E	F A I L U R E M E C H A N I S M
G	FP1	019310	100877	H	MV	B23		D			HPCI STEAM ISOL VALVE FAILED TO CLOSE ELECTRICALLY	TORQUE SWITCH NEEDED ADJUSTMENT
G	M11	016688	121776	L	MV	B23		U			ISO COND INBOARD STM SUPVAL FAIL TO CLOSE	TORQUE SW SET INCORRECTLY
G	M11	016689	121876	L	MV	B23		U			CONDENSATE RETURN VAL 1-IC-4 FAILED TO CLOSE	TORQUE SW SET INCORRECTLY
G	MD1	015026	060376	C	MV	B23		T			HPCI STM LINE ISO VAL FAILED TO CLOSE	TORQUE SW SETTING DRIFTED TOO LOW
G	PB2	021482	061278	W	MV	B23		U			VALVE MD-2-74 FAILED TO RESPOND TO A CLOSE SIGNAL	TORQUE SWITCH ON ISO VALVE DEFECTIVE
G	PB2	022707	102808	W	MV	B23		R U			MAIN STM LINE DRAIN ISO VAL MD-2-74 FAIL TO CLOSE	TORQUE SWITCH ON ISO VALVE DEFECTIVE
G	PB3	016476	121876	D	MV	B23		D			CORE SPR.B FULL FL.TST.RET.VLV FAILED TO CLOSE	TORQUE SWITCH SETTING WAS TOO LOW
G	PB3	018373	082705	M	MV	B23		D			RCIC INNER ISO.VLV(MC-15) FAILED TO CLOSE MAN.CONT	MALFUNCTION IN VLV TORQUE SWTCH. CIRCUIT
G	QC1	021436	081879	M	MV	B23		T			HPCI PMP SUCTION VLV MD-1-2301-6 WOULD NOT CLOSE	VLV.TORQUE SWITCH WAS WORN OUT
G	QC2	021129	081879	M	MV	B23		D			RCIC INBD.STM.INLET ISO.VLV.MD-2-1301-16 WOULD NO-	-T CLOSE//FAILED TORQUE SWITCH
W	KE1	020187	022878	J	MV	B23		T			ISO VAL ON EXCESS LETDOWN HX WOULD NOT CLOSE	DIRTY CONTACTS ON TORQUE SWITCH
W	NA1	022933	10776	M	MV	B23		T			MOV-QS102A FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON TORQUE SWITCH
W	PT1	018191	061577	S	MV	B23		R T			MOV-2816 FAILED TO CLOSE DURING TEST SIGNAL	TORQUE SW READJUSTED/POSSIBLE OVER TORQUE
W	SU1	014868	042976	G	MV	B23		U			MOV (1381) FAILED TO CLOSE	TORQUE SW CONTACT PROBLEM
W	SU2	014844	042276	S	MV	B23		T			SERVICE H2O MOV-SW-202B FAILED TO CLOSE / TEST	TORQUE SW CONTACTS WERE CORRODED
W	SU2	017396	030977	N	MV	B23		R D			CIRC H2O OUTLET MOV-CW-200D FAILED TO CLOSE	TORQUE SWITCH PROBLEM/JAMMED/ADJUSTED IT
W	Z12	017811	052077	G	MV	B23		T			2MOV-VC8111 FAILED TO FULLY CLOSE	TORQUE SW SETTING OUT OF ADJUSTMENT
W	DE3	015955	082276	U	AV	B24		S D			VALVE 3FDW-108 FAILED TO CLOSE	SOLEN. 6 SPR. IN AIR SUPPLY TO VLV FAILED
B	T12	022652	091378	N	DV	B24		S D			AG VALVE (4092C) FAILED TO CLOSE/COMMAND FAULT	DESIGN ERROR IN AIR SUPPLY SYSTEM
C	CC2	022742	102378	W	HV	B24		S D			#21 MSIV FAILED TO SHUT WITH ISOLATION SIGNAL	IMPROP.ACTU.SCL.VLVS-USED IN VLV ACTUATOR

FAILED TO CLOSE

VENT	PLANT	CONT. NO.	EVENT DATE	STATUS	CODE	FAIL CODE	TYPE	CAUSE	CONTR. PH	KEY	FAILURE MODE	FAILURE MECHANISM
C	FC1	016958	011177	N	AV	B24	T	D			VALVE HCV-345 OPENED PARTIALLY WHEN REQ CLOSED	ELECTRIC TO PNEUMATIC CONVERTER FAILED
C	MI2	023565	122778	C	AV	B24	S	D			ISOL VALVE 2-SW-3.2A FAILED TO CLOSE	SOV IN AIR LINE TO VALVE REPLACED
G	BF2	019134	091877	N	RM	B24	S	D			VLV FCV 77-150 INCOPERABLE IN OPEN POSITION	COMMAND / SV FSV-77-15B FAILED
G	BF2	023352	121978	N	AV	B24	S	D			DRYWELL AIR COMP. SUC. VLV FCV-32-62 FAILED TO CLOSE	ELECTROPNEUMATIC CONTROL VLV FAILURE
G	CO1	018003	041777	C	AV	B24	S	D			CONTAINMENT VALVE H+V-296AV WOULD NOT CLOSE	SOLENOID VALVE LEAKING AT CYLINDER PORT
G	DR2	020601	022578	N	AV	B24	S	D			ISOLATION VALVE 9207B FAILED TO CLOSE	PILOT VALVE ASSY LEAKING (AIR SUPPLY)
G	DR2	022969	110878	C	AV	B24	S	D			AG-2-1601-24 FAILED TO CLOSE REMOTELY	AJR. OPER. SOL. VLV. STUCK IN THE OPEN POSIT.
G	DR2	023338	121778	C	AV	B24	T	D			AG 2-9207A FAILED TO CLOSE	ASCO SOV FOUND STICKING
G	FP1	022225	081778	N	AV	B24	S	D			ISOLATION VALVE 2G-ADV-95 WOULD NOT CLOSE	SOLENOID AIR ADMISSION VALVE FAILED
G	MI1	017001	012577	C	AV	B24	S	D			VALVE 1-AC-9 FAILED TO CLOSE	DIRT IN AIR LINE
G	OC1	017543	042377	M	AV	B24	S	D			MSIV NS04A FAILED TO CLOSE//CONT. SYS FAILURE:	DEFORMED GASKET BLOCKED AIR VENT FOR SOL.
G	PB2	0165688	120176	C	AV	B24	S	D			ISO VALVE AG-2-2-40 FAILED TO CLOSE	STUCK SOLENOID IN SUPPLY SYSTEM
G	PB3	015854	092176	C	AV	B24	T	D			ISO. VLV AG-5235 (DRYWELL TO NITRO. COMP) FAIL. TO CLOSE	SOLENOID VLV IN AIR SUPPLY LINE FAILED
G	PB3	016215	102176	N	AV	B24	S	D			DRYWELL FL. DRN. INBD. ISO. (AG-3-20-82) FAIL. TO CLOSE.	SOLENOID IN AIR SUPPLY FAILED
G	PB3	016488	113076	C	AV	B24	T	D			ISO. VLV AG-5235 (DRYWL. TO NITRO. COMP) FAIL. TO CLOSE	SOLENOID VLV IN AIR SUPPLY LINE FAILED
G	PB3	018473	072277	M	AV	B24	S	D			INBOARD MSIV 80 D FAILED TO CLOSE ON REMOTE SIGNAL	FAILURE OF SOLENOID IN AIR SUPPLY LINE
G	PB3	020492	021078	C	AV	B24	S	D			NITROGEN COMP SUCTION VAL. AG-5235, FAILED TO CLOSE	SOLENOID VALVE STICKING IN AIR SUPPLY
G	QC1	018106	041277	F	AV	B24	S	D			DRAIN VALVE FAILED TO CLOSE/COMMAND FAULT	AIR SUPPLY SV FAILED/AIR WOULDNT VENT OFF
G	QC1	023585*	121978	N	AV	B24	S	D	02		TWO VENT DAMPERS FAILED TO CLOSE (1-5741A68) TEST	SCV SUPPLYING AIR TO OPERATOR FAILED
G	QC2	015381	071276	C	AV	B24	S	D			AG 2-1601-56 FAILED TO CLOSE / COMMAND FAILURE	SOV FAILED IN AIR SUPPLY TO PURGE PILOT

FAILED TO CLOSE

VEN	PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	COMM	KEY	FAILURE MODE	FAILURE MECHANISM
G	QC2	020595*	012478	S	AV	B24	S	D	02		TWO ADV FAILED TO CLOSE/COMMAND FAULT/NO AIR	SOV SUPPLYING AIR FAILED/HI TEMP&HUMIDITY
W	BV1	022139	070978	H	AV	B24	S	D			BORON INJECTION TANK RECIRC. VLV. WOULD NOT CLOSE	WORN INTERNALS IN SOLENOID SUPPLYING AIR
W	HN1	014007A	012276	W	SV	B24	S	D			MSIV NO 2 FAILED TO CLOSE IN REQUIRED TIME	SOLENOID IN AIR OPERATOR FROZE
W	JF1	019845	120277	K	RM	B24	T	D			PRZ. SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT
W	JF1	020287	011778	K	RM	B24	T	D			PRZ. SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT
W	KE1	014387*	031276	N	DV	B24	S	D	02		DAMPERS ASV-50663 FAIL TO CLOSE ON S.I. SIGNAL	STICKY SOLENOID PILOT VALVES
W	NA1	022569*	092778	C	AV	B24	S	D	02		CONTAINMENT ISO VALVES TV-CC-1020, 102F FAILED TO CLOSE	FAILURE OF SOLENOID SUPPLY VALVES
W	PT2	020355	090877	C	AV	B24	T	D			ISOL VALVE FAILED TO CLOSE/COMMAND FAILURE	3/4 SOLENOID VAL FAILED DUE TO WEAK SPRING
W	PT2	022842	092878	K	AV	B24	S	D			PRZ. SPRAY VLV. 431B WOULD NOT SHUT FULLY	FAILURE OF ELECTRO-PNEUMATIC TRANSDUCER
W	TR1	014570	022976	U	HV	B24	S	D			HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/AIR IN HYDRAULIC LINE
W	TR1	014568	032876	U	HV	B24	S	D			HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/OIL LEAKED INTO SOV
W	TR1	016251	101676	U	HV	B24	S	D			FEEDWATER BYPASS VALVE (MO-2973D) FAILED TO CLOSE	COMMAND FAULT/LOCAL CONTROL VLV FAILED
W	TR1	016442	111276	U	HV	B24	S	D			FEEDWATER ISOLATION VLV (MO-29710) FAILED TO CLOSE	HYDRAULIC SELECTOR VALVE FAILED/RIVETT CO
W	TR1	018589	070677	U	HV	B24	S	D			HYDRAULIC FEEDWATER VLV (MO-29710) FAILED TO CLOSE	SOLENOID IMPROPERLY ASSEMBLED/MANUFACTUR
W	TR1	018992	082177	U	HV	B24	S	D			HYDRAULIC FEEDWATER VLV (MO-2973B) FAILED TO CLOSE	SOLENOID VALVE BECAME WET/STEAM LEAK
W	TR1	020901	022178	W	AV	B24	S	D			MAIN STEAM ISOLATION VALVE CV-2216 FAILED TO CLOSE	ACTUATING SOLENOIDS RUSTED/COMMAND FAIL
W	TU3	021916	070678	W	AV	B24	S	D			MSIV-3B FAILED TO CLOSE / COMMAND FAULT	SOLENOID SUPPLYING AIR, FAILED TO OPERATE
W	Z11	015842	081176	C	AV	B24	T	D			VENT ISOLATION VALVE (1FCV-VN028) FAILED TO CLOSE	COMMAND FAULT/SCV FAILED/CONTROLL AIR
W	Z11	015843	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-WD17A) FAILED TO CLOSE/TEST	COMMAND FAULT/SCV FAILED/CONTROLL AIR
W	Z11	015844	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SCV CONTROLLING AIR FAILD

FAILED TO CLOSE

W	PLANT	CONI. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CON	MUMPH	KEY	FAILURE MODE	FAILURE MECHANISM
W	Z11	017727	042577	C	AV	B24	T	D				SAMPLE ISOLATION VLV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	018568	072377	C	AV	B24	T	D				BLOWDOWN SAMPLE VLV (1FCV-SS02) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	018569	072377	C	AV	B24	T	D				S/G BLOWDOWN VLV (1FCV-BD17) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	020565	012578	C	AV	B24	T	D				CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021138	040878	C	AV	B24	T	D				S/G BLOWDOWN VALVE 1FCV-SS02 FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021140	040878	C	AV	B24	T	D				CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021973	070778	C	AV	B24	T	D				CONTAINMENT VALVE (1FCV-PR24B) FAILED TO CLOSE	COMMAND/RECURRING SOV FAIL/OIL IN AIR
W	Z11	022514*	083078	C	AV	B24	T	D	03			VALVES 1FCV-WD17A/-PR20A/-PR24B FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	022848*	091478	C	AV	B24	T	D	02			VALVES 1FCV-PR24B/-WD17A FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	023125*	112078	C	AV	B24	T	D	02			VALVES 1FCV-PR24B/1FCV-WD17A FAILED TO CLOSE	ASCO SOV FAILED IN AIR SYS(OIL IN SYS)
B	DE3	023396	121678	N	RM	B26	B	T				ISOL VALVE 3FDW-106 FAILED TO CLOSE (RECURRING)	REPAIRED LIMIT SWITCH
G	BR1	021089A	041078	C	MV	B26	R	T				VLV E41-F003 FAILED TO ISOLATE DURING TESTING	DIRT.CONT.ON LIMIT SWT.GPOGR.SEAT.MTR.BR.
G	CO1	017298	012577	C	MV	B26		T				DRYWELL PURGE VALVE WOULD NOT CLOSE FROM CONT SW	CORRODED LIMIT SWITCH CONTACTS
G	EN1	014768	020675	Q	MV	B26		T				RCIC PUMP SUCTION ISOLATION VALVE FAILED TO CLOSE	CORRODED CONTACTS ON TORQUE LIMIT SWITCH
G	PB3	018472	072877	C	RM	B26		T				DRYWELL VACUUM BREAKER FAILED TO FULLY CLOSE	LIMIT SWITCH WAS OUT OF ADJUSTMENT
W	IP3	021914*	070378	N	RM	B26	C	D	04			S/G SAMP.VLVS 1223A,24A,25A,26A WOULDNT CLOSE O-	-N SIGNAL//FAIL.OF SNAP LOCK LIMIT SWCHS
B	TI1	018256	052477	C	AV	B27		T				AC VALVE R8-V7 FAILED TO CLOSE DURING TESTING	ASCO SOLENOID PILOT VALVE FAILED/DIRT
G	BF1	017525	042177	W	RV	B27	R	D				MN.STM.SAFE.RELIEF VLV. FAILED TO RESEAT	SEVERE STM.CUTS ON PILOT DISC
G	BR1	020771	031378	W	RV	B27		D				RELIEF VLV 321-F013F FAILED TO RESEAT AT REQ.PRESS	DEFECTIVE PILOT VLV/PILOT REPLACED
G	DR2	014747	052576	A	RV	B27		T				DURING BLOWDOWN TEST VALVE 203-3A REMAINED OPEN	EXCESS LEAKAGE ON PILOT STAGE OF VALVE

FAILED TO CLCSE

<u>VEN</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SUS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G EN1	017110	010977	A RV	B27	R T							RELIEF VALVE B21-F013G OPENED AND STUCK OPEN	GROSS LEAKAGE OF PILOT+2ND STAGE ASSEMBLY
G NM1	020252	012078	W AV	B27	U							MSIV 01-03 WOULD NOT CLOSE	PILOT VALVE OPERATOR FAILED
G PB2	015085	062976	W RV	B27	R T							MAIN STEAM RV FAILED IN OPEN POSITION	PILOT VALVE SEAT LEAKAGE
G PB2	016676A	010677	W RV	B27	R T							MAIN STM RV 71E FAILED OPEN	EXCESSIVE PILOT SEAT LEAKAGE
G PB3	013989	010276	W AV	B27	T							CUTBOARD MSIV 86C FAILED TO CLOSE	VLV OPER.PILOT ASS. SEAT SURF.WAS DAMAGED
G PB3	015153	071276	W RV	B27	R T							71B MAIN STEAM RELIEF VALVE FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G PB3	015228	072076	W RV	B27	R T							MAIN STEAM RELIEF VLV 71G FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G P11	022757	100978	W RV	B27	R T							RV-203-3C FAILED TO RESENT AT PROPER PRESSURE	EXCESSIVE PILCT SEAT LEAKAGE
G QC2	018121	051477	N AV	B27	D							ACV FAILED TO CLOSE (AD-2-1601-24)	SEAL LEAK IN SOLENOID OP PILOT VALVE
G QC2	019745	110677	W RV	B27	T							RELIEF VALVE 2-203-3B FAILED TO RESEAT	PILOT VALVE WAS STEAM CUT AND ERODED
G QC2	020945	030678	N AV	B27	U							SJAE SUCTION VALVE A02-5401A FAILED TO CLOSE	STICKING SOLENOID PILOT VALVE/REPLACED
G VY1	019857	082077	T AV	B27	D							ADV (FCV 108-W) FAILED TO CLOSE DURING TESTING	SOLENOID PILOT VALVE HAD SHORTED SOLENOID
G VY1	020485	120977	W AV	B27	R T							MSIV-86C FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INOPERABLE/DIRT
G VY1	020488	020478	W AV	B27	R D							MSIV-86A FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INCOPERABLE
W Z11	021446	050678	W HV	B27	R D							MSIV 1B FAILED TO CLOSE AFTER MAINT. ON VALVE	REXROTH 4WAY DIRECTIONAL VALVE JAMMED
W Z12	015192	060376	W HV	B27	R T							MSIV B FAILED TO CLOSE DURING TESTYING	PILOT FAILURE (TELEDYNE) DC SOLENOID FAILED
W Z12	022797	101578	W HV	B27	R T							MSIV 2D FAILED TO CLOSE / RECURRING EVENT	PROBLEMS WITH PILOT SOLENOID VALVES

INTERNAL LEAKAGE

<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MU</u>	<u>PM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B CR3	C19000*	090777	N	UV	COO		U 02	V				VLV INTER.LEAK/UNPLAN.RADIOACT.GAS RELEASE TUR.BLD	CAUSE OF VLV LEAK. NOT STATED
B CR3	020079*	100577	N	RM	COO		U 02	V				RAD.GAS FROM MKUP TK.LEAK.PAST VLVS TO COND AIR RS	CAUSE OF VLV LEAKBY NOT GIVEN
B CR3	020843A	020178	N	UV	COO	R U						NOBLE GAS FROM MAKEUP TK.LEAKED BY STP VL MUV-141F	CAUSE OF VLV LEAKAGE NOT GIVEN
B RS1	021746*	061178	K	RV	COO		U 03					2 SAFETY,1 ELECTRO RV LEAKING THRU DURING TESTING	UNKNOWN/2 REPLACED,1 REBUILT
B RS1	021746A	061178	K	RM	COO		U					A BLOCK VALVE ON ELECTRO RV LEAKED THRU/TESTING	UNKNOWN/REWORKED VALVE
B TI1	016832	031376	N	UV	COO		U					VALVE FOR NAOH TANK LEAKED THRU/1250 GALS IN 8DAYS	UNKNOWN
C CC2	017986	032277	E	UV	COO		U					#21 DG COOL.SERV.WTR.INLET(2-CV-1587)LEAK.BY SEAT	CAUSE OF INTERNAL LEAKAGE NOT GIVEN
C CC2	018482*	071477	N	UV	COO		U 02	V				#22 CHG.PMP DISCH.PRESS.GA.DRN.VLVS LEAK.BY SEATS	CAUSE OF VLVS NOT TIGHT.SEAT. NOT GIVEN
C FC1	014860*	040876	G	UV	COO		U 02	V				LEAKAGE BY ION EXCHANGER CH-8A ISOLATION VALVES	VALVES TO BE INSPECTED/NO CAUSE GIVEN
C FC1	015353	072676	L	UV	COO		U					VALVE CH-152 LEAKING INTERNALLY	TIGHTENED VALVE
C FC1	017745B	042577	G	RV	COO	R U						LEAKAGE THROUGH RELIEF VALVE HG-105	UNDER INVESTIGATION
C FC1	019621*	112777	C	RM	COO		U 02	V				POSSIBLE INTERNAL LEAK OF CNTMNT PURGE VALVES	CAUSE OF LEAKAGE NOT GIVEN
C FC1	020618*	022278	N	RM	COO		U 02					CNTMNT ISO VALVES HCV-1388A+HCV-1388B LEAKING	CAUSE OF LEAK UNDETERMINED
C FC1	022468B	090878	G	RV	COO	R U						RV HG-105 LEAKING INTERNALLY	CAUSE UNKNOWN
C MI2	015578	080476	H	UV	COO	R U						VALVE ON #4 SI TANK LEAKING INTERNALLY	NO CAUSE GIVEN
C PA1	022948	111078	W	XV	COO		U					DRAIN VALVE FROM PHOSPHATE STORAGE TK LEAKED THRU	REASON NOT GIVEN
C SL1	022649	100278	G	RV	COO		U					1B CHARGING PMP HAD A LEAKING RELIEF VALVE	CAUSE OF LEAKAGE NOT GIVEN
G BF1	019957*	090877	W	AV	COO	C U	07					7 MSIV'S WERE ABOVE ALLOWABLE INDIVIDUAL LEAK RATE	CAUSE OF LEAKAGE NOT GIVEN
G BF3	018634	051877	Y	SV	COO	R U						ASCO SOLENOID VALVE LEAKING AIR TO OXYGEN ANALYZER	UNKNOWN(SN 97009A) FSV-76-42B
G BF3	022461*	091778	W	AV	COO	R U	04					FOUR MSIV'S FCV-1-14,1-26,1-51,1-52 EX.T.S.LEAK LM	CAUSE OF EXCESSIVE LEAKAGE IS NOT KNOWN

INTERNAL LEAKAGE

<u>V E N</u>	<u>P L A N T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C O D E</u>	<u>F A I L C O D E</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C O N T R O L</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G BR1	021840	070178	Y UV	C00			U				OXY.MON.CAC-AQH-1259 DR.POT VLV MALFUNCTIONED	CAUSE OF VLV NOT SEATING FULLY NOT GIVEN
G BR1	023061	111478	H HV	C00			U				STM. LEAKING PAST SEAT OF HPCI E41-FOO1	NO CAUSE FOR STM.LEAK. GIVEN
G BR2	019023*	090677	C MV	C00			U 02				RHR TORUS COOL.RETRN.LN.ISOS.E11-F02486288 LEAKING	VLVS FAILED TO SEAT PROPERLY/UNKNOWN
G BR2	020205	122677	Y XV	C00			R U				NEEDLE VLV ON OXY.ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G BR2	020455	012678	Y XV	C00			R U				NEEDLE VLV ON OXY.ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G BR2	020969	032478	H RM	C00			U				DIR.CONT.VLV 122 LEAKING BY SEAT;CAUS.ROD16-47 N.O	NO CAUSE GIVEN/ROD OUT MOTION STOP;VLV RP
G DA1	015991	092876	H XV	C00			U				HPCI TURB STM LINE HI FLD EQUALIZING VALVE LEAKS	CAUSE UNKNOWN
G DR2	014377	031576	C AV	C00			U				VALVE 1601-23 LEAKING INTERNALY	CAUSE OF LEAKAGE PAST SEAT NOT GIVEN
G EN1	014786*	032776	C RM	C00			U 16				SIXTEEN VALVE BOUNDRIES LEAKING EXCESSIVELY	VARIOUS MODES OF FAILJRE
G FP1	014658	033176	J RV	C00			U				RELIEF VALVE 15RV-112A LEAKING	CAUSE UNKNOWN
G FP1	022537	092078	C RV	C00			U				SAFETY RELIEF VALVE WAS LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN
G FP1	023100*	120178	C RM	C00			U 05 Z				CONT.ISOL VALVES LEAKING THRU	REPLACED OR REPAIRED
G H11	020722A	032078	W RM	C00			U 02				MSIVS (1-MS-1A,1C) LEAKING IN EXCESS OF T.S. LIMIT	CAUSE OF LEAKAGE NOT GIVEN
G H11	020722C	032078	N RM	C00			U 02				ATMOS.CONT.VLVS(1-AL-5,6)LEAKING IN EXCESS OF T.S.	CAUSE OF LEAKAGE NOT GIVEN
G H11	020722D	032078	Q UV	C00			U 03				SHUTDOWN COOL.VLVS(1-SD-2A,4A,4B)LEAK.EXCESS OF TS	CAUSE OF LEAKAGE NOT GIVEN
G H11	020722E	032078	N UV	C00			U				CLEANUP SYS.VLV(1-CU-3)LEAKING IN EXCESS OF T.S.LM	CAUSE OF LEAKAGE NOT GIVEN
G M01	014515	050476	Y SV	C00			U				SOLENOID VALVE LEAKING (INSTR.AIR TC NITRO. SYS)	CAUSE UNKNOWN
G M01	015440	080276	Q UV	C00			U				COOL SUP VAL TO RCIC TURB LEAKING INTERNALY	CAUSE UNKNOWN
G M01	019465	101377	W AV	C00			R U				MSIV A0-2-80A LEAKING IN EXCESS OF T. S.	NO APPARENT CAUSE
G NH1	017724*	041677	C UV	C00			U 02				DRYWELL AIR VENT + FILL VALVES LEAKING	CAUSE UNKNOWN

INTERNAL LEAKAGE

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CONTR</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	DC1	018953	082777	T	UV	C00		U			GAS DRAIN VALVE V-7-29 FAILED TO CLOSE TIGHTLY	CAUSE UNKNOWN
G	PB2	014383	040376	L	UV	C00		U			RHR PUMP MIN FLOW VAL LEAKING INTERNALLY	CAUSE UNKNOWN
G	PB2	019492	102177	N	UV	C00		T			VALVE CONNECT OFF-GAS VIAL SAMPLER LEAKING	CAUSE UNKNOWN
G	QC1	014060	010476	Y	UV	C00		U			EXCESSIVE LEAKAGE THRU VALVE 1-8802-B / TESTING	UNKNOWN/*INFO LATER*/COPEX-VUL 1/2 GLOBE
G	VY1	015230	063076	C	RM	C00		U 04			4 PRIMARY CONTAINMENT VALVES LEAKED THRU/ TESTING	UNKNOWN
G	VY1	019105*	082077	C	RM	C00		U 07			SEVEN PRIMARY CONTAIN. ISOL VALVES LEAKED THRU---	--DURING TESTING//UNKNOWN(TO BE REPORTED)
G	VY1	021997*	071178	C	RM	C00		U 05			FIVE CONTAINMENT ISOLATION VALVES LEAKED THRU/TEST	UNKNOWN/PROBABLE SEAT PROBLEMS
W	BV1	016358	102476	H	UV	C00		R U			PRI.SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W	BV1	016765	122876	H	UV	C00		R U			PRI.SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W	BV1	019934	120277	X	XV	C00		U			LEAK. THRU FLOW EQUAL.VLV OF RX FLOW INSTRUMENTATI	CAUSE FOR LEAKAGE NOT GIVEN
W	BV1	020796	020178	K	RM	C00		U			PRESSURIZER SPRAY VALVE LEAKED THRU	UNKNOWN
W	BV1	023216*	110878	C	UV	C00		U 12			12 VLVS FOUND LEAKING DURING CONT.PENET.LEAK TEST.	NO CAUSE FOR LEAKAGE GIVEN
W	DC2	021467A	051978	Z	RV	C00		U			SAFETY VALVE OFFED SYS LEAKING THRU	UNKNOWN/REPLACED VALVE
W	DC2	022838A	101078	B	AV	C00		U			PNEUMATIC TEST VALVE LEAKED THRU	UNKNOWN
W	IP2	017568	032877	X	UV	C00		U			DRAIN VALVE ON MANIFOLD LEAKING INTERNALLY	CAUSE UNKNOWN
W	PT2	017806	042077	G	RV	C00		R U			LEAKAGE THRU 3/4 INCH DISCHARGE RELIEF VALVE(PUMP)	UNKNOWN/DIMINISHED WITH OPERATION
W	PT2	017859	050377	G	RV	C00		R U			LEAKAGE THRU 3/4 INCH RELIEF VALVE/PUMP DISCHARGE	UNKNOWN/VALVE WAS REPLACED
W	PT2	022841*	091378	G	RV	C00		C U 02			2-CROSBY 3/4 INCH RELIEF VALVES LEAKED THRU	UNKNOWN/ VALVES WERE REPLACED WITH SPARES
W	RG1	018076*	020776	C	AV	C00		B U 02			CV PURGE EXH & SUP VALVES LEAKED THRU DURING TEST	UNKNOWN
W	RG1	018076A	020776	C	MV	C00		U 02			TWO MOV (8136814) LEAKED THRU D/RING LEAK TEST	UNKNOWN

INTERNAL LEAKAGE

<u>VEN</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SUMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>GROUP</u>	<u>NUM</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	RG1	018785*	082277	N	UV	COO	U	02		LEAKAGE THRU AT LEAST TWO VALVES DILUTED NAOH	UNKNOWN
W	RO2	021616*	050978	L	UV	COO	R	U	02	INLET VALVES SI-867 A & B (BIT) LEAKING INTERNALLY	CAUSE NOT STATED
W	RO2	021748*	061378	L	UV	COO	R	U	02	INLET VALVES SI-867 A & B (BIT) LEAK. INTERNALLY	CAUSE NOT STATED
W	SA1	017199*	021077	W	UV	COO	D	02		INTERNAL LEAKAGE THRU 2 MS VALVES	UNKNOWN/CAUSED SEC FAILURE 017199A
W	SA1	017787	050777	K	XV	COO	U			LEAKAGE THRU EQUAL VALVE ON DP TRANSMITTER(LEVEL)	UNKNOWN
W	SU2	016884	123076	G	MV	COO	U			VALVE IN BORON SYSTEM LEAKING THRU REDUCING PPM	UNKNOWN
W	SU2	019566*	103177	G	MV	COO	R	U	02	MOV-2867C/D LEAKED THRU/BIT ISOLATION VALVES	UNKNOWN/RECURRING
W	SU2	019743*	110977	G	MV	COO	R	U	02	MOV-2867C/D LEAKED THRU / BIT ISOLATION VLVS	UNKNOWN/RECURRING
W	TU3	015006	061176	N	UV	COO	R	U		THRU LEAKAGE CAUSED DILUTION OF BORON INJEC. TANK	UNKNOWN
W	TU4	015009*	061276	N	UV	COO	R	U	02	TWICE, TWO VALVES LEAKED THRU DILUTING BORON TANK	UNKNOWN/TWO VALVES 6-11-76/SAME TWO 6-12-76
W	YR1	018267*	062077	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/VALVES REPAIRED
W	YR1	018367*	062777	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE EVENT/VALVES REPAIRED
W	YR1	018420*	070477	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/VALVES REPAIRED-AGAIN
W	YR1	018484*	071177	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/PCOR PAST REPAIRS
W	YR1	018480*	071477	G	UV	COO	R	U	05	DECIDED TO REPAIR THE 3 PUR VALVES/2 OTHERS ALSO	UNKNOWN PROBLEM/PAST REPAIRS INSUFFICIENT
W	ZI1	014432	031276	Y	AV	COO	U			LEAKAGE THRU AD DIAPHRAGM VALVE	UNKNOWN
W	ZI1	016307	100676	L	RV	COO	U			RELIEF VALVE IN RHRS LEAKED THRU/GASEOUS RELEASE	UNKNOWN
W	ZI1	019138*	102076	N	UV	COO	U	02	V	LEAKING THRU A SERIES OF VALVES/RADIOACTIVE H2O	UNKNOWN
W	ZI1	016574*	112376	N	RM	COO	U	02	V	CONTAINMENT ISOLATION SAMPLE VALVES LEAK THRU	UNKNOWN
W	ZI2	018570	071677	G	UV	COO	R	U		LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN

INTERNAL LEAKAGE

VENT	PLANT	CONT. NO.	EVENT DATE	SHIFT	CURR	FAIL CODE	TYPE	CLASS	CON	MU	PH	KEY	FAILURE MODE	FAILURE MECHANISM
W	Z12	018571	071677	G	UV	C00	R	U					LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN
G	MO1	018468	071177	X	XV	C01	R	D					NITROGEN CHARGING VLV FAILED TO HOLD PRESSURE	OVERTIGHTEN.VAL.HAND.CAUSED "O" RING FAIL
G	DR2	019490*	110277	C	UV	CC2		D 02					SAMPLE LINE ISOLATION VALVES 0501-1A,1B LEAKING	IMPROPER SEAT TO DISK CLEARANCE ADJ
G	DR3	018378A	061177	W	RV	C02	R	D					ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALY	PILOT PIN AKJUSTED INCORRECTLY
G	EN1	022706	100578	S	UV	C02		D					VALVE BODY SEAT FOR P41-F313B FAILED DURING MAINT.	IMPROPER MAINTENANCE PROCEDURES FOLLOWED
G	MO1	017034	011877	X	XV	C02	R	D					VALVE ON ACCUM T14-10 FAILED TO HOLD PRESSURE	VALVE PACKING INSTALLED INCORRECTLY
G	NM1	017849	031777	W	AV	C02		D					MSIV NO. 111 LEAKING INTERNALY	VALVE PCCPET INCORRECTLY INSTALLED
B	T11	016830A	051076	C	RM	C04		D					VALVE LEAKED THRU DURING CONTAINMENT LEAKRATE TEST	DESIGN IMPROPER
C	MI2	019257	092377	G	UV	C04		D					BORIC ACID LEAKING THROUGH DISCHARGE VALVE	VCT PRESS L.T. HEAD PRESS
G	BR2	014390*	021076	C	UV	C04		C D 03					3 BUTTERFLY VALVES LEAKING THRU//DESIGN ERROR	AIR OPERATOR ADDED TO EACH VALVE
W	Z12	017730*	033077	G	UV	C04	B	D 02 V					INJECTION LINE VALVES LEAKING THRU DILUTING BORON	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W	Z12	017729*	040177	G	UV	C04	B	D 02 V					INJECTION LINE VALVES LEAKING THRU DILUTING BORON	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
B	T11	016830B	051076	C	RM	C05		C D 02					2 VALVES LEAKED THRU ON CONTAINMENT LEAKRATE TEST	FAB ERRCR/SEAT RINGS WELDED IMPROPERLY
B	T11	016830*	051076	C	RM	C07		T 03 A					SOME VLVS LEAKED THRU ON CONTAINMENT LEAKRATE TEST	NORMAL WEAR
B	T11	017610*	032477	C	UV	C07	R	T 03 S					LOCAL LEAKRATE TESTING IDENTIFIED SEVERAL VALVES--	--LEAKING THRU//NORMAL WEAR
G	BF1	023070*	120377	W	AV	C07		D 06					6 MSIVS EXCEEDED THEIR LEAKAGE LIMITS	DEGRED. CF SEAT.SURF. THRU NORMAL OPERATN
G	BF3	023031*	111478	P	UV	C07		T 35					35 ISOLATION VLVS LEAKING ABOVE LIMIT	NORMAL WEARING OF THE SEATS
G	EN1	021085*	041178	C	RM	C07		T 03 B					VARIOUS CNTNMNT ISOLATION VALVES LEAKING	NORMAL WEAR ON VALVE COMPONENTS
W	HN1	018779	081177	U	XV	C07		T					#2 S/G NARROW RNG.LVL.SETT.POT VENT VLV.LEAK.INTER	SEAT.SURF.STM.CUT/NORMAL WEAR
W	RO2	019343	081077	C	RM	C07	R	T					CV PURGE OUTLET INNER VALVE NOT OPERABLE	EXCESSIVE INTERNAL LEAKAGE THROUGH VALVE

INTERNAL LEAKAGE

VENT	PLANT	CONT. NO.	VENT DATE	SYST	CDHP	FAIL CODE	TYPE	CLASS	CN	MPH	KEY	FAILURE MODE	FAILURE MECHANISM
G	BR1	020920	040178	X	XV	C09	T					VAC - CAC-V64 LEAKED THRU INTERNALLY	RUST FOUND IN VALVE SEAT
B	AR1	018854*	072677	C	RM	C10	C	T	02	V		ISOLATION VALVES LEAKED THRU DURING COMT LEAK TEST	FOREIGN MATERIAL PROBABLY CAUSED LEAKAGE
C	CC1	014700	041976	C	UV	C10	D					DRAIN LINE ISOLATION VALVE LEAKING THRU ON TESTING	FOREIGN MATERIAL&FREQ USE, DAMAGED SEAT
C	MY1	022144	072178	C	RM	C10	T					CNTNMNT ISO VALVE PD-A-122 LEAKING INTERNALY	PLASTIC ELECT TIE-WRAP LODGED
G	DR2	019319	102177	C	XV	C10	T					CNTNMNT AIR LOCK VENT VALVE LEAKING	VALVE SEATING SURFACES DIRTY
G	DR3	018378B	061177	M	RV	C10	R	T				ELECTROMATIC RELIEF VALVE 203-3E LEAKING INTERNALY	DIRT UNDER VALVE SEAT
G	DR3	021461	042478	E	RM	C10	T					FIRE PUMP TANK LEVEL CONTROL VALVE STUCK OPEN	PIECE OF METAL STUCK IN VALVE
G	MI1	018944	081877	D	RV	C10	T					CORE SPRAY PUMP DISCH RV LEAKING	PARTICLES BETW VAL DISK AND GUIDE
G	MO1	019466	091077	C	MV	C10	R	T				VALVE MO-2373 LEAKING INTERNALY	FOREIGN MATRL ON VAL SEAT
G	MO1	019470	101277	C	RM	C10	T					VALVE CV-7436 LEAKING INTERNALY IN EXCESS OF T.S.	DIRT AND SCALE ON SEATING SURFACES
G	PB2	022463*	090478	N	UV	C10	T	02	V			BALL VALVES IN RAD WASTE MANAGE SYST LEAK INTERNAL	DIRT DEPOSITS ON VALVE SEATING SURFACES
G	PB3	014042	011076	U	UV	C10	T					FEEDWATER FLUSH VALVE MO-3663-UNACCEPTABLE LEAKAGE	DAMAGE TO SEATING SURFACES CAUSED BY RUST
G	PB3	014213	011076	D	UV	C10	R	T				CORE SPRAY ACCUM. VENT VLV SV-92248-UNACCEP. LEAKAGE	SEAT WAS DAMAGED BY FOREIGN MATERIAL
G	PB3	015852	090776	C	SV	C10	R	T				TORUS ATMOS. SAMP. INBD. ISO. VLV LEAKED THROUGH	VALVE SEAT NEEDED CLEANING
W	PT2	014158	022076	C	AV	C10	R	T				LRT BETWEEN PURGE SUPPLY VAVES SHOWED INTERNAL LEAK	DIRT IN VALVE/CLEANING STOPPED LEAKAGE
W	PT2	014491	042376	C	RM	C10	T					CONTAINMENT SUPPLY VALVE 2CV-3245 LEAKED / TEST	DIRT ON MATING SURFACES OF BUTTERFLY VALV
W	PT2	017721	041977	N	RM	C10	T					CONTAINMENT ISOLATION VALVE LEAKED THRU	SLUDGE ON SEAT OF COPEX-VULCAN MOD F VALV
W	YR1	023146	120578	C	RM	C10	T					TRIP VALVE TV-207 (CONTAINMENT ISOLATION) LEAK THRU	SUSPECTED FOREIGN MATERIAL UNDER SEAT
W	ZI1	017254*	021377	C	AV	C10	B	T	02			VALVES 1ADV-RV0002/RV0004 LEAKED THRU	EXTRANECUS MATERIALS CAUGHT IN THEIR SEAT
C	CC1	022600*	092378	N	DV	C12	U	02				#116012 SFP EXH. FAN DISCH. DMPRS. LEAKING INTERNALLY	VLVS WERE OUT OF ADJUSTMENT

INTERNAL LEAKAGE

PLANT	CONT. NO.	EVENT DATE	SYSTEM	COMP	FAIL. CODE	TYPE	CLASS	CON MUM PH	CONTR	FAILURE MODE	FAILURE MECHANISM
C CC2	019432	101177	C XV	C12	D					CONT. ISO. VLV FOR PLANT SER. WTR. LEAKING BY SEAT	BENT VLV. STM. PREVENTED VLV FROM SEATING
G EN1	018189F	051877	W RM	C12	D					MSIV INBOARD "A" LEAKING INTERNALLY	STROKE NEEDED ADJUSTMENT
G MD1	022810	101478	W AV	C12	D					OUTBOARD MSIV AD-2-86A LEAKING INTERNALLY	VALVE STEM BENT, LOWER GUIDE RIB WORN
W BV1	023318*	122078	C RM	C12	C D 02	V				CONT. AIR EJECTOR PENET. ISO. VLVs. LEAKING	RUBBER VLV. SEAT WARPED & UNABLE TO SEAL
W DC1	017245A	022277	C RM	C12	B D 03	S				SEVERAL CONTAINMENT ISOLATION VALVES LEAKING THRU	LOOSE ACTUATORS WERE PRIMARY CAUSE
W DC1	021769A	062178	C RM	C12	B D 02	V				CONTAINMENT PURGE VALVES LEAKING THRU ON TESTING	ADJUSTMENT OF BUTTERFLY VALVE/DESIGN PROB
W IP3	022407	090378	H UV	C12	R D					BYPASS VAL FOR LOOP A ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED
W IP3	022405	091278	H UV	C12	R D					BYPASS VAL FOR LOOP B ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED
W KE1	018046A	032177	C RM	C12	D 03					EXCESS LEAKAGE THROUGH CONTNMENT ISO VALS (THREE)	VALVE STROKE ADJUSTED
W KE1	018046C	032177	C RM	C12	D					EXCESS INTERNAL LEAKAGE CONTNMENT ISO VLV	VAL INTERNALS OUT OF ADJ
W PR2	046354*	112276	C RM	C12	D 03					VALVES IN 3 PN SHOWED EXCESSIVE LEAKAGE/TESTING	REPLACE STEM/SEAT 2 JAMMED NUT 3 MALADJUSTED
W PT1	014097*	010876	C RM	C12	D 09					NINE VALVE FAILURES/INTERNAL/EXTERNAL LEAK/TESTING	LOOSE BODY TO BONNET/IMPROPER SEATING
W SA1	017785	051277	N RM	C12	R D					SPRAY VALVE (1PS3) LEAKED THRU/PRESS DECREASED	VALVE OPERATOR ADJUSTMENT PROBLEM
W SA1	018800*	073177	N RM	C12	R D 03					SPRAY VALVES (1PS1/2/3) LEAKED THRU	VALVE OPERATOR ADJUSTMENT PROBLEM
W ZI2	018537*	072177	G MV	C12	B D 02					VALVES 2MOV-S18801A/B LEAKING THRU DILUTING BORON	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
W ZI2	018720	081177	G MV	C12	R D					VALVE 2MOV-VC8801B LEAKING THRU DILUTING BORON	DARLING 4" GATE VALVE REQUIRED ADJUSTMENT
W ZI2	019500*	101277	G MV	C12	B T 02					VALVES 2MOV-S18801A/B LEAKING THRU DILUTING BORON	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
G FP1	022465*	091478	C RM	C13	C U 03					VAC BREAKER VALVES 27-V8-3,4,5 LEAKED EXCESSIVELY	REPLACED "O" RING SEALS
W NA1	022933	110178	W RM	C13	T					MAIN STEAM TRIP VALVE 1-TV-MS-111A LEAKING THRU	DETERIORATED INTERNAL GASKET
W TR1	021624	051978	K UV	C13	T					LEAKAGE THRU PLUG VALVE EXCESSIVE DURING TESTING	LOWER SEAT GASKET MISSING

INTERNAL LEAKAGE

VEN	PLAN I	CONT. NO.	EVENT DATE	CODE	FAIL CODE	SWAL	C ON P M	WORK	FAILURE MODE	FAILURE MECHANISM
W	YR1	020422	012678	H UV	C13	D			VALVE SI-TV-604 WAS FOUND TO BE LEAKING THRU	SEAL RING FAILED #
C	FC1	018600*	100475	N RM	C14	T 02	V		CNTMNT PURGE ISO VALVES LEAK IN EXCESS OF SPEC	VALVE PACKING & SEALS OUT OF ADJUSTMENT
G	MO1	018510	071977	X XV	C14	R T			NITROGEN CHARGING VAL FAILED TO HOLD PRESS	PACKING AT END OF LIFE
G	MU1	018669	081077	X XV	C14	R T			VALVE CRD HCU 30-11 WOULD NOT HOLD PRESS	PACKING FAILURE
G	MO1	022806*	102278	C MV	C14	T 02			REACTOR CLEANUP ISO VALS MO-2397*-2398 LEAK EXTRNL	EXCESS PACKING GLAND LEAKAGE, IMP T.S. ADJ
W	RO2	020181	122277	J RM	C19	T			VALVE V2-14C LEAKING INTERNALLY / NOT SHUT FULLY	INSUFFICIENT VALVE STEM LUBRICATION
G	BR1	019387	102577	D MV	C20	D			B CORE SPRAY LOOP FULL FLOW TST. VLV E21-F015B LEAK	VLV OPER. HAD STRIPPED OPERATING GEARS
W	SU1	014870	032676	G UV	C22	R D			DV 1-CH-85 RUPTURES DIAPHRAM/LEAKAGE THRU VLV	GRINNEL DIAPHRAGM FAILED/NORMAL WEAR
W	SU1	015959	082376	G UV	C22	R D			DIAPHRAGM VALVE (1-CH-125) LEAKED THRU EXCESSIVELY	RUPTURED DIAPHRAGM/GRINNEL/NORMAL WEAR
W	SU1	017052*	012677	G UV	C22	R D 02			TWO DIAPHRAGM VALVES (1-CH-83/95) LEAKING THRU	EXCESSIVE DIAPHRAGM WEAR/OVERTIGHTENING
W	SU1	017218	022077	G UV	C22	R D			DIAPHRAGM VALVE (1-CH-98) LEAKING THRU	EXCESS DIAPHRAGM WEAR/POSS OVERTIGHTENING
W	SU2	018676	081577	G UV	C22	R D			DIAPHRAGM VALVE (1-CH-144) LEAKING THRU	CRACKED DIAPHRAGM ON GRINNEL VALVE
W	YK1	017731	042577	Y UV	C22	D			SYS VOL CALCULATIONS INDICATED VALVE LEAKING THRU	FAILED DIAPHRAGM IN 2 INCH GRINNEL VALVE
W	YR1	018872A	081777	C RM	C22	T			EXCESSIVE LEAKAGE THRU (TV-40B) CONTAINMENT VLV	DETERIORATED DIAPHRAGM
W	Z11	014235	020376	G UV	C22	T			BORIC ACID VALVE (1VC8446A) FOUND LEAKING THRU	DIAPHRAGM FAILED DUE TO TIME/TEMPERATURE
W	Z12	015191	061576	G UV	C22	R T			BORIC ACID FILT BYPASS VLV (1VC8468) LEAKING THRU	FAILED DIAPHRAGM ON GRINNEL 2" MOD 2471
W	Z12	016342	081476	G UV	C22	R T			HOLDUP TANK VALVE DVC8264 LEAKING EXTERNALLY	DIAPHRAGM FOUND RUPTURED
G	EN1	018189G	051877	U RM	C23	T			1 CONDENSATE DRAIN VALVE LEAKING EXCESSIVELY	TORQUE SWITCH OUT OF ADJUSTMENT
G	QC1	014057	011676	L MV	C23	R T			VALVE MO-1-1001-37A FAILED LEAKRATE TEST	TORQUE SW OUT OF ADJUSTMENT/LIMITORQUE
G	QC1	014056	012676	N MV	C23	R D			VALVE 1-1201-2 FAILED LEAKRATE TEST	TORQUE SW MALFUNCTION/REPLACED/LIMITORQUE

INTERNAL LEAKAGE

PLAN NO.	CONT. NO.	EVENT DATE	STATUS	COMP	FAIL CODE	TYPE	CLASS NO.	CH PH	KEY	FAILURE MODE	FAILURE MECHANISM
G QC1	020531	032077	C	MV	C23	T				LEAKTEST SHOWED EXCESSIVE LEAKAGE THRU DRAIN VALVE	TORQUE SW OUT OF ADJUSTMENT
B T11	013970	010276	N	AV	C24	S D				INADVERTANT RELEASE THRU ADV-WDL-V125	PERSONNEL/OPER FAILED TO BLEED OFF AIR
B RS1	019535*	092177	C	AV	C25	C T 02				RB PURGE INLET & OUTLET VALVE LEAKED THRU ON LLRT	SEAT DEGRADATION ON 66 IN BUTTERFLY VALVE
C FC1	019437	101177	Y	XV	C25	U				EXCESSIVE LEAKAGE THRU BYPASS VALVE AROUND VA-66	DEFECTIVE SEAT
C FC1	023140*	120578	C	RM	C25	U 02 V				CONT PURGE VALVES LEAKING THRU	MODIFICATIONS DONE DURING REFUEL OUTAGE
C PA1	014522	032876	C	AV	C25	T				ISO VAL CV-1101 LEAKING INTERNALLY	TEFLON VALVE SEATS WORN (NORMAL WEAR)
C PA1	019466	081477	C	AV	C25	T				PURGE AIR EXHAUST ISC VLV LEAKING INTERNALLY CV-18	WORN RUBBER VAL DISK SEAT
C PA1	019546*	101877	C	AV	C25	U 02 V				CNTNMNT PURGE ISO VALVS LEAKING AFTER MODIFICATION	VALVES NOT SEATING PROPERLY
G C01	019292	091277	S	UV	C25	T				A HEAT EXCHANGER OUTLET VALVE LEAKING THRU	PORTION OF RUBBER VALVE SEAT MISSING
G EN1	018189A	051877	L	UV	C25	T 07				7 RHR VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189	051877	H	UV	C25	T 04				4 HPCI VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189C	051877	Q	UV	C25	T 03				3 RCIC VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189D	051877	D	UV	C25	T 02				2 CORE SPRAY PUMP VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G FP1	018477*	072877	W	RM	C25	T 12 Z				PRIMARY CNTNMNT ISOLATION VALVES LEAKING INTERNALLY	WEAR OF VALVE SEATS AND DISKS
G M01	019471	091077	W	AV	C25	T				MSIV A02-86A LEAKING INTERNALLY	VALVE SEAT FAILURE
G M11	022811	101478	W	AV	C25	D				D OUTBOARD MSIV A0-2-86D LEAKING INTERNALLY	SCRATCH FOUND ON MAIN VALVE SEAT
G M01	023390	112478	H	XV	C25	U				HPCI DRAIN VALVE CV-2043 LEAKING THRU INTERNALLY	INTERNAL PARTS NEED REPLACEMENT
G DC1	017702	042377	W	AV	C25	T				MSIV NS04B LEAKING INTERNALLY	TIGHT CRACKS AROUND ENTIRE VALVE SEAT
G DC1	022357C	091678	W	AV	C25	D				MSIV NS03A LEAKING INTERNALLY IN EXCESS OF T.S.	FAILURE OF MAIN PORT TO SEAT PROPERLY
G DC1	022651A	101878	T	UV	C25	T				OFF GAS SYSTEM ISO VALVE V-7-31 LEAKING INTERNALLY	VALVE HAS DAMAGED RUBBER SEAT

INTERNAL LEAKAGE

REV	PLAN Y	CONT. NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CONTR. PH	KEY	FAILURE MODE	FAILURE MECHANISM
G	QC1	022983*	112078	C	AV	C25	U	06			SIX VENT VALVES LEAKING THRU ON CONT LEAKRATE TEST	SEAT PROBLEMS, REPAIRED SOME, REPLACED REST
G	PB2	014412*	033076	M	AV	C25	T	05			MSIVS 86A, 86B, 86C, 86D, 80D LEAKING EXCESSIVELY	SLIGHT DISTORTION ON VALVE SEAT
G	PB3	014035	010776	H	AV	C25	T				HPCI EXHAUST LINE DRAIN VLV AD-9248 -EXCESS-LEAK.	POOR MATING BETWEEN PLUG & SEATING SURF.
G	PI1	019694*	111377	C	RM	C25	T	18			18 PRI CNTNMNT ISO VALVES LEAKING IN EXCESS OF T.S	NORMAL DETERIORATION OF DISK/SEATS
G	QC1	014064	010376	M	MV	C25	U				EXCESSIVE LEAKAGE THRU MS DRAIN VALVE MD-1-220-1	SEAT-DISC PROBLEM/Crane 3 INCH GATE 783-U
G	QC1	020531B	032077	C	MV	C25	T	02	V		EXCESS LEAKAGE THRU SPRAY VALVES DURING TEST	IMPROPER SEATING OF VALVE
G	QC2	020396*	011578	M	AV	C25	C	T	03		3 MSIV HAD EXCESSIVE THRU LEAKAGE ON LEAKRATE TEST	SEATING SURFACES WERE LAPPED
G	QC2	020944	030478	G	RV	C25	T				SBLC RELIEF 2-1105A LEAKED THRU / LOW PUMP OUTPUT	MACHINED SEAT AND RESET TO 1450 PSIG
M	DC1	014736*	050276	C	RM	C25	C	T	03	B	VALVES LEAKED THRU DURING CONTAINMENT ISOL TESTING	SEAT PROBLEMS/DEPOSIT BUILDUP AND WEAR
M	IP2	014209	012376	C	RM	C25	T				INTERNAL LEAKAGE THROUGH VLV FCV-1171	DISK DID NOT SEAT PROPERLY
M	IP2	018788B	051377	K	RV	C25	T				INTERNAL LEAKAGE PAST VALVE PCV-466	EXCESSIVE VALVE SEAT WEAR
M	KE1	016486*	020377	C	RM	C25	T	04			EXCESS LEAKAGE THROUGH CNTNMNT ISO VLVS (FOUR)	FAILURE OF RUBBER VALVE SEATS
M	KE1	018046B	032177	C	RM	C25	T				EXCESS LEAKAGE (INTERNAL) CNTNMNT ISO VLV	VALVE SEAT CLEANED
M	PR1	017488A	032477	C	RM	C25	C	T	02	V	PURGE SUPPLY VALVES (BUTTERFLY)/LEAKED THRU	SEAT PROBLEM/REPLACED SEATS
M	PR2	015335	080676	C	RM	C25	T				NITROGEN SUPPLY VALVE CV-31554/EXCESSIVE LEAKAGE	NEW SEAT AND GASKETS WERE INSTALLED
M	PR2	016947	011177	C	RM	C25	D				CONTAINMENT ISOLATION VALVE CV-31349 LEAKING THRU	GALLED GAGE AND PLUG STEM/REPLACED SAME
M	PR2	023222*	112878	C	RM	C25	B	U	02		OUTER CONT. EXH & SUPPLYS(25A625B) LEAKING THRU	SEATS NOT ADJUSTED PROPERLY(RECURRING)
M	RG1	013995*	011176	C	AV	C25	B	U	02		CV PURGE SUPPLY&EXHAUST VALVE LEAKED THRU/TESTING	RUBBER SEAT SHOES REALIGNED/LOW TEMP PROB
M	RO2	022681	100378	C	RM	C25	T				42IN BUTTERFLY VAL LEAKING PAST SEAT	NORM WEAR OF NORDEL RUBBER SEAT
M	TR1	021624A	091978	K	UV	C25	D				TWO BUTTERFLY VALVES LEAKED THRU EXCESSIVELY/TEST	RUBBER SEATS REQUIRED RETORQUING

INTERNAL LEAKAGE

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u> <u>.</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>C</u> <u>O</u> <u>M</u> <u>P</u> <u>S</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>Y</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>N</u> <u>U</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>	
W	YR1	018872	081777	C	RM	C25		D		EXCESSIVE LEAKAGE THRU (TV-211) CONTAINMENT VLV	WORN SEAT AND DISC	
W	YR1	023103	012778	M	MV	C25		T		CS-MOV-540 LEAKING THRU	GATE WAS LAPPED AND RETURNED TO SERVICE	
W	Z11	016047A	091676	H	AV	C25		D		NITROGEN VALVE (1HCV-SI943) LEAKED THRU	LEAKING SEAT OF AD PLUG VALVE	
W	Z11	016044	092176	C	AV	C25		R	T	CONTAINMENT PURGE ADV-RV0002 LEAKED THRU	BULGE ON SEATING SURFACE OF BUTTERFLY VAL	
W	Z11	016377*	110476	C	AV	C25		B	T	02	VALVES 1A0VRV0002/1A0VRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	016609*	112276	C	AV	C25		B	T	02	VALVES 2A0VR0002/2A0VR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	017042*	011677	C	AV	C25		B	T	02	VALVES 1A0VRV0002/1A0VRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	019165*	090177	C	AV	C25		B	D	02	VALVES 1RV0001/1RV0003 LEAKED THRU	SEATS WERE OUT OF ADJUSTMENT
W	Z11	020000	120877	C	AV	C25		R	T		VALVE 1A0V-RV0002 LEAKED THRU	SEAT CONTRACTION DUE TO LOW TEMPERATURE
W	Z12	015163	031576	C	AV	C25		R	T		CONTAINMENT PURGE ISOLATION ADV LEAKED THRU	VALVE SEAT INADEQUATELY TORQUED/42" BUTFLY
W	Z12	017728	040577	C	AV	C25		R	T		CONTAINMENT PURGE VALVE (2A0V-RV0002) LEAKED THRU	SEATS CONTRACTED/LOW TEMP/42" BUTTERFLY
W	Z12	020262	010978	C	AV	C25		R	T		CONTAINMENT VLV (2A0V-RV0002) LEAKING THRU	SEAT SEPARATED FROM VALVE DISC/LOW TEMP
G	DA1	014445*	033176	W	RV	C27		T	06		SIX RELIEF VALVES LEAKING INTERNALLY	EXCESS STEAM CUTTING ON PILOT VALVE SEAT
G	DR2	019656	110877	N	AV	C27		T			ISOLATION VALVE 9207A LEAKING INTERNALLY	PILOT VALVE SEAT LEAKAGE
G	DR3	018377	061277	W	RV	C27		R	D		ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALLY	DEFECTIVE PILOT VALVE STEM
G	M11	018156	061877	W	RV	C27		T			RV DISCH TEMP HIGH/VLV LEAKING STM INTERNALLY	COLLAPSED FILTER, STM CUTTING OF PLT SEAT.
G	M11	020698	031078	K	RV	C27		T			RV FAILED TO RESEAT	LEAKAGE IN PILOT VALVE / STEAM CUT
G	PI1	019859	111577	W	RV	C27		R	T		RELIEF VALVE 203-3B DETERMINED TO BE LEAKING	FIRST+SECOND STAGE OF PILOT VALVE LEAKING
G	PI1	019756	111777	W	RV	C27		R	T		RELIEF VALVE 203-3D DETERMINED TO BE LEAKING	FIRST STAGE OF PILOT VLV SEAT LEAKING

EXTERNAL LEAKAGE/RUPTURE

VENT	PLANT	CONT. NO.	EVENT DATE	SYSTEMS	COMP	FAIL CODE	TYPE	CLASS	CLASS	UN	KEY	FAILURE MODE	FAILURE MECHANISM
B	ARI	016665	120176	N	UV	D00		U				VLV SF-11 HAD A CRACK IN THE HEAT AFFECTED ZONE	REASON FOR CRACK IS UNKNOWN
B	DE3	023312	120878	U	UV	D00		U				VALVE 3FDW-46 LEAKED ON RTD	REASON FOR LEAKAGE NOT STATED
B	RS1	015612	060576	L	UV	D00		U				VENT VALVE ON DECAY HEAT COOLER EXTERNAL LEAKAGE	UNKNOWN/NIPPLE REPLACED/POSS VIBRATION
C	CC1	020063*	012278	K	XV	D00		T	02			EXTERNAL LEAKAGE ON PRESS. INST. RT VLV&A SPRAY VLV	STEM PACKING LEAKS
G	BF1	022255A	090373	C	RM	D00		D				VLV FCV-68-77 WAS LEAKING AT THE BONNET	NO CAUSE GIVEN FOR BONNET LEAKAGE
G	BR1	021253*	042178	P	UV	D00		U	02	V		VALVES FOUND LEAKING WATER INTO PUMP SPEED CONTROL	UNKNOWN/CAUSE OF LEAKAGE NOT STATED
G	FP1	016136	061776	N	UV	D00		U				LEAKING PUMP DRAIN VALVE ON FEEDWATER PUMP	CAUSE UNKNOWN
W	IP3	022403	091278	X	LV	D00		U				MANIFOLD STOP VLV 561A LEAKING BCRATED WTR. EXTERN.	NO CAUSE FOR LEAKAGE GIVEN
W	NA1	023329	122678	W	XV	D00		U				ROOT ISOLATION VALVE 1-MS-4 LEAKING STEAM (REF LEG)	CAUSE NOT STATED
W	SU1	015958	090976	H	UV	D00		U				EXTERNAL LEAKAGE OF NITROGEN FROM ST VALVE HCV1549	BODY TO BONNET LEAK/UNKNOWN CAUSE OF LEAK
W	SU1	018930	082377	K	XV	D00		U				VALVE 1-RC-95 (RTD BYPASS) LEAKING/LEAKAGE > 1 GPM	UNKNOWN/BACKSEATED VALVE TO CORRECT LEAK
W	SU1	021132	040778	G	UV	D00		U				DIAPHRAGM VALVE 1-CH-93 DEVELOPED EXTERNAL LEAK	UNKNOWN/BODY TO BONNET LEAK
W	Z11	021107	040278	X	XV	D00		U				TRANSMITTER ISOLATION VALVE HAD STEAM LEAK	UNKNOWN
W	Z12	013943	010676	U	XV	D00		U				S/G LEVEL INSTRUMENT ROOT VALVE LEAKING EXTERNALLY	UNKNOWN/BODY-BONNET LEAK
W	Z12	015841	082176	X	XV	D00		U				PZR. LVL. CHAN. 2LT-461 UPPER ROOT VLV. LEAKING EXTERN	NO CAUSE FOR LEAKAGE GIVEN
C	PA1	017981	052677	G	RV	D02		D				RV-2255 LEAKING EXTERNAL/PART. UNSCREW. FROM COLLET	PERSONNEL ERROR/MAINTENANCE IMPROP. PERF.
G	FP1	022276	083078	N	XV	D02		D				BACKHOE OPERATOR BROKE FIRE LOOP ISOLATION VALVE	PERSONNEL ERROR
G	PI1	022956	111678	N	XV	D02		D				HYDRANT SHUT-OFF VALVE BLEW OFF LINE	PERSONNEL ERROR IMPROPER INSTALLATION
C	CC1	015271A	062776	G	RV	D04		C	D			PIN-HOLE LEAK DISCOV. IN BONN. #11 BOR. ACD. PHP. RELIE	SUC. REL. MADE OF CARBON STEEL; DESIGN ERROR
W	Z11	022649	090478	X	XV	D04		R	D			HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TOO LOW

EXTERNAL LEAKAGE/RUPTURE

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>PK</u>	<u>YR</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	Z11	022516	090878	X	XV	D04	R	D					HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z11	022844	091478	X	XV	D04	R	D					HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
B	DB1	021579	050978	C	CV	D05		D					CONT.VAC.RELIEF CV-5070 HAD EXCESSIVE LEAKAGE	DEF.INITIAL INSTAL. OF TEST CONN. PIPING
B	DB1	021578	051178	C	CV	D05		D					CONT.VAC.RELIEF CV-5076 HAD EXCESSIVE LEAKAGE	VLV NOT PROPERLY SEATING AGAINST VLV LINE
W	HN1	018778	073077	G	XV	D05	R	D					B CHARG PUMP BYPASS ISO VAL LEAKING EXTERNALY	DEFECTIVE CASTING
C	MI2	017490	031577	B	XV	D07		T					STM TRAP ISO VAL LEAKING EXTERNALY	NORMAL PACKING WEAR
G	DR2	019154	091377	W	RM	D07		T					MSIV 203-28 HAS PACKING LEAK	PACKING REACHED NORMAL END OF LIFE
W	HN1	021906	071178	X	XV	D07		T					NO 4 SIM LIN ELBOW TAP DRAIN VAL LEAKING	NATURAL END OF LIFE
G	DR2	020950	033078	H	RM	D08		T					VALVE MD-2301-3 LEAKING EXTERNALY	STEAM CUT OF SEAL RING
W	HN1	021387	050478	G	XV	D08	R	T					PINHOLE LEAK IN B CHG PUMP DISCH VALVE	SEVERE EROSION CAUSED BY THROTTLING VAL
W	HN1	021335	050978	G	XV	D08	R	T					BODY TO BONNET LEAK B CHG.PMP BYPASS ISO VLV	ERROSION FROM HI VELOCITY WTR FLOW
G	MD1	023388	111478	F	RM	D09		T					PINHOLE LEAK IN CV-1729,RHR D/P CONTROL VALVE	CORROSION/ERROSION OF UPPER VALVE BODY
W	SU2	020236	012078	L	MV	D09		T					18 GPM LEAK FROM MOV-RH-2700 PACKING GLAND	CORROSION FAILED STUDS HOLDING PACKING
C	FC1	020365	011778	G	RV	D11	B	T					WELD ON 1-B CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	020585	021578	G	RV	D11	B	T					WELD ON CH-1A CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	021118	040878	G	RV	D11	B	T					WELD ON VALVE CH-219 CRACKED	VIBRATION OF PIPING IN SERVICE
W	DC1	018418	070677	B	MV	D11		T					AUX FEED WATER VALVE FOUND WITH CRACK IN BODY	WATER HAMMER AND VIBRATION
G	CO1	020054	120577	X	CV	D12		U					EXCESS FLOW CHECK VALVE LEAKING EXTERNALY	LOOSE NLT ON VALVE BODY
G	EN2	022212	081078	C	CV	D12		D					VACUUM BREAKER 2T48-F328A LEAKING EXTERNALY	LOOSE MECHANICAL PARTS ON VALVE BODY
C	PB2	016967	020877	H	MV	D12		U					EXTERNAL STM LEAK VAL MD-2-23-16	VAL PACKING LUBE PLUG LEAKING

EXTERNAL LEAKAGE/RUPTURE

VEN	PLANT	CONT. NO.	EVENT DATE	SY	CUM P	FAIL CODE	TYPE	CLASS	CON MUM PM	KEY	FAILURE MODE	FAILURE MECHANISM
W	IP3	G22875	100478	N	UV	D12	U				VALVE FM-1 LEAKING EXTERNALLY	VALVE BODY RUPTURED
W	Z11	G18456	032277	G	UV	D12	D				SENSING LINE VALVE (1VC8157) LEAKED EXTERNALLY	BROKEN PACKING GLAND STUD
B	DB1	021177	041078	B	CV	D13	U				SHUT DOWN AUX.FDPMP.1-2 DUE TO STM-LEAK ON MS-735	STM-LEAK CAUSED BY BAD COVER GASKET&SURF.
B	DB1	021851	060578	L	CV	D13	T				CORE FLOOD LINE DISC.CK.VLV CF30 LEAKING AT BONNET	FAILURE OF BONNET GASKET
B	T11	016382	110676	L	MV	D13	D				EXTERNAL LEAK INCREASED WHEN MOV (DH-V1) OPENED	LEAKAGE PAST SEAL RING GASKET/SHUT VALVE
C	CC2	017455	031477	W	XV	D13	T				S/G COMB.LVLEPRESS ROOT STOP VALVE LEAK. EXTERNAL.	GASKET FAILURE IN BOLTED BONNET
C	CC2	019215	100777	K	CB	D13	U				EXTERNAL LEAKAGE FROM 22B SI LOOP CHECK VALVE	FAILED BONNET GASKET
C	SL1	C155C3	C62676	G	RV	D13	T				RELIEF VALVE ON BORON ACID SYSTEM/EXTERNAL LEAKAGE	GASKET FAILED ON INLET TO VALVE
G	BR1	019086	091177	S	UV	D13	D				RHR SERVICE WTR.HEAT XCHGER.1B IN.VLV GASKET RUPT.	RUBBER GASK.MAT.NCT DESIGN.FOR OP.PRESS.
G	DR3	016017	092276	W	UV	D13	T				VALVE 3-220-1 LEAKING BODY TO BONNET	DETERIORATED PRESSURE SEAL RING
G	EN1	018189E	051877	C	RM	D13	T 02				2 PURGE EXHAUST VALVES LEAKING EXCESSIVELY	FAILED C-RING GASKET
W	JF1	019699	111377	B	UV	D13	T				VALVE HV3226 LEAKING EXTERNALLY (STM. SUP. VLV)	LOWER SEAT GASKET BLOWN
W	Z11	016047	091676	H	AV	D13	T				NITROGEN FILL VALVE (1S188758) LEAKED EXTERNALLY	BODY TO BONNET LEAK CF AQ PLUG VALVE
B	CR3	017322A	030777	X	UV	D14	T				MUV-26 EXTERNAL LEAKAGE	PACKING FAILURE / REPLACED PACKING
	CR3	019873	093077	N	UV	D14	T				LEAK.FROM MAKE-UP DISCH.PRESS.IND.ISO.VLV MUV-184	PACKING FAILURE/RADICAC.GAS RELEASED
	DB1	020269A	010378	Y	UV	D14	T				LEAKAGE OBSERVED FROM PACKING ON VLV DH2735	PACKING WAS LOOSE ON VLV;VLV WAS REPACKED
B	DB1	020269B	010578	Y	XV	D14	T				PACKING LEAK PRESS.LVL.TRANSMITTER SOURCE VLV PACK	VLV PACKING GLAND LOOSE;VLV WAS REPACKED
A	DE1	020092	122077	K	UV	D14	T				VALVE IRC-2 LEAKING EXTERNALLY	VALVE PACKING FAILED
	DE2	014811	011076	Y	XV	D14	T				INST.ROOT VAL ON PRESS LEV TRANS LEAKING EXTERNAL	VALVE PACKING FAILURE
B	TE2	019960	120177	N	XV	D14	T				VALVE RC-16 LEAKING EXTERNALLY	VALVE PACKING FAILED

EXTERNAL LEAKAGE/RUPTURE

<u>VE</u>	<u>PLAN</u>	<u>CONT.NO.</u>	<u>EVENT</u>	<u>DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CUN</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	DE2	021130	040778	N	UV	D14	T					VALVE ZRC-3 LEAKING EXTERNALLY	VALVE PACKING FAILURE
B	DE2	021130A	040778	N	XV	D14	T					EXTERNAL LEAK ON AN INSTR. LINE ROOT VALVE	VALVE PACKING FAILURE
B	DE2	023427	123078	K	XV	D14	U					SPRAY CONTROL BYPASS VALVE ZRC-2 LEAKING EXTERNAL	PACKING LEAK
B	RS1	019794	111777	K	XV	D14	T					PRESSURIZER VENT VALVE LEAKING EXTERNALLY	BACKSEATING VELAN GLOBE VALVE STOPPED LEAK
B	TI1	020294	011778	N	XV	D14	T					WHILE CLOSING MU-V74A EXCESSIVE EXTERNAL LEAKAGE	PACKING IN VALVE WAS WORN
C	CC1	021057	041178	G	UV	D14	D					VLV CVC-397(LETDOWN-ISO.VLV)HAD EXT.PACKING LEAK	VLV STM.PACKING WAS WORN
C	CC2	018929	082077	K	RM	D14	T					PRESS.SPRAY VLV 2-CV-100E LEAKING EXTERNALLY	LEAK.DUE TO FAILED PACKING
C	CC2	019205	100477	G	UV	D14	T					LETDOWN CONT.VLV(2-CV-110Q-(V)HAD EXT.LEAK ON PACK	PACKING FAILURE/VLV REPACKED,LEAKAGE STOP
C	FC1	021528	051478	C	RM	D14	T					VALVE PCV-742D LEAKING EXTERNALLY	VALVE PACKING TIGHTENED
C	PA1	015438	082376	C	RM	D14	T					VALVE CV 180B LEAKING IN EXCESS OF T.S.	VALVE PACKING FAILURE
G	BF1	022258	090378	C	RM	D14	T					VLV FCV-69-1 WAS LEAKING AT THE PACKING INTO DRYWELL	NORMAL PACKING LEAK;ADJ.PACK.,LEAK STOPPD
G	BF2	020775	031878	K	UV	D14	R T					VLV FCV-68-33 LEAKING EXTERNALLY INTO DRYWELL	LEAKAGE OCCURRED FROM THE PACKING
G	BF3	018642	073077	K	UV	D14	R T					VLV FCV 3-68-33 HAD EXTERNAL LEAKAGE INTO DRYWELL	PACKING LEAK;NORMAL WEAR & DETER.OF PACK.
G	BR1	018695*	071777	K	UV	D14	C T 03 B					VLV EXT. LEAK. ON 3 OCCAS.CAUSED INC.LEAK.INTO SUM	PACKING LEAKS FROM VARIOUS VALVES
G	BR1	019276	100477	Y	CV	D14	T					LEAKAGE FROM RHR CHECK VLV E11-F090B INTO DRYWELL	PACKING LEAKAGE;VLV REPACKED&RETURN.TO SR
G	BR1	019390	101477	Y	UV	D14	T					EXTERNAL LEAKAGE RECIRC. PMP 1A DISCH.EQUALIZR VLV	VLV B32-F043A HAD PACKING LEAK;REPACKED
G	BR1	019390*	101477	Y	UV	D14	C T 06					PACKING ADJUSTED ON SIX VALVES WITH PACKING SEEPAG	PACKING ADJUSTED AS PREVENTIVE MAINTENANC
G	BR2	022292	081878	K	UV	D14	T					EXT.VLV LEAKAGE(PACKING)CAUSED HI.TEMP.IN DRYWELL	FAILED PACKING IN VLV CAUSED LEAKAGE
G	CO1	016604	111276	P	UV	D14	U					VALVE LEAKED EXTERNALLY/DRIPPED ON SW/PUMP STOPPED	PACKING NEEDED TIGHTENING
G	CO1	018605*	041777	W	UV	D14	T 03					THREE ROCKWELL 1612-JIMMY VALVES LEAKING EXTERNALLY	DEFECTIVE VALVE STEM PACKING

EXTERNAL LEAKAGE/RUPTURE

W E N	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N D I T I O N	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DR2	014376	031576	C	AV	D14	T				VALVE 2-1601-56 LEAKING EXTERNALLY	EXCESSIVE PACKING LEAKAGE
G	DR2	019156*	090877	W	UV	D14	C	U	02	V	STEAM VALVE GLAND LEAKS CAUSED HI TEMP ISOL SIGNAL	VALVES WERE REPACKED
G	DR3	016014	091876	C	RM	D14	T				ISOLATION VALVE 3-1601-23 LEAKING IN EXCESS OF T.S	FAILURE OF VALVE PACKING
G	DR3	019660	110877	Y	XV	D14	T				LPCI MANUAL ISOLATION VALVE MO-3-1501-268 LEAKING	VALVE PACKING FAILURE
G	DR3	020780C	030478	C	XV	D14	T				MSIV 3-203-2C TEST CONNECTION VLV LEAKING EXTERNAL	PACKING FAILURE / VALVE REPACKED
G	FP1	020929	040478	L	MV	D14	T				VALVE 10MOV27A LEAKING EXTERNALLY	FAILURE OF VALVE PACKING
G	M11	015879	092576	L	CV	D14	T				ISOLATION VALVE 1-1C-1 LEAKING	PACKING FAILURE
G	DC1	0223578	091678	W	AV	D14	T				MSIV NS048 LEAKING EXTERNALLY IN EXCESS OF T.S.	FAILURE OF STEM PACKING MATERIAL
G	PB2	017262	030177	Q	AV	D14	T				VALVE AD-2-23-42 LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	019096	091477	H	AV	D14	T				VALVE AD-53 LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	019718	111277	Q	MV	D14	T				ISO VAL MO-16 LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	019953	113077	K	MV	D14	T				VALVE MO-2-2-65 LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	019952	120277	H	UV	D14	T				HPCI STM ISO VAL LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	020724	022478	K	UV	D14	R	T			EXTERNAL LEAKAGE MO-2-2-65A(RECIRC.SYS-LP.X-CONN.)	FAILED PACKING ON VLV CAUSED LEAKAGE
G	PB2	021193	042678	M	UV	D14	T				CRD ACCUM.CHGNG.VLV 3-13-111 LEAKING EXTERNALLY	PACKING FAILURE/NORMAL AGING OF PACKING
G	PB2	021554*	060978	K	XV	D14	R	T	02		HEAD VENT MAN VAL, VAL MO-2-2-65B LEAKING EXTERNALLY	VALVE PACKING FAILURES
G	PB3	014266	022476	Q	MV	D14	T				RCIC STM.OUTBOARD ISO VLV LEAKING EXTERNALLY	PACKING LEAK DUE TO NORM.PACK.COMPRESSION
G	PB3	020723	030578	K	MV	D14	R	T			RECIRC PUMP DISCHARGE VALVE, MO-2-53B LEAK EXTERNAL	FAILURE OF DISCHARGE VALVE PACKING
G	QC1	014063	010476	W	AV	D14	T				HS STOP ISOL VALVE EXCESS LEAKAGE DURING TEST	PACKING TIGHTENED AND RETIMED THE VALVE
W	BV1	018089	101076	X	XV	D14	T				STM.LEAK.FROM RT.STOP VLV,PZR.LVL.IND.READ HIGH	STEAM LEAKAGE DUE TO PACKING LEAK

EXTERNAL LEAKAGE/RUPTURE

PLANT	CONT. NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CONTR	OPER	FAILURE MODE	FAILURE MECHANISM
W BV1	017622	041277	Y	UV	D14	T				A HIGH LEAK RATE OF RX COOL SYS WTR WAS OBSERVED	FAILED PACKING RX COOL PMP SEAL HDR FL VL
W BV1	019611	102777	K	XV	D14	R	T			20 GPM LEAK. FROM 1A LOOP FILL VLV PACKING	PACKING DEGRADATION
W BV1	020757	012978	K	XV	D14	R	T			LEAKAGE IN EXC. OF 10GPM OBS. THRU B LP. FILL VLV PK	LEAKAGE DUE TO DEGRADED PACKING IN VLV.
W DC1	020324	011078	G	UV	D14	T				EXTERNAL LEAKAGE FROM PRESSURIZER AUX SPRAY VALVE	PACKING FAILURE
W DC1	022837	102878	K	XV	D14	T				PZR SAFETY VALVE LOOP SEAL DRAIN VALVE/EXT LEAKAGE	PACKING FAILURE
W DC2	021467	051978	K	UV	D14	T				EXTERNAL LEAKAGE FROM VALVE BETWEEN RCS & RHR	PACKING FAILURE
W IP2	014004	010376	L	MV	D14	T				EXTERNAL LEAKAGE FROM VALVE MOV-731	PACKING GLAND LEAKAGE
W IP2	016039	092776	L	MV	D14	T				14-IN VAL ON RHR SYST LEAKING EXTERNALLY	EXCESSIVE PACKING GLAND LEAKAGE
W IP3	016717	011577	M	AV	D14	T				VALVE PCV-455B LEAKING EXTERNALLY	VALVE PACKING FAILED
W IP3	020434A	020378	N	UV	D14	T				VALVE 565C LEAKING EXTERNALLY	PACKING FAILURE
W IP3	020434B	020378	N	UV	D14	T				VALVE 571C LEAKING EXTERNALLY	PACKING FAILURE
W IP3	022404*	090878	N	UV	D14	T	O2			ISO VALS 561A, 561B LEAKING EXTERNALLY	PACKING FAILURES
W JF1	019363	081877	H	UV	D14	T				1A ACCUM. NITRO. SUP/VENT ISO. VLV LEAKING EXTERNALLY	PACKING LEAK
W NA1	021540*	052978	K	XV	D14	T	O2			VALVES 1-RC-77, 1-RC-102 LEAKING EXTERNALLY	LEAKAGE THROUGH VALVE PACKING
W PR2	023221	112878	L	RM	D14	U				RHR HX OUTLET VALVE CV-31239 LEAKING EXTERNALLY	DETERIORATION OF PACKING
W SA1	021374*	040477	Y	XV	D14	T	O2			13 & 14RC20 LEAKING EXTERNALLY (RTD BYPASS VALVES)	PACKING LEAKAGE
W SA1	017788*	051977	Y	XV	D14	C	T O2			TWO MANUAL VALVES (IPS24/IPS28)/EXTERNAL LEAKAGE	LEAKS PAST PACKING/BACKSEATED TEMPORARILY
W SA1	018248	070877	K	XV	D14	R	T			EXTERNAL LEAKAGE ON VALVE 1CV75	LEAKAGE PAST STEM PACKING
W SA1	019609*	110877	H	UV	D14	C	T O2			TWO VALVES (13614SJJ143) (SI) LEAKED EXTERNALLY	PACKING FAILED
W S01	018009	041777	K	XV	D14	T				LOOP RCP SEAL VALVE (FCV-1115D) LEAKED EXTERNALLY	EXCESSIVE LEAKAGE PAST PACKING

EXTERNAL LEAKAGE/RUPTURE

VEN	PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	COM	MU	PM	KEY	FAILURE MODE	FAILURE MECHANISM
M	Z11	021467	071778	X	XV	D14	T						ROOT VLV TO S/G 1D LVL-CHAN.537 LEAKING EXTERNALLY	PACKING LEAK ON ROOT VALVE
C	CC1	023381	120978	G	UV	D18	T						#11 RX.COOL.CHG.PUMP DISCHG.ISO.VLV.LEAK.EXTERNAL.	BODY TO BONNET SEAL WELD FAILURE
G	EN1	020032	081477	K	XV	D18	T						CRACK IN WELD FOR ISOL VALVE TO LEVEL TRANSMITTER	UNKNOWN REASON,SUSPECT TOO RIGID MOUNTING
G	OC1	022357A	091678	W	AV	D18	D						MSIV NS04A LEAKING EXTERNALLY IN EXCESS OF T.S.	CRACKED STELLITE WELD IN BODY SEAT RING
W	HN1	021903	060578	H	XV	D18	U						PINHOLE LEAK IN PRESS SPRAY ISO VALVE	DEFECT IN BODY TO BONNET SEAL WELD
W	NA1	022766	100978	W	XV	D18	T						STEAM VALVE L-MS-120 LEAKING EXTERNALLY	DEFECTIVE PIPING JOINT BETW VALVE + PIPE
G	DR2	014428*	032376	C	AV	D19		02					VALVES 2-1601-32A,32E LEAKING EXTERNALLY	DETERIORATION OF WATERLESS GREASE ON SHFT
G	P82	019187	092677	H	RM	D22	R	U					HPCI OIL SYST CONT VAL LEAKING OIL	DIAPHRAGM LEAKING
G	P83	019556	102677	H	RM	D22	R	D					OIL LEAK FOUND ON HPCI OIL PRESSURE CONTROL VALVE	OIL LEAK WAS CAUSED BY A SPLIT DIAPHRAGM
W	IP2	021908	062678	L	UV	D22	D						DIAPHRAM VALVE 1823D LEAKING EXTERNALLY, 2 IN VAL	RUPTURED DIAPHRAGM / CRACKED BONNET
W	JF1	021186	032078	W	RM	D24	S	D					MSIV V002 FITTING ON AIR SUPPLY LEAKING	SOLDERED CONNECTION LOOSE
G	BF2	021092A	042078	W	AV	D25	T	02	V				MSIV'S LEAKING BY SEATING SURF.GREAT.THAN TS LIMIT	SEATING SURFS.DETERIOR.THROUGH NORM.OPER.
G	BF2	021092B	042078	C	UV	D25	T	02	V				DRYWELL TO SUP.CHBR.VENT.SYS.ISO.VLV.S.LEAK.BY SEAT	SEATING SURFS.DETERIOR.THROUGH NORM.OPER.

REVERSE LEAKAGE (CHECK VALVES)

V	P L A N T	CONI. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N M U P H	K E Y	FAILURE MODE		FAILURE MECHANISM	
											FAILURE MODE	FAILURE MECHANISM		
B	CR3	0208438	020178	N	CV	E00	R	U			NOBLE GAS FROM MAKEUP TK. LEAK. BY CHECK VLV MUV-140	CAUSE OF VLV LEAKAGE NOT GIVEN		
B	DB1	020989*	031678	D	CV	E00		U	02		CHECK VLVS AF39672 LEAKED INTERNALLY	CAUSE OF REVERSE LEAKAGE NOT GIVEN		
C	CC2	022246*	090778	H	CV	E00		U	02	V	#218622B SI-TANK OUTLET CHECK VLVS LEAKING	CAUSE OF REVERSE LEAKAGE NOT GIVEN		
C	FC1	017745A	042577	G	CV	E00	R	U	02		VALVES CH-284+HG-100 LEAKING INTERNALLY	UNDER INVESTIGATION		
C	FC1	022468A	090878	G	CV	E00	R	U	02		CVS CH-284 + HG-100 LEAKING INTERNALLY	CAUSE UNKNOWN		
C	M12	017620	040777	H	CV	E00	R	U			INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN		
C	M12	018740	072177	H	CV	E00	R	U			S.I. HEADER CHECK VLV. 2-SI-648 LEAKING INTERNALLY	NO CAUSE GIVEN		
C	M12	018971	081677	H	CV	E00	R	U			INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN		
G	BR1	020964	032378	Y	CV	E00	R	T			FAULTY CK. VLV IN SAM. DR. LN. ALLOWED H2O INTO MONIT	MGN. CAC-AQH-1262-1 CK VLV FAIL. CAUSE UNKN		
G	BR1	020921	033178	Y	CV	E00	R	T			RAD. MON. SAM. DR. LN. CK. VLV FOUND STUCK OPEN	CAUSE OF CK. VLV. FAILURE NOT STATED		
G	EN1	021727	061678	K	CV	E00		U			EXCESS FLOW CHECK VALVE B31-F040A LEAKING INTERNAL	CAUSE UNKNOWN, SUSPECT DIRT IN LINE		
G	M11	020722B	032078	U	CV	E00		U	04		FEED WTR. CK. (1-FW-9A, 9B, 10A, 10B) LEAK. EXCESS OF T.S	CAUSE OF LEAKAGE NOT GIVEN		
G	DC1	013956*	010676	C	CV	E00		U	02		VAC BKRS V-26-16, V-26-18 LEAK INT. IN EXCESS OF T.S	CAUSE UNKNOWN/REPAIRS TO BE PERFORMED		
G	VY1	022196*	081078	C	CV	E00		U	02		ISOLATION CHECK VLVS (V72-89B/C) LEAKED THRU/TEST	UNKNOWN/DRESSER ZIN TYPE 5580W CHECK VAL		
W	DC2	020978	031878	B	CV	E00		D			AUX FEED SYS CHECK VALVE FROM S/G 1 STUCK OPEN	UNKNOWN (VALVE 2-FW138-1) AT WOOD & MORRILL		
W	HN1	015218	070576	B	CV	E00		U			CHECK VALVE IN FEED LINE HAD REVERSE LEAKAGE	NO CAUSE GIVEN FOR REVERSE LEAKAGE		
W	HN1	018777	080177	B	CV	E00		U			CHECK VALVE ON AUX FEED PUMP LEAKING INTERNALLY	UNKNOWN		
W	JF1	023152	091478	E	CV	E00		U			18 AIR COMPRESSOR RELIEF/CHECK VALVE LEAKED	CAUSE UNKNOWN		
W	PR2	019664	111377	C	CV	E00		U			CONTAINMENT ISOL CHECK VALVE 2V-8-5 LEAKING THRU	UNKNOWN/VALVE WAS REPLACED		
W	RG1	018076B	020776	C	CV	E00		U			CHECK VALVE (1713) REVERSE LEAKAGE / TESTING	UNKNOWN		

REVERSE LEAKAGE (CHECK VALVES)

<u>VEN</u>	<u>PLAN</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CL</u>	<u>CHN</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	RG1	018247	071377	H	CV	E00	U				SI PUMP 1A CHECK VALVE REVERSE FLOW TO RWST	UNKNOWN/ VELAN 3 INCH 1500 PSIG CHECK VAL
W	RD2	014822	012876	H	CV	E00	U				B ACCUMULATOR CHECK VALVE 875E LEAKED THRU	REASON NOT STATED
W	SU1	015522*	070276	H	CV	E00	U 02				TWO CHECK VLV (1-SI-128/130) LEAKED THRU	UNKNOWN
W	SU2	015529*	081376	G	CV	E00	U 02				TWO CHECK VLVS (2-SI-145/147) LEAKING THRU	UNKNOWN
W	SU2	019744	110877	H	CV	E00	U				CHECK VALVE 2-SI-127 LEAKING THRU	UNKNOWN
W	Z11	015162*	062376	H	CV	E00	U 02	V			LEAKAGE THRU CHECK VALVES/ACCUMULATOR OVERFILL	UNKNOWN/DARLING 30 INCH TYPE 10-C48Z
W	Z11	019138A	102076	N	CV	E00	U				LEAKING THRU A CHECK VALVE/RAD H2O TO FIRE SUMP	UNKNOWN
G	DA1	014339	032376	U	CV	E02	D				FEEDWATER CHECK VALVE V-14-1 LEAKING INTERNALY	TWO CLOTH RAGS FOUND IN VALVE/PERS. ERROR
W	KE1	019456*	102177	E	CV	E04	C D 02	V			REVERSE LEAK.PAST D.G.AIR COMP. CHECK VALVES	DESIGN PROB.,REPLACED CHCK.VLVS.NEW STYLE
C	FC1	022972	110178	B	CV	E05	D				AUX FEED CHECK VALVE FOUND INSTALLED WRONG	CONSTRUCTION ERROR
W	RD2	019351	081777	B	CV	E05	D				DISCH CK VAL FOR AUX FEED PUMP,C STM GEN FAILED	CK VAL HAS BURR ON HINGE JOINT,OPEN POSI;
G	FP1	016176	101476	L	CV	E07	T				CHECK VALVE 42B LEAKING INTERNALY	NORMAL WEAR ON VALVE SEAT
B	DB1	021849*	060778	C	CV	E08	T 06				6 CONT.ISO.CK.VLVS SHOWED EXCESSIVE LEAKAGE	PART.OF DIRT CR WEAREPITTING PREV.SEATING
G	DR3	0160168	092176	U	CV	E08	R T				FEEDWATER CHECK VALVE 3-220-62A LEAKING INTERNALY	WORN DISK ASSEMBLY PINS
B	DB1	021583	050478	S	CV	E09	T				VLV SW-82 HAD REVERSE LEAKAGE;OUTLET CHECK VALVE	TOP OF INTERNALS WERE RUSTED;PREV.OPERATN
G	CD1	017071	012177	H	CV	E10	U				HPCI TESTABLE CHECK VALVE LEAKING INTERNALY	A 14 IN PROBE JAMED BETW. DISK+SEAT
G	DF2	014443	032476	N	CV	E10	T				SBLC ISO CHECK VALVE 2-1101-16 LEAKING INTERNALY	CRUD ON VALVE SEAT
G	DR3	016016A	092176	U	CV	E10	R T				FEEDWATER CHECK VALVE 3-220-58A LEAKING INTERNALY	DIRT IN SEATING AREA
G	DR3	016163	110776	L	CV	E10	T				ISOLATION CHECK VALVE 3-1501-25B LEAKING INTERNALY	DIRT AND SMALL SCRATCHES ON VALVE SEAT
G	DR3	016164*	100776	U	CV	E10	T 02				FEEDWATER CHECK VALVES 3-220-58B,-62B LEAKING	DIRT IN THE SEATING AREA

REVERSE LEAKAGE (CHECK VALVES)

V E N	P L A N T	CONT.NO.	EVENT DATE	S Y S T E M	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N T R O L	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DR3	016471	102876	M	CV	E10	T				ISOLATION CHECK VALVE 3-0301-98 LEAKING INTERNALLY	NORMAL WEAR; LIGHT RUST ON SEAT
G	DR3	016454	110176	L	CV	E10	T				ISOLATION CHECK VALVE 3-205-2-7 LEAKING INTERNALLY	DIRT IN SEATING AREA & ON DISK PIVOT PIN
G	DR3	021157	040378	M	CV	E10	T				CHECK VALVE 3-1101-15 LEAKING INTERNALLY	CHEMICAL DEPOSITS ON VALVE SEAT SURFACES
G	MO1	019467*	091377	C	CV	E10	R T	02			VALVES AD-14-13A + AD-14-13B LEAKING INTERNALLY	SCALE ACCUM ON SEATING SURFACES
G	MO1	019468	091677	C	CV	E10	R T				VALVE LEAKING IN EXCESS OF T.S.	DIRT ON SEATING SURFACES
G	MO1	022808	102078	C	CV	E10	R T				HPCI-9 TURB EXT LINE CHECK VALVE LEAKING INTERNALLY	ACCUMULATED DIRT ON SEATING SURFACES
G	P82	014464*	032976	C	CV	E10	R T	04			FEED WTR CV 28A, 28B, 96A, 96B LEAKING EXCESSIVELY	RUST SCALE ON VAL SEATING SURFACES
G	P83	014036	010976	C	CV	E10	T				FEEDWATER CHECK VLV 28A-UNACCEPTABLE LEAKAGE	RUST SCALE ON VLV SEAT AND FLAPPER
G	P83	014116	010976	C	CV	E10	T				FEEDWTR OUTBOARD CHECK VLV 96B-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G	P83	014117	010976	C	CV	E10	T				FEEDWTR OUTBOARD CHECK VLV 96A-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G	P83	014118	010976	C	CV	E10	T				FEEDWATER CHECK VALVE 28B-UNACCEPTABLE LEAKAGE	RUST SCALE ON VALVE SEAT & FLAPPER
G	QC2	020943	030578	L	CV	E10	T				REVERSE FLOW THRU CHECK VALVE 2-220-67A / TESTING	DIRT ACCUMULATED IN VALVE INTERNALS
M	DC1	017245*	022277	C	CV	E10	B T	02 V			CHECK VALVES FAILED LEAKRATE TEST	LAKE WATER DEPOSITS ON SEATING SURFACES
M	DC1	021769*	062178	C	CV	E10	B T	02 V			CHECK VALVES FAIL LEAKRATE TESTING	LEAKAGE PAST SEAT/PROBABLE FOREIGN MATER
M	PR1	017488*	032477	C	CV	E10	C I	06 Z			LEAKRATE TEST SHOWS 3 PENETRATIONS LEAKING THRU	FOREIGN MAT ON SEATING SURFACES
C	FC1	019552	102077	M	CV	E12	D				VALVE HCV-10418 DISK FOUND UNFASTENED	LOCK PIN BROKE ALLOWING NUT TO LOOSEN
G	DR2	014442*	032576	U	CV	E12	T	02			CHECK VALVES 2-220-58B, 62B LEAKING INTERNALLY	WORN SEAT RING & O-RING ASSEMBLIES
G	DR2	019218*	100477	U	CV	E12	R T	02			REACTOR FEED CV 2-220-58B, 62B, LEAKING INTERNALLY	WORN SEAT/DISK ASSY PINS, WORN SEAT RING,
G	DR3	020780A	030478	C	CV	E12	T	02			FEEDWATER CHECK VALVES 3-220-58B, 62B LEAKING	WORN SEAT/DISK ASSEMBLY PINS
G	DR3	020780B	030478	C	CV	E12	U				CHECK VALVE 3-1601-21 LEAKING INTERNALLY	OFF-CENTER DISK IN VALVE

REVERSE LEAKAGE (CHECK VALVES)

VEN	PLANT	CGNT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CON NUM	KEY	FAILURE MODE	FAILURE MECHANISM
G	EN2	022736*	141778	C	CV	E12		D 03	V		DRYWELL VACUUM BREAKERS LEAKING INTERNALLY	RETAINING MAGNETS EXTENDED TOO FAR
G	MO1	019469	100477	C	CV	E12		D			RCIC-9 TURB EXT VAL LEAK IN EXCESS OF T.S.	DISK WASHER BENT
G	PB2	022916	102178	H	CV	E12		T			CHECK VALVE 2-23-131 LEAKING INTERNALLY, GLAND SEAL	INTERNALS OF CHECK VALVE WORN OUT
W	IP2	021653	052378	H	CV	E12		D			4 IN SWING CV D.S.OF PUMP 22 LEAKING INTERNALLY	TWO HANGER BRACKET BOLTS MISSING
G	NM1	017649*	042777	C	CV	E13		T 02			TWO OXY SYST CHECK VLVS LEAKING INTERNALLY	O-RING FAILURE
G	QC1	014059	010576	H	CV	E13		U			HPCI EXHAUST CHECK VLV. LEAKING INTERNALLY	DEFECT GASKET BETWEEN VLV SEAT AND BODY
C	SL1	021524*	042078	C	CV	E25		D 02			TWO VENT VALVES (V-25-20/FCV-25-3) LEAKED THRU	SEAT PROBLEMS, 1-CUT, 2-SMALL DEPRESSION
G	DR2	014420	032976	H	CV	E25		T			HPCI VALVE 2-2301-45 LEAKING INTERNALLY	CORROSION, PITTING OF LOWER SEATING AREA
G	PB3	014033	010776	H	CV	E25		T			HPCI EXHAUST LINE CHECK VLV 23-65-EXCESSIVE LEAK.	POOR MATING BETWEEN FLAPPER & SEATING SUR
G	PB3	014034	010976	N	CV	E25	R	T			INST.NITRO.OUTBOARD CK.VLV B-EXCESSIVE LEAKAGE	POOR MATING BETWEEN THE VLV FLAPPER&SEAT
G	PB3	014183	012676	N	CV	E25		T			INSTRUMENT NITRO.TO TORUS CHECK VLV-UNACCEPT.LEAK.	POOR MATING BETWEEN VLV FLAPPER & SEAT
G	QC1	014058*	011076	U	CV	E25	R	T 03			3 FEED WATER CV THAT FAILED EARLIER FAILED AGAIN	VITON O-RINGS(SEAT SURFACES) DETERIORATED
G	QC1	020531A	032077	C	CV	E25		T			EXCESSIVE LEAKAGE THRU CV DURING TESTS	DETERIORATED O-RINGS
W	HN1	019899	110377	C	CV	E25		T			VALVE CC-CV-721 DID NOT SEAT PROPERLY	FAILURE OF SEATING SURFACE
W	PT2	014389	030876	C	CV	E25	R	T			CV 2-755A IN CCW SYSTEM FAILED LEAKRATE TEST	DIRT ON SEATING SURFACES/LAPPED SURFACES
W	PT2	017404	030977	C	CV	E25	R	T			4 IN CV IN CCW SYSTEM FAILED LEAKRATE TEST	SEAT/DISC PROBLEM/PROB DUE TO NORMAL WEAR

FAILED TO OPERATE AS REQUIRED

VEN	PLANT	CONT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CON PH	KEY	FAILURE MODE	FAILURE MECHANISM
B	CR3	020266	020479	U	MV	FOO		U			STROKE TIME FOR FEEDWTR ISO FVW-15 GRT.THAN T.S. L	DEFINITE CAUSE IS NOT KNOWN/BEING ANALYZD
B	DE3	016900	112176	C	RM	FOO		U			CNTNMNT FEED WATER ISO VAL INOPERABLE	CAUSE UNKNOWN (PROBABLE INTERNAL PROBLEM)
B	RS1	019798	111977	H	MV	FOO		U			HPI INJECTION ISOLATION VALVE FAILED TO CYCLE/TEST	UNKNOWN
C	CC1	020163*	012578	M	HV	FOO		U 02			BOTH MSIV'S FAILED TO CLOSE WITHIN REQ. TIME(3.6S)	CAUSE UNDER INVESTIGATION
C	MI2	017780	042577	M	AV	FOO		U			A MSIV TAKES TOO LONG TO CLOSE	CAUSE UNKNOWN
G	BR1	020765	022778	M	RM	FOO		U			PRECOAT PRESS.CONT.VLV G31/Z002-V54 IMP.IN.PRESS.	CAUSE OF VLV NOT MAIN. PROP.PRESS.NOT GIV
G	BR2	015434*	073076	M	RM	FOO		U 02			MSIVS INB.B32-F022D&OUTB.B32-F028D RESTRICTED FLOW	CAUSE UNDER INVESTIGATION
G	BR2	018153	050977	S	RM	FOO		T			SERVICE H2O VALVE E11-F068A FAILED TO OPERATE RM	CAUSE UNKNOWN POSSIBLE DIRTY CONTACTS
G	CO1	015351	061776	C	RM	FOO		U			VALVE PC-238AV WOULD NOT CLOSE IN 15 SECONDS	CAUSE UNKNOWN / POSSIBLE LUB PROBLEM
G	DA1	020480	012078	N	DV	FOO		U			ACTUATOR FOR DAMPER VALVE A073188 MALFUNCTIONING	CAUSE UNKNOWN
G	DR3	017977*	060677	M	RM	FOO		U 02			IRREGULAR OPERATION OF TWO SCRAM PILOT VALVES	CAUSE UNKNOWN
G	DR3	022591	092278	L	MV	FOO		U			LPCI HX VALVE M03-1501-3A FAILED TO OPERATE	CAUSE UNKNOWN
G	FP1	016413	111176	M	RM	FOO		U			THE INNER MSIV ON STEAM LINE D FAILED TO OPERATE	CAUSE UNKNOWN
G	MI1	019629	103177	Q	UV	FOO		U			ISO.COND.STM.SUPPLY VLV 1-IC-1 FOUND INOPERABLE	CAUSE OF OCCURRENCE HAS NOT BEEN DETERM.
G	NM1	018296	071277	L	UV	FOO		U			NO.11 EMER CORE COOL SYST INOPERABLE,VAL FAILURE	CAUSE UNKNOWN
G	UC1	017258	031477	N	AV	FOO		U			DIA.OPER.VLV FAILED(LUBE SYS FOR GAS SAMPLE PMP.)	CAUSE UNKNOWN
G	PB2	017481	040777	M	HV	FOO		U			MSIV 868 CLOSE TIME GREATER THAN T.S. LIMIT	CAUSE UNKNOWN
G	PB3	015222	071476	M	HV	FOO		U			MSIV 808 VLV CLOSURE TIME GREATER THAN T.S. LIMIT	SPECIFIC CAUSE UNDETERMINED
G	PI1	023143	120278	M	SV	FOO		U			TWO SCRAM PILOT VALVES FOR CRD 46-39 NOT BLEEDING	VALVES REPLACED FROM STOCK
M	BV1	021298	050978	N	RM	FOO		R U			SUMP DISCH VALVE STAYED OPEN ON HI PH CONDITION	UNKNOWN (SEE LER NO. 020650,POSS CONNECT)

FAILED TO OPERATE AS REQUIRED

VEN	LANI	CONT. NO.	EVENT DATE	SY S	COM P	FAIL CODE	TYPE	CLASS	CON NUM	RE	FAILURE MODE	FAILURE MECHANISM
G	FP1	021227	050876	D	MV	F02		D			POWER REMOVED FROM CORE SPRAY VALVE MOTOR	PERSONNEL ERROR
G	PB2	014153	020976	Q	MV	F02	R	D			RCIC O.B. STM ISO VAL MO-13-16 FAILED TO STROKE	VALVE PACKING TOO TIGHT / PERSONNEL ERROR
W	BV1	018728	080177	U	RM	F02	R	D			1B FEEDWATER REG. VLV. OPERATING IMPROPERLY	LOOSE LOCK PLATE DUE TO OVER TORQ. OF BOLT
W	IP2	021027*	040178	U	RM	F02		D	02	V	HI. TEMP. SHUTOFF VLVS IN MN. STM. SUP. TO #22 FEED PU-	-MP WOULDN'T OPER. AUTO. // PERSONNEL ERROR
W	KE1	019312	100377	F	MV	F02		D			MAINT. MAN DEENERGIZED 2 SW VLVS, WHEN ONLY ALLO. T-	-O DEENER. 1 VLV // PERSONNEL ERROR
W	RO2	023370	121778	W	AV	F02		D			MSIV C STEM FAILED TO TRAVEL FULL TEST DISTANCE	PERSONNEL ERROR (MALADJUSTED PACK GLAND)
W	SA1	019888*	110277	N	UV	F02	C	D	10		VALVE INTERNALS LEFT OUT IMPLEMENTING ENG-PR CDF19	PERSONNEL ERROR DURING MAINTENANCE
B	DB1	022047*	071878	U	RM	F03		D	02	V	POWER REMOVED FROM FEEDWATER STOP VALVES FOR TEST	PERSONNEL ERROR, FAILED TO RESTORE POWER
C	SL1	021733	053078	U	RM	F03		D			15# FEEDWATER BYPASS CONT VLV INADVERT. OPENED FULLY	// ANALYTICAL SETTINGS UNREALISTIC
G	DA1	017312	021977	H	RM	F03		D			CONTACT BLOCK FOUND INSTALLED IN VALVE CIRCUIT	PERSONNEL ERROR, FAILED TO REMOVE AFTER TS
G	DR2	020857	032178	Q	MV	F03		D			ISOL COND VALVE MO 1301-3 RENDERED INOPERABLE	PERSONNEL ERROR, LOSS OF POWER TO VALVE
L	BR1	018128	052077	Q	CV	F04		D			HPCI STM. LINE EXH. CHECK VLV E41-F049 DETER. FAILED	VLV OSCIL. CAUSED OSC HINGE FAIL; IMP. DESIGN
G	EN2	022496	091778	N	DV	F04		D			ELECTRICAL CABLES ROUTING INTERFERES W DAMPER VALS	DESIGN ERROR, CABLES REROUTED
G	MO1	019050	090977	C	MV	F04	R	D			VALVE MO 2009 FAILED TO OPERATE PROPERLY	SET CLAMP SCREWS UNDERSIZED
W	BV1	023214	101278	C	CV	F04		D			1A RCP SEAL INJEC. SPR. LOAD. CKVL OPEN. PRESS. TO HIGH	CHECK VLV. HAD IMPROPERLY DESIGN. SPRING
W	DC1	020520	020978	N	UV	F04		D			FIRE PUMP TEST VALVE 1-FP-241 FOUND FULL OPEN	VALVE COULD VIBRATE TO OPEN POS (LOCKED)
W	ZI1	022845	091478	R	DV	F04		D			1B RCFC ACCIDENT INLET DAMPER FAILED TO SHIFT	DESIGN PROB/DIFF PRESS FLEXED & BOUND BLADE
G	DA1	017043	021177	D	MV	F05		D			CLUTCH HOUSING FOR MOV 2115 FRACTURED DUR. TEST	MATERIAL TOO BRITTLE
G	MO1	018465*	062377	N	RM	F05		D	02	V	SGTS TRAIN "A" ISC. VLV. CONTROLS INSTALLED IMPROPER	FABRICATION ERROR
G	QC1	019489	093077	D	MV	F05		D			CORE SPRAY VALVE 1-1402-258 FAILED TO OPERATE	CRACKED YOKE/PROB SINCE INSTALLATION

FAILED TO OPERATE AS REQUIRED

<u>VEN</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY S</u>	<u>COM P</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>ML</u>	<u>PH</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	T12	023543	120278	U	RM	F06		D					MAIN FEED REG VALVE PINNED OPEN, EXCESS FLOW RESULT	DEFECTIVE PROCEDURES
G	DA1	014187*	011676	C	RM	F16		D	63				PCIS CV 4300, 4303, 4309 NOT CLOSING IN PROPER TIME	CLOSING TIME TECH SPEC IN ERROR
G	DA1	016071*	101576	W	MV	F06		D	03				MTR. OPER. VLVs, MSIV-LC SUBSYS A, B, D NOT PROP. ADJUS	LACK OF EXPER. & PROCEED. TO DETERM. CPT. SET
G	MO1	018463	061677	C	MV	F06		D					TORQUE SW NOT ADJ PROP. OUTBRD RCIC STM ISO VLV	WRA IMPROPERLY PROCESSED
G	FB2	015884*	092176	D	RM	F06		D	03	Z			TRIP LEVEL FOR CORE SPRAY SET IMPROPERLY	DEFECTIVE PROCEDURES
G	FB3	015881*	092176	D	RM	F06		D	03	Z			TRIP LVL. SET FOR ECCS VLV SET AT WRONG PRESSURE	MISUNDERSTANDING BETWEEN NSSS & LICENSE
W	P12	016038*	100676	N	RM	F06		D	02	V			POST-LOCA HYDRO. CONT. SYS. VLVs LEFT INCAPABLE OF B-	-EING CLOSED IN 1 MIN. // DEFECTIVE PROCED.
G	PJ1	017675	041777	W	HV	F07		T					MSIV-A0-203-18 CLOSING TIME TOO FAST	NORMAL WEAR IN HYDRAULIC CIRCUIT
W	HN1	019245	100377	W	HV	F07		T					VALVE VERY SLOW TO RESPOND	COMPONENT WEAR (HYDRAULIC SERVO MOTOR)
W	RO2	019344	061977	N	RM	F07		R	T				CV PURGE OUTLET INNER VALVE INOPERABLE	NORMAL WEAR TO RUBBER SEAT
G	VY1	019854	110177	D	XV	F08		D					MANIFOLD BYPASS VALVE FAILED TO OPERATE	GALLED THREADS/STEM SEIZED
B	AR1	016566	112176	R	SV	F10		R	T				VLV CV-6202 WOULD NOT REMAIN IN CLOSED POSITION	SOLENOID VLV ACTU. WAS NOT FUNC. PROPERLY
G	CO1	021620	042378	C	CV	F10		T					FLV-160 EXCESS FLOW CHECK VALVE MALFUNCTIONING	CRUD BUILDUP ON POPPET ASSEMBLY
G	MO1	018467	070977	T	SV	F10		T					GAS FLOW CONT VAL FCV-7489A FAILED	DIRT IN VALVE SEAT AND DISK
G	MO1	020700	022878	Y	AV	F10		T					VALVE BV-4 WOULD NOT FUNCTION TO ALLOW MINIMUM FLO	FOREIGN MATERIAL IN BV-4 POSITIONER
G	PH2	022819	103178	C	SV	F10		T					OXYGEN ANALYZER SYSTEM ISO VAL, SV-26716, FAILED	VALVE SEAT DIRTY, PLUNGER STICKING
G	VY1	013980	011876	T	SV	F10		T					ASCO 3-WAY SOLENOID VALVE FAILED TO OPERATE	DIRT BUILDUP IN ACTUATING MECHANISM
W	Z12	021709A	060578	C	SV	F10		R	T				INST AIR ISOL VALVE 2FCV-1A01A FAILED TO OPERATE	OIL IN AIR SYS FAILED SOV/VARNISH BUILDUP
B	DB1	023424	123078	S	AV	F12		D					SER. WTR. OUTLET VLV SW-1424 WOULD NOT OPERATE PROP.	LINK. BETWEEN VLV. & OPERATOR OUT OF ADJUST
B	DE1	014808	041376	H	XV	F12		D					FLOOD TANK 1A NITROGEN ADD VLV FAILED OPEN	VAL STEM SEPERATED FROM DISK

FAILED TO OPERATE AS REQUIRED

ZONE	PLANT	CONT. NO.	EVENT DATE	STATUS	CODE	FAIL CODE	REASON	MECH	MODE	FAILURE MODE	FAILURE MECHANISM
B	OE1	022343	082978	R	MV	F12	D			VALVE LPSW-21 FAILED TO OPERATE PROPERLY	MISALIGNMENT OF GEARING BETW VAL *OPER
B	OE2	016210	100776	C	RM	F12	D			VALVE 2LWD-1 INOPERABLE	COMPRESSION FOOTROLL PIN BROKEN
B	OE3	020064	010378	L	AV	F12	D			VALVE 3LP-14 FAILED TO CYCLE MANUALLY	MECH PARTS LOOSE+OUT OF ALIGN
B	OE3	020593	020778	F	MV	F12	D			VALVE BS-2 FAILED IN INTERMEDIATE POSITION	VALVE STEM FAILURE
B	TI1	014718	042776	L	UV	F12	U			VALVE FAILED TO OPERATE (OH-V1)	STEM NEEDED REPLACED
C	MI2	017891	030676	S	RM	F12	R D			SEAWATER TEMP CONTROL VLV INOPERABLE	TENSION PIN SHEARED BETW VAL AND OPER
C	MI2	017113	012077	G	MV	F12	D			VALVE 2-CH-514 WOULD NOT OPERATE	VALVE FAILED DUE TO INTERNAL BINDING
C	MI2	017346	030277	S	RM	F12	R D			C RBCCW HX SERV WAT OUT TEMP CV FAILED TO OPERATE	SHEAR OF PIN COUPLING OPER TO STEM
C	MI2	023211	110778	S	RM	F12	D			RX BLOG COOLING WATER VALVE FAILED TO OPERATE	FAILED TENSION PIN BETWEEN VALVE OPERATOR
C	MY1	017602	060277	G	AV	F12	D			LETDOWN PRESS+CONT.VLV LD-F-16 OSCILLATING RAPID.	BOLTS ON OPER. LOOSE / OPER. FELL OFF
C	PA1	017905	021977	S	CV	F12	R T			DISCH CV,SERV WATER PUMP PC7 STUCK	CV FLAPPER STUCK,VAL LUBED AND RET TO SERV
C	SL1	010271	061077	C	MV	F12	D			MOV (I-MV-15-1) FAILED TO OPERATE	FAILED ACTUATING NUT ON MOTOR DRIVE
C	SL1	021835	061578	R	DV	F12	D			MOTOR OPERATED DAMPER VALVE FAILED TO OPERATE	OUT OF ADJUSTMENT
G	BF3	020524	021378	L	MV	F12	R D			VLV FCV.3-74-52 WAS FOUND INOPERABLE	UPPER BRNG.LOCKNUT STRIPPED FROM NOR. POS
G	BF3	021245	042878	L	MV	F12	R D			VLV FCV 3-74-52 WAS FOUND INOPERABLE	UP,BRNG.LOCKNLT STRIPPED FROM NOR.POSITIN
G	DA1	014729	052976	W	RM	F12	D			MSIV LEAKAGE CONTROL SYSTEM INLET VALVE INOPERABLE	BINDING OF MECHANICAL INTERLOCK
G	DA1	014888	061476	W	RM	F12	U			MSIV 4420 CLOSING TIME OUTSIDE T.S. REQUIREMENTS	CLOSE THROTTLE OUT OF ADJUSTMENT
G	DR2	016453	111376	H	MV	F12	D			HPCI INJECTION VALVE M02-2301-8 FAILED	VALVE STEM SHEARED
G	DR2	019808	121277	C	CV	F12	R D			VACUUM BREAKER 2-1601-328 INOPERABLE	MECHANICAL BINDING OF VALVE PARTS
G	DR2	023334*	112378	W	AV	F12	R U 02			2 MSIV FAILED TO CLOSE IN REQUIRED TIME	MINOR ADJUSTMENTS TO SPEED CONTROL VALVES

FAILED TO OPERATE AS REQUIRED

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYM</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MUM</u>	<u>PH</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	DR3	022921	110478	W	AV	F12	R	U					MSIV 3-203-2A FAILED TO CLOSE IN PROPER TIME	SPEED CONTROL OUT OF ADJUSTMENT
G	EN2	022466*	092678	L	RM	F12		D 02					RESTRICTED FLOW THROUGH RHR SYSTEM CONTROL VALVES	DAMAGED CAVITROL TRIMS IN VALVES
G	FP1	021023	040878	H	MV	F12		D					VALVE 23MOV14 SEPERATED FROM OPERATOR	FAILURE OF MECHANICAL FASTENERS
G	FP1	023366	122078	C	AV	F12		U					FOUND COUPLING KEY MISSING FROM 27-ADV-115	KEY REPLACED, REASON UNKNOWN FOR MISSG KEY
G	MO1	019158	092377	C	MV	F12		D					VALVE MO-2008 FOUND FAILED DURING MAINTENANCE	SEAT RING THREADS STRIPPED
G	MO1	021755	060578	M	SV	F12		R D					SCRAM PILOT VALVE FOR CRD 06-19 WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVE BROKEN
G	MO1	021985*	072878	M	SV	F12		R D 07					SCRAM PILOT VALVES FOR CRDS WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVES BROKEN
G	PB2	014316	022476	N	UV	F12		D					CELL DISTR. VLV ON C COOL. TOWER FAILED	FAIL OF STEM BUSH. RETAIN PLT, DIST. VALVE
G	PB2	015142	061876	L	MV	F12		D					RHR SD COOL SUCT ISO VAL MO-2-10-18 FAIL TO STROKE	VALVE STEM BEND
G	PB3	014523	042676	N	RM	F12		D					MO-12-68 RWCU RETURN ISO. VLV HAD TOO SLOW CLOSING	VALVE STROKE WAS OUT OF ADJUSTMENT
G	PI1	019669	110477	L	MV	F12		T					MTR OPER FOR VAL MO-1001-188 OVERLOADED, BURNED OUT	WORN GEARS ALLOWED MTR TO RUN AFT VLV CLS
G	PI1	021096	041178	W	AV	F12		U					MSIV-AD-203 DECLARED INOPERABLE	STEM SHEARED AT LCC WHERE PLT STG TAPERED
G	QC1	015257	070176	F	MV	F12		J					LOOP SPRAY VALVE FAILED TO OPERATE (MO-1-1001-23-B)	LOOSE BOLTS HOLDING OPERATOR TO VALVE
G	QC1	018115	051277	W	RM	F12		D					CONTROL VALVE IN MS SYS FAILED TO OPERATE	MECH FAILURE WHICH LOST FEEDBACK SIGNAL
G	QC2	022816	100278	M	SV	F12		D					SCRAM SOLENOID VALVE 118 MALFUNCTIONED	CORE SPRING DETACHED FROM CORE OF SV
W	BV1	018831	072277	U	RM	F12		R D					1A FEED REGULATING VLV WAS OPERATING IMPROPERLY	VLV STEM LOCK PLATE CAME LOOSE; BOLT FAIL.
W	DC1	016367	110176	L	MV	F12		U					RHR VALVE FAILED TO CYCLE DURING TESTING	PACKING GLAND WAS TOO TIGHT
W	DC1	019309	100777	J	MV	F12		U					MO HEAT EXCHANGER OUTLET ISOLATION VALVE NOT OPER	BINDING OF INTERNALS/TORQUE INCREASED
W	IP2	018787A	050777	F	UV	F12		D 02					VALVES TCV-1104 & 05 DID NOT OPERATE PROPERLY	BINDING OF VALVE INTERNALS
W	KE1	013963	010876	H	MV	F12		D					VALVE SI-28 DID NOT OPERATE	SCREW HOLDING TRIP LEVER BACKED OUT

FAILED TO OPERATE AS REQUIRED

VEH	PLANT	CONT.NO.	EVENT DATE	SYS	CUM P	FAIL CODE	TYPE	CLASS	CON NUM	KEY	FAILURE MODE	FAILURE MECHANISM
W	PR1	014001	012176	R	DV	F12	R	D			DAMPER FOUND IMPROPERLY POSITIONED	BINDING SHAFT BUSHING/POSS LUBRIC PROBLEM
W	PR1	018859	070177	R	DV	F12	R	D			DAMPER FAILED TO OPERATE DURING TEST/COUPLING PROB	PINS SHEARED/RAMCCN ACTUATOR TO DAMPER
W	PR1	018808	072677	R	DV	F12	R	D			DAMPER FAILED TO OPERATE/ACTUATOR FAILED(RAMCCN)	REPLACED BOTH ACTUATORS(BINDING DAMPER ?)
W	PR1	021640	051678	R	DV	F12	R	T			DAMPER FAILED TO OPERATE AS REQUIRED	RAMCON NO. R-260 ACTUATOR FAILED/LUBRICNT?
W	PR2	C20473	012878	R	UV	F12		D			DURING REPACKING VALVE STEM FOUND BROKEN(MV-32154)	PARTS FAILED FOR UNKNOWN REASON
W	S01	021207	041878	H	MV	F12		D			MOV-850C FAILED TO OPEN IN REQUIRED TIME / TESTING	SHAFT DISTORTED/PROB DUE TO EXCESS TORQUE
W	S02	015526	061576	L	MV	F12		D			LPIS MOV-28628 FAILED TO OPERATE FROM CONSOLE	THERMAL OVERLOAD DUE TO VALVE PLUG BIND
W	ZI1	016699*	092376	R	DV	F12	B	D	02		TWO VENT FAN DAMPERS FAILED TO SHIFT TO ACCID MODE	STICKY ACTUATING SHAFT&COUNTERWT PROBLEM
W	ZI1	021231	041478	C	RM	F12		D			PRESSURE CONTROL VALVE (PCV-PP04) FAILED TO OPER.	VALVE WAS OUT OF ADJUSTMENT
W	ZI2	018392	062877	C	RM	F12		D			LOW FLOW REG VLV (2PCV-NT03) FAILED TO OPERATE	BINDING BETWEEN PLUG AND SEAT
W	ZI2	020718	022478	Y	RM	F12		D			CRANE MODEL 431 FLOW CONTROL VALVE FAILED TO OPER	VALVE NEEDED ADJUSTMENT
C	CC1	021994	072178	M	HV	F13		U			#12 MSIV DECLAR. INOP. DUE TO ACCUMULATORS DEPRESS.	MSIV ACTUATOR CAP & SEAL WERE FAILED
G	QC1	014538	040276	M	AV	F13		T			VALVE FAILED TO OPERATE PROPERLY DURING TESTING	NEW SEAL RING IN VALVE OPERATOR
G	QC1	017468	030577	C	AV	F13		T			VALVE ACTUATOR FAILED/VALVE FAILED TO OPERATE	TEFLON O-RINGS IN AIR CYLINDER REPLACED
W	RO2	020322	011178	L	MV	F13		T			VALVE RHR-7448 FAILED TO FUNCTION PROPERLY	OIL LEAK INTO MOTOR CAUSING SHORT
B	AR1	014837*	051276	N	RM	F14	C	T	02		2 VLVS DID NOT OPER. WHEN REQUIRED TO	FRICTION BETWEEN STEM & PACKING DUE TO AGE
G	DR3	015158	050376	M	RM	F14		T			MSIV 3-203-1A CLOSING TIME TOO LONG	DRY VALVE PACKING
G	MI1	021352	042478	M	RM	F14		T			SCRAM VALVE OPERATION SLCW	VALVE PACKING TOO TIGHT
W	HNI	018967	091677	M	RM	F14		D			#1 MSIV DID NOT MOVE THE 1 1/2" REQUIRED BY TEST	BINDING OF VALVE PACKING GLAND
B	AR1	014837A	051276	N	RM	F16	S	D			VLV DID NOT OPERATE WHEN REQUIRED TO	DIRTY RELAY CONTACT

FAILED TO OPERATE AS REQUIRED

VEN	PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CON NUM	KEY	FAILURE MODE	FAILURE MECHANISM
B	AR1	014837B	051276	N	RM	F16	S	D			VLV DID NOT OPERATE WHEN REQUIRED TO	LOOSE CONNECTION AT TERMINAL PLUG
B	AR1	017521	031077	N	RM	F16	T	D			VALVE CV-2123 WAS FOUND TO BE INOPERATIVE	CIRCUIT BREAKER OVERLOAD HEATERS FAILED
B	CR3	019978*	121477	C	RM	F16	S	D	03		3 VALVES, BSV-17, CFV-15, WDV-94 FAILED TO OPERATED	ONE RELAY FAILED/INSUL BETW CONTACTS (CC)
B	CR3	023095	100478	L	RM	F16	S	D			FLOW CONTROL VALVE DHV-110 FAILED TO CONTROL FLOW	NO SIGNAL FROM FLOW CONTROLLER
B	DB1	021853*	062578	C	RM	F16	S	D	02		TWO CONT ISOL VALVES (CC14078, CC14118) FAIL TO OPER	BROKEN WIRES AT CONNECTORS (CLUMSINESS)
B	DE1	019860	010477	N	MV	F16	S	D			DISCHG. VLV. 1PR-19 ON PENET. RM. EXH. FAN INOPERABLE	DIRTY CONTACT ON MTR. CONT. CENTER
B	FI1	021954	060578	N	RM	F16	S	D			RB-V-7 DID NOT OPERATE (RX. BUILD. COOL. SYS. VLV.)	FAILED THYRECTOR CAUSED SHORT CIRCUIT
C	CC1	014465	030576	H	MV	F16	S	D			HPSI LP. ISO. VLV 1-MOV-616 WOULD NOT OPER. REMOTELY	BLOWN CONTROL CIRCUIT FUSE CAUSED FAILURE
C	CC2	018881	082577	F	RM	F16	S	D			#21 CONT. SPRAY SYS. HDR. ISO. VLV (2-SI-4150-CV) CCS	VLV PLACE. OUT OF SERV. DUE TO FAIL. RESIST.
C	FC1	023139	112478	L	RM	F16	S	D			PC-105B WAS NOT OPERATING	VALVE CLOSING RELAY NOT REWIRED AFT MAINT
C	MY1	020758	020277	H	RM	F16	S	D			WIRES DISCONNECTED FROM VALVE SL-P-3, SIAS FUNCT.	CAUSE UNKNOWN
G	BF1	014665	041176	Q	RM	F16	S	D			RCIC PUMP DISCHARGE VALVE FAILED TO OPERATE	TRANSFER SWITCH (205A87740D) BAD DESIGN
G	BF3	022687	070878	Q	MV	F16	S	D			RCICS DISCHARGE VALVE INOPERABLE	SHORT IN IND LITE ASS CAUSED FUSES TO BLO
G	BR1	016402	111976	L	MV	F16	S	D			RHR INJECTION VALVE (E11-F015A) FAILED TO OPERATE	UNDERSIZED BR/DESIGN PROBLEM (ROOT)
G	BR1	020837	031478	C	RM	F16	S	D			VALVE B32-F 12B WOULD NOT OPERATE DURING TEST	DEFECTIVE SWITCH ON CONTROL BOARD
G	CO1	016253	100976	G	RM	F16	S	D			A SLC INJECTION WAS FOUND INOPERATIVE	BLOWN FUSE DUE TO IMPROPER SIZE WIRING
G	DA1	014731*	052076	W	RM	F16	S	D	02		MSIV 8402A & D (LEAK. CONT. SYS. IN.) INADVERT. CYCLED	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
G	DA1	016675	102176	W	MV	F16	S	D			MOV 8462D INOPERABLE DUE TO TRIPPED OVERLOAD RELAY	TRIP SETPOINT INCREASED SLIGHTLY
G	DA1	016529*	102176	W	MV	F16	S	D	02		MOV-8401B AND 8403D WOULDNT OPERATE	CONTROL RELAYS NOT MAKING ELEC CONTACT
G	DA1	021862*	061778	M	RM	F16	S	D	02	V	BACK UP SCRA. VALVES OPEN WHEN REQUIRED SHUT	LOOSE AUX SW SCREWS CAUSED FALSE SIGNAL

FAILED TO OPERATE AS REQUIRED

VE N	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O M M P	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DR3	016474	111976	H	HV	F16	S	D			HPCI LOGIC DESIGN WIRING CAUSING VALVES TO CYCLE	DESIGN ERROR
G	EN2	022024*	071778	L	MV	F16	S	D	02	V	RHR VALVES HAD POWER LOST TO THEM	BREAKER TRIPPED DUE TO BLOWN FUSES
G	EN2	022753*	110678	H	RM	F16	S	D	02	V	HPCI CONTROL VALVES FAILED TO OPERATE	WIRE LEFT OFF BY MAINT PERSONNEL
G	FP1	020517	021078	Q	HV	F16	S	D			RCIC TURBINE STEAM INLET VALVE FAILED TO OPERATE	COMMAND/SUPPLY BREAKER RELAY OVERLOADED
G	FP1	022223	081678	K	MV	F16	S	D			LOSS OF POWER TO BYPASS VALVE 02-MOV-54B	UNIT BLOWS FUSES CAUSE UNKNOWN
G	M11	022749	101978	Q	RM	F16	S	D			THE ISO.COND.ISO.VLV 1-IC-3 SPURIOUSLY OPENED	FAILURE OF SWITCHES IN LOGIC CHANNEL
G	MO1	015755	082576	C	RM	F16	S	D			S/D COOL.ISO.VLV. EXPERIENCED LOSS OF POWER	FAILURE OF RELAY COIL IN CONT. CIRCUIT
G	MO1	023389	112178	L	MV	F16	S	D			MO-2014 LPCI A ADMISSION VALVE INOPERABLE	BLOWN FUSE IN CONTROL POWER CIRCUIT
G	NM1	018299	063077	H	RM	F16	S	D			NO.12 INLET INSIDE IV-8(40-01)FAIL TO OPERATE	FAILURE OF ELECT CONTACTOR (CLOSING)
G	OC1	019430A	101177	T	AV	F16	S	D			VAL ON STBY GAS TREAT SYST NO1 FAIL TO OPER PROP	FLOW SENSING PROBE DISPL (VLV V-29-26)
G	PB2	015140	062076	C	MV	F16	S	D			ISO VAL MO-2-14-71 FAILED TO STROKE	GROUNDING WIRE AT MTR CONT CENTER
G	PB2	019094	091377	H	MV	F16	S	D			HPCI TURB EXHAUST VAL MTR DAMAGED	SHORT IN VAL CONTROL CIRCUIT
G	QC1	015706	080976	N	MV	F16	S	D			REACTOR WTR.CLEANUP SYS.ISO.VLV.MO-1-1201-2 INOPER	RELAY SHORTED & BURNED UP CONTROL TRANSF.
W	BV1	016746	010577	U	MV	F16	S	D			DYNAMIC INSTABILITY OF FEEDWATER REG VALVE	NEW TRIM CIRCUIT NEEDED
W	BV1	020650	020178	N	RM	F16	S	D			SUMP CAUSTIC VALVE OPENED DUE TO ERRONEOUS SIGNAL	DEFECTOR FILLED WITH RESIN BEADS
W	DC1	015082*	061776	P	RM	F16	S	D	05	Z	ALL VALVE ON CONT CENTER 1-AZV-A WERE WITHOUT POWR	BREAKER TRIPPED(SHORT DUE TO PERSON ERROR
W	DC1	017370*	030577	K	RM	F16	S	D	02		VALVES QCM-250 AND IMO-53 LOST PWR TO THEM	BREAKER OPENED DUE TO RELAY FAILURE
W	DC1	021011*	032278	H	MV	F16	S	D	03		POWER FOUND OFF TO 3 ECCS VALVES	3 BREAKERS FOUND TRIPPED ON MCC
W	KE1	015967*	092376	U	RM	F16	S	D	02	Z	FEEDWATER ISOLATION VALVES FAILED TO OPERATE	COMMAND/FAILED BY RELAY/NO SIGNAL
W	PT2	017035	012777	F	MV	F16	S	D			CONT.SPRAY PMP.DISCHG.VLV.2-860B INOPERABLE	VALVE OPERATOR BREAKER WAS OPEN

FAILED TO OPERATE AS REQUIRED

PLANT	CONT. NO.	EVENT DATE	COMP	FAIL CODE	TYPE	CLASS	CONTR. NO.	KEY	FAILURE MODE	FAILURE MECHANISM
W S01	022336	081878	B HV F16	S D					VALVE OPENED ACCIDENTLY DURING CIRCUIT MAINTENANCE	SIGNAL TO VALVE/COMMAND FAULT/MAINTEN
W TR1	018588	070277	R MV F16	S D					AIR COOLER BYPASS VALVE FAILED TO OPERATE/TESTING	COMMAND/PERSONNEL INCORRECTLY WIRED CIR
W ZI2	017037*	012877	N DV F16	S D	02				TWO AIR COND DV(DFCV-AV42A/B) FAILED TO OPERATE	COMMAND/STICKING RELAY
G DR2	021512*	051378	C CV F17	R T	02				VACUUM BREAKERS 2-16G1-33E6F FOUND INOPERABLE	SWELLING OF TEFLON SHAFT BUSHINGS
G DC1	022574*	091578	C AV F19	T	02				VACUUM BREAKERS V-26-16, V-26-18 INOPERABLE ON TEST	LACK OF LUBRICATION, VALVE BINDING
B RS1	019536	100177	L MV F20	D					BWS ISOL VALVE FAILED TO OPERATE (SFV-25003)	LIMITORQUE OPERATOR(SMB) FAILED (EXCESS OPP
G BR1	022089	071678	M MV F20	R U					OUTBOARD MN. STMN. DR. ISO. VLV B21-F019 WOULDNT OPR	MTR. BRUSH. NOT MAKING PROP. CONT. W/COMMUTAT
G BR1	022820	102878	M MV F20	R U					MN. STMN. DR. ISO. VLV B21-F019 FAILED TO OPERATE	FAULTY MTR. BRUSH HOLDER
G C01	014359	012476	L MV F20	R D					VLV RHR-MO-34A WOULD NOT OPERATE BY MTR. OPERATOR	SHEARED WOODRUFF KEY. IN MTR. OPERATOR
G C01	015717	081076	D MV F20	D					VALVE CS-MO-128 WOULD NOT OPERATE	TRIPPER PIN IN OPERATOR DISLODGED
G C01	018004	042077	D MV F20	D					CORE SPRAY PUMP VALVE INOPERATIVE, MOTOR RUNS	MOTOR GEAR SET SCREW ON VAL OPER LOOSE
G EN1	014785	040776	L MV F20	U					VALVE E11-F047A FAILED TO OPERATE ELECTRICALLY	A MOTOR WINDING FAILURE OCCURRED
G EN2	022675	102778	H MV F20	T					HPCI VALVE 2E41-F001 FAILED TO OPERATE	FAILURE OF MOTOR SHUNT FIELD INSULATION
G FP1	016374	110176	Q MV F20	D					RCIC ISOLATION VALVE 13-MOV-16 FAILED DURING TEST	VALVE MOTOR OPERATOR BURNED OUT
G FP1	022119	080678	N MV F20	D					SUCTION VALVE 23-MOV-57 WOULD NOT OPERATE	VALVE MOTOR BURNED OUT
G P83	014265	022576	K MV F20	U					MO-538 RECIRC. PMP. DISCHG. VLV. INOPERABLE	SHRT. CKT. OF WIRING IN VLV. MTR. OPERATOR
G P83	022078	081278	M MV F20	T					MAIN STEAM LINE DRAIN ISO VAL, MO-74, INOPERABLE	VALVE MOTOR OPERATOR CIRCUIT GROUNDED
W PR1	018341	061877	B MV F20	D					AUX FEED PUMP DISCHARGE VALVE FAILED TO OPERATE	OPEN LEAD IN OPERATOR/LIMITORQUE SMB-COO
W PT1	013945	010876	B MV F20	D					MOV-4020 AUX FEED PUMP DISCHARGE FAILED STUCK/TEST	VALVE OPERATOR RING WORN/GEAR REPLACED
W SA1	016539*	011077	H MV F20	D	02				MTR. BRKRS. TO VLVs 15J162 TRIPPED WHEN VLVs WERE O-	PENED//BOTH MTR. OPERATORS HAD FAILED

FAILED TO OPERATE AS REQUIRED

VEEN	PLAN T	CONT.NO.	EVENT DATE	SY S	C U H P	FAIL CODE	T Y P E	C L A S S	C O N M U P M	K E Y	FAILURE MODE	FAILURE MECHANISM
W	SU1	016202	100576	G	MV	F20		T			CHEM ADDITION MOV (MGV-CS-1026) FAILED TO OPERATE	SHORTED MOTOR/CONTACTS CORRODED
W	SU2	014843	041276	N	MV	F20		R T			CONDENSER OUTLET MOV-CW-200A FAILED TO OPERATE	OPERATOR PROBLEM/IT CONTAINED WATER
W	SU2	019478*	101177	S	MV	F20		C D 04			4 MOV'S IN SERVICE H2O SYS FAILED TO OPERATE	PIT CONTAINING THEM WAS FLOODED
W	TR1	016664*	120976	C	MV	F20		C D 02			CONTAINMENT VALVES (MO-5663/5671) FAILED TO OPERATE	FRICTION IN OPERATOR/INCREASED CLOSE TIME
W	TR1	020325	112777	B	MV	F20		T			UX FEED VLV (CV-300482) FAILED TO OPERATE	MOTOR OPER FAILED/WATER CAME THRU GASKET
W	ZI2	022518	090578	C	MV	F20		D			VALVE 2MOV-VC8105 FAILED TO OPERATE DURING TEST	JAMMED MOTOR OPERATOR/LIMITORQUE SMB-0C
B	DE1	017226	022577	C	SV	F21		U			MPI LETDOWN ISO.VLV., IHP-5, FAILED (CONT. ISO.VLV.)	ELECTRICAL FAILURE OF THE SOLENOID COIL
G	DR3	014071	010476	W	SV	F21		U			NO.2 CONTROL VALVE FAILED TO OPERATE	MAIFUNCTION OF FAST ACTING SOLENOID VALVE
G	FP1	013958	010676	W	SV	F21		D			DRY WELL PARTICULATE SAMPLING VALVE FAILED TO OPERATE	ELECTRIC SOLENOID BURNED OUT
G	FP1	017840	073076	N	SV	F21		D			VALVE IN DRYWELL MOISTURE LINE FAILED TO OPERATE	FAILURE OF VALVE SOLENOID
G	VY1	022253	081478	Y	SV	F21		U			PURGE MAKEUP VLV V16-22B CAUSED A FUSE TO BLOW IN-	-THE PCIS LOGIC//FAULTY SOLENOID OPERATOR
B	DB1	022691	091778	Y	SV	F22		T			RADIATION MONITOR PMP DISCH. VLV FAILED TO OPERATE	DIAPHRAGM IN VLV WAS CRACKED/DUE TO HIGH PRESS
G	NM1	018297A	071377	M	RM	F22		D 26			SCRAM PILOT VALVES FAILED TO OPERATE CORRECTLY	PRESS & EXH DIAPHRAGMS TORN OR CRACKED
W	JF1	022988	100978	C	RM	F22		D			INST AIR PRESSURE CONTROL VALVE FAILED OPEN	DIAPHRAGM FAILED
B	AR1	022339	072078	G	RM	F23		T			SODIUM THIOSULFATE BLOCK VLV CV-2411 FAIL. TO OPERATE	TORQUE SETTING OUT OF ADJ; DRY PACKING
B	DE1	018427	070777	N	MV	F23		T			VALVE 1LPSW-18 FAILED TO OPERATE	MECHANICAL FAILURE OF TORQUE SWITCH
G	DR3	021679	060678	F	MV	F23		D			VALVE MO3-1901-28B FAILED WHILE BEING CYCLED	DEFECTIVE SHAFT PIN ON TORQUE SWITCH
G	P82	015139	062076	W	MV	F23		D			MAIN STM LINE DRAIN ISO VAL MO-2-74 FAIL TO STROKE	TORQUE SWITCH FAILURE
G	P83	018525	080977	Q	MV	F23		R D			RCIC OUTER ISO.VLV(MG-16) FOUND INOPERABLE	BROKEN LUG ON TORQUE SWITCH TERMINAL
W	DC2	021218	042278	J	MV	F23		T			MOV FAILED TO OPERATE DURING TESTING	TORQUE SWITCH CONTACTS NEEDED BURNISHING

FAILED TO OPERATE AS REQUIRED

VEH	PLAN	CONT. NO.	EVENT DATE	SVCS	COMP	FAIL CODE	TYPE	SWRFC	CON	PH	YMK	FAILURE MODE	FAILURE MECHANISM
W	IP2	0187878	050777	F	RM	F23	D					VALVE 822B DID NOT OPERATE PROPERLY	TORQUE SWITCH MALFUNCTION
W	PT2	021766	061678	F	MV	F23	D					CONT SPRAY VALVE(MOV) FAILED TO OPERATE FOR TEST	SMB-00 LIMITORQUE SW FAULTY/REPLACED
W	RO2	020323	010478	S	MV	F23	U					VALVE V6-33C FAILED TO FUNCTION PROPERLY	TORQUE SWITCH MALFUNCTIONING
W	SU1	017260	021977	G	MV	F23	D					CHEM ADDITION MOV (GS-102A) FAILED TO OPERATE	TORQUE SW FAILED TO DEENERGIZE MOTOR
B	AR1	016465	112276	N	RM	F24	S D					DELUGE VALVE INADVERTENTLY TRIPPED OPEN	SEALING PRESS TO IT LEAKED OFF(COMMAND)
B	AR1	017303	021877	J	SV	F24	T D					VALVE CV6202 WOULD NOT REMAIN CLOSED	TWO AIR SUPPLY BLOCK VALVES FAILED
B	AR1	020883A	030878	N	DV	F24	S D					DAMPER CV2101 DID NOT OPERATE PROPERLY	CV2101 AIR SUPPLY INCORRECTLY ADJUSTED
B	DB1	020275	011278	S	AV	F24	S D					SM-1424 NOT OPER. PROP.; SOMETIMES STUCK OPEN, SHUT	SOLENOID VLV IN CONT SYS BURNED OUT
B	DE1	015530	081076	C	AV	F24	T D					VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS EXH.
B	DE1	017473	032677	C	AV	F24	T D					VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
C	CC1	019206	100377	S	AV	F24	T D					SERVICE H2O CONT VALVE OPERATED ERRATICALLY IN AUTO	PROBLEM WITH PNEUMATIC CONTROLLER TO VALV
C	CC1	019203	100477	S	AV	F24	T D					SERVICE H2O CONT VALVE OPERATED ERATICALLY IN AUTO	PNEUMATIC CONTROLLER NEEDED CALIBRATION
C	CC2	019783	112577	S	AV	F24	T D					SERVICE H2O CONT VALVE MALFUNCTIONED IN AUTO MODE	CONT AIR & FEEDBACK TUBING INSTAL'D WRONG
G	BF3	021400	051378	W	HV	F24)					MSIV 1-38 CLOSED IN 1 SEC.; EXCEED. T.S. REQUIREMNT	DASHPOT WAS LOW ON OIL
G	BF3	021781	062678	W	HV	F24	T D					OUTBOARD MSIV FCV 3-1-78 CLOSED FASTER THAN T.S. AL	VLV'S DASHPOT ASS. WAS LOW ON FLUID
G	BR1	019684	091577	K	RM	F24	T D					PRESS. CONT. VLV LD-PCV-1739 DRIFTED OPEN; MOT-GEN TR	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT
G	BR1	019493	102577	K	RM	F24	T D					PRESS. CONT. VLV LD-PCV-1739 DRIFT. OPEN; MTR-GEN TRIP	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT
G	BR2	014627	031076	K	AV	F24	S D					RECIRC. SYS. WTR. SAMP. VLV 2-B32-F019 CLOSED TOO SLOW	OPEN. AIR PRESS. TO VLV OPER. DRIFTED HIGH
G	BR2	014916	052576	W	HV	F24	S D					OUTBOARD MSIV-B21-F028C STROKED TOO FAST/2.2 SECS.	NIT. PRESS. & HYDR. FL. LOW/LEAK. VENT PLUGGCKV
G	DA1	014340	032476	C	AV	F24	S D					VENT VALVE CV4301 NOT CLOSING WITHIN T.S. TIME LIM	DIRTY PILOT SOLENOID VALVE IN AIR SUPPLY

FAILED TO OPERATE AS REQUIRED

VEN	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CON	K	FAILURE MODE	FAILURE MECHANISM
G	DR2	022942	090778	C	AV	F24	S	D			VALVE 2-1603-24 FAILED TO OPERATE IN TIME LIMIT	FOREIGN MATTER LODGED IN AIR SUP. SOLEN.
G	DR2	022778	093078	C	AV	F24	S	D			VACUUM RELIEF VALVE AD-1601-208 FAILED OPEN	AIR OPERATOR SOLENOID VALVE SHORTED
G	M11	014290	021276	U	AV	F24	S	D			1 OF 2 FEEDWTR.REG.VLVs LOCK, IN THE AS IS POSITION	FAILURE IN 3 WAY PRESSURE REGULATOR
G	M11	018414	071377	U	AV	F24	S	D			"B" FEEDWTR.REG.VLV EXPERIENCED CONTROL PROBLEMS	FAILURE CAUSED BY DIA.FAIL. IN SUP.SYS.VLV
G	M11	018625*	080677	U	AV	F24	S	D	C2	V	FEEDWTR.REG.VLVs. LOCKED UP "AS IS"	LOSS OF INSTRUMENT AIR PRESS.CAUSED FAIL.
G	DC1	0194308	101177	T	AV	F24	S	D			VAL ON STBY GAS TREAT SYST NO1 FAIL TO OPER PROP	FLO CONT PLUG ON PILOT SV DETERIORATED
G	PI1	021963*	071078	X	RM	F24	S	D	02		SCRAM VALVES FOR CRD 38-47 SLOW ACTUATING	STICKY ASCD SOLENOID VLV IN SUPPLY SYS
W	DC1	014549*	050576	C	AV	F24	S	D	02		VALVES CCR-4606462 FAILED TO CLOSE IN REQUIRED TIME	WRONG SIZE TUBING(VENT)FROM VALVE(DESIGN)
W	IP2	015732	091276	K	SV	F24	S	D			INST AIR PRESS LOST BY MALFUNCT OF 4-WAY VALVE	CAUSE UNKNOWN
W	IP3	015576	081076	N	DV	F24	S	D			CONT.ROOM DAMPER "C" DID NOT TRANSFER ON SIGNAL	MALFUNCTIONING RELAY IN SUPPLY LINE
W	JF1	022633*	090978	B	F24	S	D	03			CONTROL WAS LOST ON FLOW CONT.VLVs 3228A,B,C	DEFECTIVE RELAY IN TOAPP CONTROL C...
W	PT1	017805	043077	N	DV	F24	T	D			CONTROL RM VENT VALVE(DAMPER) FAILED TO OPERATE	FOREIGN MATTER IN AIR REGULATOR
W	PT1	017864	052877	N	DV	F24	T	D			CONTROL RM VENT VALVE(DAMPER) FAILED TO OPERATE	FOREIGN MATTER IN AIR REGULATOR
W	SA1	016940*	011677	W	HV	F24	T	D	02		TWO HYDRAULIC MSIV WOULDNT OPERATE/COMMAND FAULT	HYDRAULIC LINES TO VALVES RUPTURE/FITTING
W	SA1	017699*	042977	N	RM	F24	S	D	02		TWO VALVES FAILED TO OPERATE(IN REQUIRED TIME)	SOV BLEED-OFF UNDERSIZED/DESIGN PROBLEM
W	TU4	022585*	092078	W	AV	F24	S	D	03		3 MSIVs HAD DEFECTIVE SOLENOID COILS/PREV MAIN	COMMAND FAULT/SOLENOIDS CONTROL AIR
W	Z11	016181	093076	C	AV	F24	T	D			CONTAINMENT VALVE (1FCV1A018) FAILED TO OPERATE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
W	Z11	019410	100777	W	HV	F24	S	D			WHILE RECHARGING HYDRAULICS/MSIV OPENED PARTIALLY	COMMAND FAULT/PRESSURE*COMMANDED*IT OPN
W	Z12	021709*	060578	C	AV	F24	T	D	02		TWO AIR OPERATED CONTAINMENT VALVES FAILED TO OPER	COMMAND/OIL IN AIR SYS FAILED SOVS
B	CR3	013559	071577	C	RM	F26	T				CONT ISOL VALVE MDV-94 FAILED TO OPERATE	DIRTY LIMIT SWITCH CONTACTS

FAILED TO OPERATE AS REQUIRED

VE N	PLAN I	CONT.NO.	EVENT DATE	S M P	C O M P	FAIL CODE	T Y P E	C L A S S	C O N M U M	K M V	FAILURE MODE	FAILURE MECHANISM
C	CC1	021760	060778	C	MV	F26	D				CONT NOR SMP TSO (MOV-5463) DID NOT SHUT IN REQ TIM	OPEN LMT.SWITCH WAS OUT OF ADJ.(PROCEDURE)
G	BR2	018693	072877	N	RM	F26	U				ISOLATION VALVE ON 2A FILTER DEMIN FAILED TO OPER	LIMIT SW PROBLEM
G	BR2	020240	010478	H	MV	F26	T				CLOSING TIME ON E41-F002 EXCEED. TS LIMIT (HPCI)	LIMIT SWITCH(OPEN) OUT OF ADJUSTMENT
G	DR2	015378	071176	D	MV	F26	D				CORE SPRAY INJECTION VAL MD2-1402-24B FAILED	BROKEN LIMIT SWITCH CONTACT BLOCK
G	QC1	017360	012377	W	AV	F26	T				MSIV AD-1-203-1A FAILED TO OPERATE DURING TESTS	LIMIT SWITCH FAILED DUE TO EXCESS HEAT
G	DA1	014312*	030976	W	RM	F27	T	06			MSIV 4412,4413,4418,4419,4420,4421 LEAKING	OUT OF ROUND PILOT VALVE DISKS
G	QC1	017361	021177	W	AV	F27	T				MSIV FAILED TO CLOSE IN REQUIRED TIME DURING TEST	FAULTY PILOT VALVE VITRON O-RINGS
G	QC2	019224	092277	W	AV	F27	T				MSIV FAILED TO OPERATE PROPERLY	FAULTY 4-WAY PILOT/O-RING DAMAGED
G	VY1	022744	101478	W	AV	F27	D				MSIV (V2-86C) CLOSED FASTER THAN DESIGN TIME	SPEED CONTROL VALVE BECAME LOOSE
W	Z11	019863	120377	W	HV	F27	R	U			MSIV 1B FAILED TO OPEN OR CLOSE IN REQUIRED TIME	3WAY SELECTOR(TELEDYNE)DC SOLENOID FAILED
W	Z11	021110	040178	W	HV	F27	R	T			MSIV FAILED TO OPERATE IN REQUIRED TIME	REXROTH 4WAY DIRECTIONAL CONTROL VAL FAIL
W	Z12	023161*	020378	W	HV	F27	B	D	02		TWO MSIVS FAILED TO OPERATE IN TIME REQUIRED	PILOT FAILURE/2 TELEDYNE DC SOLEN FAILED

PLUGGED (FAILS TO REMAIN OPEN)

VEN	PLANT	CONT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CONTRUM	KEY	FAILURE MODE	FAILURE MECHANISM
W	BV1	021644	062278	F	UV	G05	D				INFLATABLE PLUG FOUND IN RECIRC PUMP INLET VALVE	PERSONNEL ERROR DURING CONSTRUCTION PHASE
W	SU1	020815	030578	S	UV	G09	R T				ISOLATION VALVE ON COOLER (1-SW-E-18) PLUGGED	DISC SEPARATED FROM STEM/CORRODED STEM
W	SU1	023135	120478	S	XV	G09	T				SEAL COOLER INTAKE GATE VALVE PLUGGED/GATE SEPARAT	--ED FRCH STEM//CORROSION OF STEM
W	SU2	020819	030578	S	UV	G09	R T				SEAL COOLER 2-SW-E-18 ISOLATION VLV PLUGGED	GATE SEPARATED FROM STEM DUE TO CORROSION
G	OC1	0228518	101878	T	UV	G10	T				DRAIN VALVE V-7-29 OBSTRUCTED BY CORK LIK MATRL	ASSUMED THAT MATRL NOT REMOVED DUR CONST
G	P83	015853	090176	Y	UV	G10	T				DRYWELL RAD.MONIT.SYS.PRESS.CONT.VLV HAD FLOW REST	FLOW BLOCCKAGE DUE TO FOREIGN WATER.CONT.
W	PT1	020489	020478	N	XV	G10	U				GLOBE VALVE USED TO CONTROL AIR FLOW PLUGGED	BLEW WATER OUT / READJUSTED FOR AIR FLOW
W	SU2	019565	102977	G	UV	G10	T				NO FLOW COULD BE ATTAINED THROUGH FCV-2113A	BORON CRYSTALLIZATION ON VALVE SEAT
B	CR3	022361	081978	L	RM	G16	T D				DHV-3 WENT CLOSED WHEN REQUIRED TO REMAIN OPEN	LOSS OF 120 VOLT AC VITAL BUS(INVERTER)
C	CC2	020157	010378	W	RM	G16	S D				#21 MN-STM.ISO.VLV FAILED SHUT;VLV DECLARED INOPER	POSITIVE GROUND ON VLVS CONTROL CIRCUIT
C	PA1	020230	122377	H	MV	G16	S D				MDV-3011(HPCI ISO.VLV) FAILED TO REMAIN OPEN	BAD SWITCH CAUSED CLOSING CONT.TO STICK
G	BR2	016198	100976	O	RM	G16	S D				RCIC STM.SUP.VLV E51-F007 CLOSED ON SPURIOUS SIGNL	FAILURE IN RCIC ISOLATION CIRCUITRY
G	EN1	015564	072076	L	RM	G16	S D				RHR FLOW VALVE E11-F007B FAILED TO STAY OPEN	DEFECTIVE SHITCH SUPPLYING SIGNAL TO VALV
W	SA1	022873*	110678	F	RM	G16	S D 02 V				SERVICE H2O VALVES FOUND TRIPPED	INADVERTANT TRIP SIGNAL,DESIGN PROBLEM DT
W	TR1	014504	022176	L	MV	G16	S D				RHR VLV CLOSED WHEN IT WAS REQUIRED TO REMAIN OPEN	VOLT.FLUC.ON INSTRUMENT AC BUS
W	TR1	021068*	032078	L	MV	G16	S D 02 V				DEENERGIZING PROTECTION SYS CAUSED RHR VALVES TO--	--CLOSE//PROCEDURAL DEFICIENCY
W	BV1	017554	032877	S	AV	G22	R U				18 RCP COOL.WTR.SUP.CONT.ISO.VLV FAILED SHUT	FAILED DIAPHRAGM IN VLV. OPERATOR
W	BV1	023439	011478	J	AV	G22	R U				1A RCP COOLING WATER INLET ISO. VLV FAILED SHUT	RUPTURED VLV LPER. DIAPHRAGM CAUSED FAIL.
B	CR3	022360*	002178	N	AV	G24	S D 02				DAMPERS TO AHF-14B & D WENT CLOSED/VENT WAS REVERS	SOVS IN AIR SUP. HAD DEFECTIVE CONT.VLVS.
G	QC1	018459	061177	H	RM	G24	S D				HPCI PUMP INLET VALVE WOULD NOT STAY OPEN/TESTING	MALFUNCTION IN LOCAL VALVE CONT STAT CIRC
W	BV1	015909	091076	F	AV	G24	S D				COOL WATER CONT ISOLATION VALVE WENT CLOSED	AIR PRESS TO VAL DROPPED/AIR SYS(DESIGN)
W	BV1	017697*	022077	W	AV	G24	S D 02				1A & 1B MN STM ISO. VLVS WENT PARTIALLY CLOSED	LOW AIR PRESS TO TH MSIVS VLV POSITIONER
W	HN1	023582*	122978	N	AV	G24	S D 04				4 S/G BLOWDOWN LINE VALVES CLOSED WHEN REQ OPEN	AIR SUPPLY TO VALVES TRIPPED(COM CAUSE)
W	SA1	017199A	021077	W	RM	G24	S D				MSIV FAILED TO OPERATE(IT DRIFTED SHUT)COMMAND	EXCESS DIFF PRESS ON PISTON OF MSIV
G	VY1	014297	030276	Y	AV	G27	D				ADV FAILED TO OPERATE(AS DESIGNED)/CLOSED INADVERT	SOLENOID OPERATED AIR PILOT CLOSED INADV.

PREMATURE OPEN (RELIEF VALVES)

VE N	PL AN I	CONT.NO.	EVENT DATE	S Y S	CO M P	FAIL CODE	T Y P E	CL AS S	CO N F I D E N T I A L	KEY	FAILURE MODE	FAILURE MECHANISM
B	CR3	017320	022577	W	RV	H00	R	U			MN.STM.RELIEF VLV MSV-36 OPEN BEFORE SETPOINT	CAUSE OF PREMATURE OPENING NOT KNOWN
B	CR3	017319	030877	W	RV	H00	R	U			MN.STM.RELIEF VLV MSV-3 OPENED PREMATURELY	CAUSE OF FAILURE UNKNOWN
B	CR3	019305	091677	W	RV	H00	R	D			MN.STM.SAFETY VLV. MSV-42 RELIEVED AT PRESS.BELW SP	SETPOINT DRIFT (CAUSE OF DRIFT NOT STATE)
B	DB1	020219*	122177	W	RV	H00		U	04		4 MN.STM.SAFETY VLVS LIFTED BELOW DESIGN SETPOINTS	CAUSE OF PREMATURE OPENINGS IS UNKNOWN
C	FC1	015209A	052876	W	RV	H00	R	U	02		RELIEF VALVES OPENED BELOW SET PRESSURE	PRESSURE SETPOINT HAD DRIFTED
C	FC1	015209B	052876	W	RV	H00	R	U	06		6 RELIEF VALVE SETPOINTS BELOW DESIRED PRESSURE	SETPOINTS HAD DRIFTED
C	SL1	015511*	071876	L	RV	H00		U	02		TWO SUCTION RELIEF VALVES OPENED PREMATURELY	UNKNOWN/FAILED TO RESEAT ALSO
G	BF3	023291	121678	G	RV	H00		T			RV ON DISCHG.OF STBY.LIQ.CONT.PMP.OPENED PREMATUR	NO CAUSE GIVEN (PROB.SETPOINT DRIFT)
G	BR2	015421	070776	A	RV	H00		U			ADS SAFE.RELIEF VLV R-B21-F013G OPENED PREMATURELY	CAUSE NOT GIVEN
G	FP1	015241	072176	A	RV	H00		U			SAFETY RELIEF VALVE OPENED PREMATURELY	CAUSE UNDER INVESTIGATION
G	FP1	016373	111976	A	RV	H00		U			RELIEF VALVE 02-RV-71F INADVERTENTLY OPENED	CAUSE UNKNOWN
G	FP1	016415	112276	W	RV	H00		U			SAFETY/RELIEF VALVE 02-RV-71B OPENED PREMATURELY	CAUSE UNDER INVESTIGATION
G	FP1	016600	121576	E	RV	H00		U			RELIEF VALVE ON SOAK BACK PUMP LIFTING EARLY	CAUSE UNKNOWN
G	PI1	014942	052876	W	RV	H00		U			CROSBY RELIEF VALVE OPENING AT TOO LOW PRESSURE	CAUSE UNKNOWN
G	VT1	014544	041576	L	RV	H00		U			RELIEF VALVE (RHR-25A) LIFTED PREMATURELY / TEST	UNKNOWN/ RESET TO LIFT 100 PSI HIGHER
W	BV1	020131*	121877	L	RV	H00	C	U	02	V	RELIEF VLVS LIFTED AT SETTING LOW THAN NORMAL	NO CAUSE GIVEN FOR RV LIFTING LOW
W	HN1	014898	051876	B	RV	H00		U			RV ON STEAM SUPPLY TO AUX FEED PUMP LIFTED EARLY	VALVE TO BE REPAIRED/FAIL. CAUS. UNKNOWN
W	IP2	021290	020778	G	RV	H00		U			RV NO.264 RELIEVED BELOW DESIGN SETPOINT	CAUSE UNKNOWN
W	IP2	021026	031478	K	RV	H00	R	U			RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT
W	IP3	016635	100276	L	RV	H00		U			RV-1836 LIFTED BELOW TS PRESSURE	UNKNOWN
W	SU1	016882A	111376	K	RV	H00	R	U			PRESSURIZER SAFETY VLV (SV1551A) PREMATURE OPEN	UNKNOWN/ "SETPOINT DRIFT" DOWN
W	SU1	017217	021577	W	RV	H00	R	U			MS SAFETY VALVE (SV-MS-101A) PREMATURELY OPENED	UNKNOWN/SETPOINT DRIFT OF TORQUE LIMITOR
W	SU1	023131	072678	H	RV	H00		U			HYDRO TEST PUMP DISCHARGE RV PREMATURELY OPENED	UNKNOWN/VALVE WAS REPLACED AND CHECKED OK
W	SU2	019212*	092077	K	RV	H00	R	U	03		3 PRESSURIZER SAFETY VALVES OPENED PREMATURELY	UNKNOWN/PROB WIDE VARYING TEMP&ENVIRONMENT
W	YR1	022739*	102178	W	RV	H00		U	02		TWO SG SAFETY VALVES LIFTED PREMATURELY	UNKNOWN/READJUSTED VALVES
G	EN1	013045*	072976	A	RV	H03		D	07		ALL SEVEN ADS VALVES OPENED INADVERTANTLY ON TEST	PERSONNEL ERROR (USED WRONG PROCEDURE)
C	CC2	019982	121377	H	RV	H04		D			HI.PRESS.SI.HDR.RELIEF LIFTED AT PRESS.BELOW T.S.	DESIGN ERROR;VLV WAS SET AT TOO LOW PRESS
C	FC1	016334*	111076	K	RV	H06	R	D	02		VALVES RC-141+RC-142 LIFTING PRESS OUT OF SPEC	LIFTING PRESS SET WITH NITROGEN
G	BF3	019562	012277	G	RV	H08	R	D			RELIEF ON 3A STBY.LIQ.CONT.PUMP OPEN.BELOW SETPOINT	DISC BOUND IN GUIDE;VLV SEATS DAMAGED
G	BF3	018635	062177	G	RV	H08	R	D			RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	SCORED AREA ON PLUG GUIDE AND PLUG
G	BF3	018542	072577	G	RV	H08	R	D			RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	DISC GUIDE WAS GALLED WITH THE VLV DISC
G	QC1	017359	012577	G	RV	H10		T			RV IN STANDBY LIQ CONT SYS OPENED PREMATURELY	POSS BORON CRYSTALS IN SEATING AREA
C	CC2	017906	051477	W	RV	H12	R	T			S/G SAFETY VLV LIFTED BELOW SETPOINT (2-RV-3993)	DRIFT IN VLV'S SPRING TENSION/ADJ.TENS.

PREMATURE OPEN (RELIEF VALVES)

VEN	PLANT	CONT.NO.	EVENT DATE	SUS	C	FAIL CODE	TYPE	CLASS	CON	KEY	FAILURE MODE	FAILURE MECHANISM
											MP	PH
C	CC2	018040*	061477	W	RV	H12	R	T	04		3 SAFE.VLVS #22S/G&I SAFE.VLV #21S/G LIFTED PREMAT	DRIFT IN THE VLVS* SPRING TENSION
G	BF2	021401	050478	G	RV	H12	R	D			RELIEF VLV.ON #8M STBY.LIQ.CONT.PUMP OPEN.BELOW SP	CAUSE OF IMP.SET POINT SETTING NOT GIVEN
G	BF3	022125	082278	W	RV	H12	R	D			DURING STARTUP MSRV 1-4 OPENED BELOW SETPOINT	PREMATURE OPEN.DUE TO EXCESS.2ND.STG.LEAK
G	BR2	018178A	060877	G	RV	H12		T			STDBY.LIQ.CONT.PMP 2B REL.VLV LIFTED BELOW SETPOIN	MECHANICAL DRIFT
G	BR2	018178B	060877	G	RV	H12		T			STDBY.LIQ.CONT.PMP 2A REL.VLV LIFTED BELOW SETPONT	MECHANICAL DRIFT
G	MI1	019962	112977	A	RV	H16	S	D			A TARGET ROCK SAFETY/RELIEF VLV ACTUATED PREMATURE	CABLE FAULT CAUSED ACTUATION SOL.TO ENERG
W	Z11	014399	010876	W	RV	H24	S	D			RELIEF VLV ON 1A S/G OPENED PREMATURELY	STM.PRESS.XMITTER.1PT-916 DRIFT.TO MAX OP
G	DR2	014542	041276	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-A LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	DR2	014530	041376	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-B LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	VY1	018978*	082877	G	RV	H25		T	02		TWO SBLC RELIEF VALVES LIFTED PREMATURELY	1-SEATING SURFACES LAPPED 2-RESET SETPONT
G	BF3	022126*	081778	W	RV	H27	R	D	03		MN.STM RVS MSRV1-41,30,634 OPENED BELOW SETPOINTS	VLV FAILURES WERE CAUSED BY PILOT VLV.PRB
G	BR2	015419	071576	W	RV	H27		D			SAFE.RELIEF 2-821-F013K(S/N 109)LIFTED PRIOR TO SP	PILOT VLV HAD POPPET.& SEAT STEAM CUT
G	EN1	017190	020477	A	RV	H27	R	T			RELIEF VALVE 821-F0133 OPENED PREMATURELY	LEAKAGE BY VALVES PILOT SEAT
G	MI1	018157	061777	W	RV	H27	R	T			VALVE 1-MS-3D LIFTED BELOW SET PRESSURE	EXCESSIVE LEAKAGE PAST PILOT SEAT
G	MI1	019631	111877	K	RV	H27		T			RV LIFTED BELOW SET PRESSURE	EXCESSIVE PILOT SEAT LEAKAGE
G	MI1	020698A	031078	K	RV	H27		T			RV LIFTED PREMATURELY DURING A SHUT DOWN	LEAKAGE IN PILOT VALVE/STEAM CUT

MAINTENANCE/REPLACEMENT

EVENT	PLANT	CONT. NO.	EVENT DATE	SY	COMP	FAIL CODE	TYPE	CLASS	CN	KEY	FAILURE MODE	FAILURE MECHANISM
B DB1	020702	022878	W RM	IOO	D	MN.STM.ISO.MS-101 HAD RAISED METAL CN 2 OF4 SP.GD.					CAUSE OF RAIS.MET.ON SPR.GUID.TUBE.UNKNOW	
C CC1	017925A	051976	N RV	IOO	U	WORK REQUIRED ON STORAGE TANK OUTLET RELIEF VALVE					FAILURE CAUSE NOT STATED	
G BR2	015419*	071576	W RV	IOO	U 03	3 RVLVS (A(S/N 98),B(S/N 107),G(S/N 99) UNSATISF.					CAUSE OF RVLVS BEING UNSATISFACT.NOT GIVN	
C MY1	022401*	082478	K MV	IO1	R D 06 Z	THERM.OVERLD.LINK.NOT REMOVED FROM RCS LOOP ISO.V-					LVS BRKRS.AS REQUIRED//PERSONNEL ERROR	
G DR2	018181	060377	L MV	IO1	C D	LPCI VALVE 2-1501-3A, CLOSING VALVE BENT STEM					PERSONNEL ERROR	
B DB1	020707*	021078	L AV	IO2	D 02	MECH.STOPS FOR DH14AE14B INCORRECTLY SET					PERSONNEL ERROR;MAINTENANCE DONE INCORREC	
B DB1	022051	072478	C CV	IO2	D	FLOOR DRAIN FLAPPER VLV REMOVED,MODE4 OPER;TS VID.					PERSONNEL ERROR MAINTENANCE	
B T12	022390*	082478	X UV	IO2	D 04 Z	CABLES TO SAFETY RELATED VALVES NOT SPLICED AS REQ					PERSONNEL ERROR/CONTRACTOR PERSONNEL	
B T12	022386	090778	C MV	IO2	D	DISCOVERED MOV THAT DIDNT HAVE CONT GRADE SWITCHES					--AND MOTOR(WDL-V-271)//PERSONNEL ERROR	
B T12	023076*	090878	C MV	IO2	D 02	MOV(SMU-V2A/B) FOUND WITH CONNECTIONS NOT TAPED					PERSONNEL ERROR/INSTALLED SHRINK TUBING	
C MY1	020761	021678	K MV	IO2	R D	THERM.OVERLD.LINK.NOT REMOVED FROM #1 LP. COLD LE-					G ISO.VLV.BRKR.//PERSONNEL ERROR(MAINT.)	
G DA1	017308	021977	N AV	IO2	D	INCORRECT SV REPLACED ON TORUS V.B. CV-4304					MAINTENANCE PERSONNEL ERROR	
C CC1	014703	033176	S RM	IO4	R D	BUTTERFLY VALVE TO BE REPLACED WITH GATE(1CV5210)					POOR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL	
C CC1	015271B	062776	G RV	IO4	D	#12 BORIC ACID PUMP SUC.RELIEF MADE OF WRONG MATER					DESIGN ERROR	
C PA1	014721*	043076	M AV	IO4	C	VALS CV-2113,-2115 DO NOT MEET STRESS CODE CRIT.					CHANGE OF CALCULATION TECHNIQUE / DESIGN	
C PA1	019405	091677	C AV	IO4	D	CNTNMNT PURGE ISO VLVs NEED REDUNDANT AIR SUPPLY					DESIGN ERROR IN ORIG SYST DESIGN	
C SL1	017609*	040677	N RM	IO4	D 02	ATMOSPHERIC STEAM DUMP VALVES DIDNT MEET FSAR CRIT					DESIGN ERROR IN SIZING THE VALVES	
G FP1	021495*	061678	Q MV	IO4	D 03	3 VALVE OPERATOR MOTORS HAVE WRONG CLASS WINDINGS					MOTORS REMOUND WITH CLASS H INSULATION	
G QC1	021127*	042178	H MV	IO4	C D 02 V	GE NOTIFIED QC THAT RECIRC SUCTION VALVES COULD---					---CLOSE SPURIOUSLY/DISABLED ELECTRICALLY	
W IP2	016467*	120276	C RM	IO4	R D 07	ELEC.CIRC.FOR 4CONT.ISO.VLVs&3CONT.REL.VLV.NOT ME-					ET SING.FAIL.CRIT(1 SOURCE PWR)//DESIGN	
W IP2	019281*	101977	C RM	IO4	R D 02 V	AIR EJECT.LINE CONT.ISO.VLV.CIRCUITRY DID NOT MEE-					T SINGLE FAIL.CRIT(1 SOURCE PWR)//DESIGN	
W IP2	022163	081778	K RV	IO4	D	DISCREP BETW SPEC + AS SUPPLY PARAMETERS FOR RV					DESIGN ERROR,3 IN,1500 PSI PRESS RV	
W NA1	021148	040778	N RM	IO4	D	TV-SS112A NEEDS DESIGN MOD TO REPLAC LIM SW					DESIGN ERROR	
C FC1	023022*	111678	P MV	IO5	D 30	30 LIMITORQUE VALVES FOUND WITHOUT STAKED LOCKNUTS					MANUFACTURER ERROR	
C SL1	015005	060476	Y UV	IO5	D	RECCRDS REVIEW SHOW VALVES OF H2 SYS NOT TESTED---					---FOR #1 ENVIRONMENT/REPLACED VALVES	
C SL1	022185*	072878	P MV	IO5	C D 05 Z	VENDOR NOTIFIED PLANT OF POTENTIAL MOV FAB PROBLEM					LOCKNUTS STAKED WRONG ON JOME/REPAIR SAME	
G BF1	020493A	021478	W RV	IO5	C D 02	LINEAR INDIC. FOUND IN 2 MN.STM.RVS,BODY CASTINGS					CAUSED BY CASTING SHRINKS OR NONMETAL.INC	
G BF2	014104	071276	UV	IO5	D	DEMIN H2O TO DRYWELL VALVE FOUND NOT SEISMIC QUAL					PERSONNEL ERROR/PROBABLE Q.C.	
G BF2	021493B	021478	RV	IO5	C D 02	LINEAR INDIC. FOUND IN 2 MN.STM.RVS,BODY CASTINGS					CAUSED BY CASTING SHRINKS OR NONMETAL.INC	
G PB2	020684*	030678	W RV	IO5	C D 04	DURING INSPECT.;CRACKS FOUND NEAR SEATS OF 4 S.RVS					CRACKS WERE CAUSED BY PRE-EXIST.CAST.DEF.	
G P11	014476	041376	C MV	IO5	D	WELD ON HPCI SYSTEM VALVE MO 2301-4 CRACKING					ORIGINAL WELD FABRICATION VARIANCE	
W DC1	014430	042076	B MV	IO5	D	AUX FEED WATER VALVE FOUND INSTALLED BACKWARDS					CONSTRUCTION/QC ERROR/INLET-OUTLET REVERS	

MAINTENANCE/REPLACEMENT

PLANT	CONT.NO.	EVENT DATE	VALVE	COMP	FAIL CODE	TYPE	C	S	M	P	KEY	FAILURE MODE	FAILURE MECHANISM
W JF1	020446	012178	L RM	I06		D						VAL HCV-603A MECH STOP NOT REPLACED AFTER MAINT	ERROR IN TECH SPEC
W SU1	021732*	052878	P UV	I06	B D	02	V					PROCEDURAL DISCREPANCY ABOUT WHAT LUBRICANT TO USE	FOREIGN MATERIAL ON VALVE SEAT SURFACES
W SU2	021987*	071278	F MV	I06	B D	02						INSPECTION OF MOV'S AFYER MAINT/EXCESS LUB ON SEATS	VALVES HAD TO BE CLEANED/PROCEDURAL PROB
C CC1	020036	121977	J RV	I09		T						#11COMP.COOL.HEAT XCHGR.SALT WTR.RV NEEDED REPAIRS	VLV'S SPRING WAS SEVERELY CORRODED
G DA1	014438*	030276	P MV	I10		U	03	S				EXCESS OIL FOUND IN SEVERAL VALVE MOTOR OPERATORS	ACTUAL CAUSE UNKNOWN
G DA1	016450	111776	Q MV	I11		T						LOOSE COMPONENTS ON RCIC VALVE MOV 2405	EXCESS VIBRATION LOOSENED MECH. PARTS
G CO1	020052	112177	D MV	I12		D						VALVE CS-MO-12B NOISY IN OPERATION	2 TEETH MISSING ON VALVE OPERATOR GEAR
C CC1	014122	010376	M HV	I13		T						GROSS OIL LEAK CLOSING SIDE OF #11 MSIV OPERATOR	FAILED O-RING HI PRESS.SIDE OF VLV OPER
G NM1	018297B	071377	P RM	I13		U	26					SCRAM PILOT VALVES HAD DEFECTIVE GASKETS	ALL VALVE BODY GASKETS REPLACED
B DB1	019377	101077	L MV	I16	S	D						DECAY HEAT ISOL. VLV DH-12 MIGHT INADVERT. CLOSE	REQUIRED WIRING CHANGE TO FIX
G PB2	016677*	010377	M RV	I22		T	09					INSPECTION OF RELIEF VLVS SHOWED DIAPHRAGM PROBLEM	DELAMINATION AND OVERHEATING OF DIAPHRAGM
G PB2	016676B	010677	M RV	I27	R	T	G3					PAIN STM RVS 710,EGK FOUND TO NEED MAINT. ON INSP	EXCESSIVE PILCT VLV SEAT LEAKAGE

TECHNICAL SPECIFICATION VIOLATION

VEN	PLAN F	CGNT. NO.	EVENT DATE	S-S	COMP	FAIL CODE	TYPE	CLASS	CUN	KEY	FAILURE MODE	FAILURE MECHANISM
B	DB1	022366	081578	S	UV	T01	D				PORT. OF SERVICE MTR. VLV. TEST NOT PERF. IN REQ. TIME	PERSONNEL ERROR/INSTRUCTIONS MISINTERPRET
C	M12	019602	102877	W	RM	T01	D				MN. STM. LINE ISO. VLV. OPER. TEST COMPLETED LATE	TECH. SPEC. VIO. DUE TO ADMINISTRATIVE CAUSE
G	EN1	018142	051777	N	RM	T01	D				FAILED TO TEST AUTO. ISO. VLV. RADWASTE DISCH LINE	PERSONNEL ERROR
G	EN2	023635	110978	C	RM	T01	D				VACUUM BREAKERS NOT TESTED AS REQ BY TECH SPECS	PERSONNEL ERROR
W	DC1	017794	042777	W	RM	T01	D				DISCOVERED SAMPLE VALVE NOT TIMED AFTER MAINTENANC	PERSONNEL ERROR/TECH SPEC VIOLATION
W	DC2	021680	040378	P	UV	T01	D				ALL CLASS 1, 2, & 3 ASME VALVES NOT INSPECTED AS REQ.	PERSONNEL ERROR/MISUNDERSTOOD REQUIREMENT
W	NA1	022267	081078	C	XV	T01	D				INSTRUMENT AIR VALVE NOT UNDER SURVAIL AS REQD	OPERATIONS PERSONNEL ERROR
W	PR2	017894	042276	S	RM	T01	D				COCL. MTR. SYS. ISO. VLV. TEST NOT PERF. IN REQ. TIME -	-LIMIT//PERSONNEL ERROR
W	PR2	016945	010877	H	MV	T01	D				4 SAFETY INJ VALVES NOT TAGGED AS PER TECH SPECS	PERSONNEL/HANDWRITTEN LINE-UP SHEET USED
W	YR1	020693	022178	N	SV	T01	D				HYD. VENT SYS. SOL. VLV. HV-SOL-162 NOT TESTED ON TI-	-ME//PERSONNEL ERROR
C	MY1	020475	021678	S	XV	T02	D				VALVE SW-53 CLOSED BUT NOT LOCKED	PERSONNEL ERROR
G	EN1	021725	060778	K	CV	T02	D				4-EXCESS FLOW CVS NOT FUNCTIONALY TESTED AS REQ.	MAINTENANCE PERSONNEL ERROR
W	DC1	017246	030377	N	RM	T02	D				CLOSING TIME NOT TESTED ON S/G BLOWDOWN VALVE	MAINTENANCE PERSONNEL ERROR
W	JF1	023282	120678	H	MV	T02	D				T.S. REQUIRED BREAKER TO VALVES LOCKED OPEN	PERSONNEL FAILED TO LOCK BREAKERS OPEN
W	NA1	021502	051078	C	UV	T02	D				TV-SS112A WAS NOT TIMED PRIOR TO RETURNING TO SERV	MAINTAINANCE PERSONNEL ERROR
W	NA1	022938	092778	N	RM	T02	D				AFTER MAINT, VLV. TV-B0100A, B, D, F NOT STROKE TIMED	MAINTENANCE PERSONNEL ERROR
G	CO1	018894	072577	L	RM	T03	D				4 ISOLATION VALVES NOT LEAK TESTED	PERSONNEL ERROR
G	DR3	018551	072577	L	RM	T03	D				SURVEILLANCE TEST NOT COMPLETED ON LPC1 VALVES	PERSONNEL WERE 6 DAYS LATE COMPLETING TEST
G	DR3	019659	102677	H	RM	T03	D				SURVEILLANCE TEST NOT COMPLETED ON TIME	PERSONNEL ERROR (RECURRING PROBLEM)
G	EN1	014106	010276	D	RM	T03	D				CORE SPRAY TEST NOT DONE IN REQUIRED TIME	PERSONNEL ERROR
W	BV7	0644	033178	G	UV	T03	D				TECH SPEC VIOLATION, VALVE POSITION NOT VERIFIED	PERSONNEL ERROR/FAILED TO SCHEDULE TEST
B	DB1	021958	071378	P	UV	T06	D				DISCOVERED 2 REQUIRED TEST NOT BEING PERFORMED/Y.S	TESTS NOT INCORPORATED INTO SCHED. PROGRAM
B	DE3	019883	120677	L	XV	T06	D				VALVE LP-28 OPEN BUT NOT LOCKED AS REQD	INADEQUATE PROCEDURES
G	NM1	015849	090876	P	RV	T06	D				REQD SURVEILLANCE ON RV NOT PERFORMED	PROCEDURE ERROR
W	DC2	022793	102378	P	RM	T06	D				FOUR OR MORE VALVES NOT TIMED AFTER MAINT (TS VIOL)	PROCEDURAL PROBLEMS
W	TR1	015172	042176	S	RM	T06	D				DISCOVERED THAT MANY VLV. WERE NOT TESTED AS REQ.	PROCEDURE INADEQUACY/REVISED PROCEDURES

IMPROPER VALVE CONFIGURATION

V E N	P L A N T	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N F I G	K E Y	FAILURE MODE	FAILURE MECHANISM
												FAILURE MECHANISM
B DB1	020270	010578	N DV	V00	S D						INLET BAL. DAMPERS TO EVS FANS 1-161-2 FOUND CLOSED	EXACT CAUSE UNKNOWN/PROBABLY PERSONNEL ER
B DE3	020640	020878	S UV	V00	S D						LPSW PUMP SUCT VAL. CLSD DUR PUMP START UP	CAUSE UNKNOWN (PROBABLE PERSONNEL ERROR)
C CC1	017925	051976	N UV	V00	S D						BORIC ACID STOR. TK. #11 DRAIN. BELCW MINIMUM LEVEL	CAUSE NOT DETERMINED/PROB. PERSON. ERROR
B AR1	015013	061276	G UV	V01	S D						INCORRECT VALVE LINE-UP/TANK OVERFLOWED	PERSONNEL ERROR
B AR1	018901	082677	Y XV	V01	S D						INCORRECT SEQUENCE OF VALVE OPERATION/H2O IN FILTR	PERSONNEL ERROR
B AR1	023181	112178	U UV	V01	S D						CONDENSATE VLV. CS-30 OPEN WHEN REQUIRED TO BE SHUT	PERSONNEL ERROR
B CR3	017322	030777	H RM	V01	S D						"B" LOOP OF HPI SYS. ISOL. CONT. TO T.S. FOR MAINTENC	PERSONNEL ERROR
B CR3	017658	042177	M RM	V01	S D						SUCT. VLVs CAV-38646 FROM BORIC ACID STOR. TANK. SHUT	T.S. VIOL./PERSONNEL ERROR/IMP. VLV LINEUP
B CR3	020265	011178	X MV	V01	S D						BRKR. FOR HPI ISO. VLV MUV-25 OPEN TAG. CONT. TO T.S	PERSONNEL ERROR
B CR3	020478	020178	C XV	V01	S D						NITROGEN VLV NGV-81 WAS OPEN CONTRARY TO T.S.	PERSONNEL ERROR
B CR3	023237	103078	M RM	V01	S D						CONC. BORIC ACID TK. DISC. VLVs. CAV38643 CLOSED; TS V/	PERSONNEL ERROR; IMPROPER VALVE LINEUP
B DB1	019381	102077	B UV	V01	S D						BOTH AUX. FD. PMP. SUCTS. LINED UP TO DEAERATOR STR. TK	PERSONNEL ERROR; IMPROPER COOL. WTR. LINEUP
B DB1	019939	121277	J UV	V01	S D						SER. WTR. OUT. ISO. VLV. COMP. COOL. WTR. LP1-2HTXCH. CLOSE	PERSONNEL ERROR; IMP. VLV LINEUP; T.S. VIOL.
B DB1	021176	043078	L UV	V01	S D						VLVS DH11612 WERE NOT OPENED WHEN REQ. DURING S/D	PERSONNEL ERROR & PROCEDURE INADEQUACY
B DB1	022690	091578	S XV	V01	S D						SERVICE WATER OUTLET VALVE NOT REOPENED	PERSONNEL ERROR AFTER FLOW BALANCE
B DE2	015538	070676	C XV	V01	S D						VALVES ZIA-90 AND 91 NOT IN PROPER LINE UP	PERSONNEL ERROR
B DE2	015535	080976	L UV	V01	S D						LOW PRESS INJECT TRAIN A NOT ISO PROPERLY	PERSONNEL FAIL TO FOLLOW T.S. REQUIREMENTS
B DE2	019970	120877	F XV	V01	S D						ISO. VLV. TO CHAN. 3 RB PRESS. TRANS. SHUT BY MISTAKE	PERSONNEL ERROR
B DE2	023020	110578	K XV	V01	S D						PC LOOP A1 HPI STOP CHECK VALVE FOUND CLOSED	PERSONNEL ERROR; VALVE WAS REQUIRED OPEN
B DE3	016209	110176	H CV	V01	S D						IMP. LINEUP VALS 3HP-152 + 3HP-153 CLOSED S.B. OPEN	PERSONNEL ERROR

IMPROPER VALVE CONFIGURATION

V E N	P L A N I	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N N U M P M	K E Y	FAILURE MODE	FAILURE MECHANISM
B	DE3	C21048	032278	S	XV	V01	S	D			VALVE 3LPSW-78 CLOSED WHEN REQ.OPEN	PERSONNEL ERRCR(VLV OPENS CLOCKWISE)
B	RS1	023502	121578	L	UV	V01	S	D			INCOMPLETE VALVE LINEUP CAUSED SEVERE H2O HAMMER	PERSONNEL ERRCR
B	RS1	023484	122178	X	XV	V01	S	D			FLOW TRANSMITR INADVERTANTLY VALVED OUT(RX TRIP--	CKTS EFFECTED//PERSONNEL ERROR
B	II1	C16109	101276	N	UV	V01	S	D			INCORRECT VALVE LINEUP LEAD TO HI DISSOLVED SOLIDS	PERSONNEL ERRCR/>700PPM DISCHARGED RIVER
C	CC1	014467	040576	N	UV	V01	S	D			#12 S/G BLOWDOWN DRG.BYPASS 1-BD-121 POSIT.INCORR.	T.S.VIO./PERSONNEL ERRCR(SHUT WRONG VLV)
C	CC1	016408	110476	S	XV	V01	S	D			DIESEL SERVICE WTR.SYS.LINED UP IMPROPERLY	PERSONNEL ERROR;OPERATED WRONG VALVES
C	CC1	018487	071377	E	XV	V01	S	D			ISO.VLV TO PRESS.SWTCHS.FOR #11DSL.SHUT/T.S.VIO.	PERSONNEL ERRCR/IMPROPER VLV LINEUP
C	CC1	023262	121678	N	UV	V01	S	D			IMPROPER VLV. LINEUP ON MAKE-UP WATER DEMINERALIZ.	PERSONNEL ERRCR
C	CC2	022915	111578	N	UV	V01	S	D			RWT LOCAL SAMPLE VLV.OPEN WHEN REQ. TO BE SHUT	PERSONNEL ERRCR
C	FC1	014569	050676	N	UV	V01	S	D			VALVE HCV-2508 WAS CLOSED,SHOULD BE OPEN	IMPROPER VALVE LINEUP / PERSONNEL ERROR
C	M12	016721	121976	G	KM	V01	S	D			VLV 2-CH-514 WAS NOT RECLOSED FOLLO. AN SIAS ACTU	PERSONNEL ERRCR(VALVE NOT CLOSE PROP.TIM)
C	M12	017837	051577	E	XV	V01	S	D			BOTH D/G FUEL SUP.VLVs SHUT WHEN REQUIRED TO BE D-	-PEN//PERSONNEL ERROR
C	M12	021332	041478	M	XV	V01	S	D			PRI MAKEUP VAL IN PART.OPEN POSIT,SHOULD BE CLOSED	PERSONNEL ERRCR
C	MY1	C19261	102077	L	UV	V01	S	D			IMPROPER VALVE LINEUP LPSI PUMPS	PERSONNEL ERRCR
C	MY1	022398	090778	G	UY	V01	S	D			VLV.LINEUP ERRCR ALLOWED RCS WTR.AT 1250 PPM BCRD-	-N TO DISCH.BACK TO RWST//PERSONNEL ERROR
C	PA1	016527	040876	Y	UV	V01	S	D			OPAIN LINEUP PERFORMED ON WRONG WST.GAS DECAY TK.	PERSONNEL ERRCR
C	PA1	021322	042178	C	XV	V01	S	D			CNTNMNT SERV AIR VAL OPENED IN VIOL OF T.S.	PERSONNEL ERRCR
C	PA1	022229	080778	N	UV	V01	S	D			INCORRECT HANDJACK OPER FOR CV-0437A,CV-04373	PERSONNEL ERRCR
C	PA1	023021	112678	Y	XV	V01	S	D			VCT SITEGLASS DRAIN VALVE OPEN WHEN REQ CLOSED	PERSONNEL ERRCR
C	SL1	019504	070576	M	UV	V01	S	D			IMPROPER VLV.LINEUP TO RWT (TANK OVERFLOWED)	PERSONNEL ERRCR

IMPROPER VALVE CONFIGURATION

PLANT	CONT. NO.	EVENT DATE	UNIT	COMP	FAIL CODE	TYPE	CLASS	CDN NUM	KEY	FAILURE CODE	FAILURE MECHANISM
G BR1	019842	111077	0	XV	V01	S	D			IMPROPER VLV LINEUP; ST.SUP.LN.CD.DR.POT.ISO.CLOSE.	PERSONNEL ERROR
G BR1	020919	040173	N	UV	V01	S	D			INCORRECT VALVE LINEUP CAUSED RESIN DAMAGE	PERSONNEL ERROR
G BR2	014128	011976	N	UV	V01	S	D			OFF GAS RADIAT.MON.SAMP.VLV WAS FOUND SHUT/TS VID.	PERSONNEL ERROR
G BR2	014111A	020276	N	UV	V01	S	D			Z-CAC-V50 WAS OPENED WITH A LCO EXISTING/T.S. VID.	PERSONNEL ERROR
G BR2	015416	070376	0	MV	V01	S	D			RHR VLV Z-E11-F003A SHUT WHILE MTR REMOV.=GIV. LCO	PERSONNEL ERROR/VLV COULDN'T BE OP. REMOT
G BR2	016260	110276	0	CV	V01	S	D			RCIC TURB.EXH.STP-CHK E51-F001 CLOSED WHEN REQ.OPN	PERSONNEL ERROR/VLV NOT OPEN.AFTER TEST
G BR2	018176	060977	N	XV	V01	S	D			DRAIN VALVE LEFT OPEN (RX WATER CLEANUP)	PERSONNEL ERROR(ROOT CAUSE)
G BR2	020972	032778	C	RM	V01	S	D			RX.INSTR.PENET.VLV CAC-PV-3439 FOUND CLOSED/TS VID	PERSONNEL ERROR/VLV SHLT BY MISTAKE
G CD1	014358	020776	Y	DV	V01	S	D			INCORRECT VALVE LINEUP ON RX BLDG VENT DAMPER	PERSONNEL ERROR
G CD1	016004	091076	L	XV	V01	S	D			EQUALIZING VALVE ON DP PRESS INDICATING SW OPEN	PERSONNEL ERROR
G CD1	016387	110176	N	UV	V01	T	D			FLUSHING VALVE OF RADWASTE MONITOR LEFT OPEN	PERSONNEL ERROR
G CD1	023378	121278	N	UV	V01	S	D			FLUSH.VLV.OF THE RADWASTE EFF.MONIT.INADV.LEFT OP-	-EN//PERSONNEL ERROR
G DA1	014733	052876	C	RM	V01	S	D			HPCI AND RCIC INJECTION VALVES LINED UP WRONG	PERSONNEL ERROR, LCO-LOW LEVEL RESET WRONG
G DA1	018281	052777	U	XV	V01	S	D			MANUAL FEEDH2O BLOCK VALVES NOT OPERATED PROPERLY	PERSONNEL ERROR, SCRAM DUE TO COLD H2O
G DA1	020674	030178	N	UV	V01	S	D			COOLING TOWER BLOWDOWN DISCHARGE VALVE OPENED WITH	--OUT APPROVAL//PERSONNEL ERROR
G DR2	014023	010276	X	XV	V01	S	D			RACK ISO VAL FOR PRESS SW263-518 IMPROPER LINEUP	PERSONNEL ERROR
G DR2	016171	100376	Y	UV	V01	S	D			STACK GAS SAMPLE PUMP LOW FLOW/IMP. VLV LINE UP	PERSONNEL ERROR
G DR2	023335	100376	Y	XV	V01	S	D			STACK GAS PUMP FLOW LOW, VALVE LINEUP WRONG	PERSONNEL ERROR
G DR2	020170	010578	G	UV	V01	S	D			SUCTION VALVE 2-1101-4 CLOSED CONTRARY TO T.S.	OPERATING PERSONNEL ERROR
G DR2	021158	042878	L	XV	V01	S	D			VALVES ONA LPCI & CORE SPRAY IMPROPER LINEUP	OPERATING PERSONNEL ERROR

IMPROPER VALVE CONFIGURATION

<u>V E N</u>	<u>P L A N T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C O M P</u>	<u>TAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C O N T R O L</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G DR3	019987	121677	Q XV	V01	T D						PRESS SWITCH FOUND VALVED OUT	PERSONNEL ERROR
G EN1	014798	052476	N XV	V01	T D						DEMIN DRAIN VALVE LEFT OPEN(WATER DUMPED TO RIVER)	PERSONNEL ERROR
G EN1	020191	120877	E XV	V01	S D						IMPROPER LINEUP,FUEL OIL TRANS PUMPS DISCH VALVES	PERSONNEL ERROR
G EN1	021083	040678	K XV	V01	S D						DRAIN VALVE LEFT OPEN,FOUND CN LLRT	PERSONNEL ERROR
G FP1	015065	062976	Y SV	V01	S D						SOV-135A AND B FOUND CLOSED WHEN REQUIRED OPEN	PERSONNEL ERROR(PANEL MARKED POORLY)
G MO1	017373	032177	N UV	V01	S D						AIR EJECT.SAMP.SYS.SUP.VLV SHUT WHEN REQ. OPEN	PERSONNEL ERROR
G MO1	022809	100178	C UV	V01	S D						2 VLVs NOT CLOSED WHEN REQUIRED TO BE	PERSONNEL ERROR
G NM1	019404	102677	M UV	V01	S D						CHG.WTR.VLV TO SCRAM ACCUMULATOR IN IMPROPER LINE-	-UP//PERSONNEL ERROR
G NM1	020764	030778	E CV	V01	S D						FOOT VALVE OPENED AT IMPROPER TIME	PERSONNEL ERROR
G PB2	015711	091376	N UV	V01	S D						IMPROPER VAL LINEUP TO SETTLING BASIN	PERSONNEL ERROR
G PB2	020610	021678	C XV	V01	S D						INLET VLV FOR THE MANOMETER WAS OPEN INSTEAD OF CL	PERSONNEL ERROR/FAILED TO FOLLOW PROCEDUR
G PB2	020667	022378	N XV	V01	S D						DISCHG VLV ON DIESEL F.O.PMP LEFT OPEN VICE SHUT	PERSONNEL ERROR
G PB3	019091	092577	M UV	V01	S D						CHARGING WATER VLVs. TO SCRAM SYS.IN IMPROPER LIN-	-EUP//PERSONNEL ERROR
G P11	018497	080277	N UV	V01	S D						VALVE IN TRUCK LOCK, OPENED IN VIOLATION OF T.S.	OPERATIONS PERSONNEL ERROR
G P11	023500	102878	N UV	V01	S D						BLOCK VALVE TO FCV-118 SHUT WHEN REQUIRED TO BE O-	-PEN//PERSONNEL ERROR
G QC1	017357	011077	N AV	V01	S D						VALVE LINE-UP INCORRECT/RADWASTE DISCHARGE	PERSONNEL ERROR
G QC2	018575	071977	L UV	V01	S D						VALVE FOUND CLOSED BETWEEN A & B LOOP/LOSS OF LPCI	PERSONNEL ERROR/INADVERTANT CLOSURE
G QC2	019450	092977	C XV	V01	S D						STOP VALVE TO TORUS LEVEL TRANSMITTER FOUND CLOSED	PERSONNEL ERROR
G QC2	021561	052178	D RM	V01	S D						2A CORE SPRAY SUC.VLV. MO 2-1402-3A CLOSED WHEN R-	-REQUIRED TO BE OPEN//PERSONNEL ERROR
G VY1	014739	051276	H UV	V01	S D						IMPROPER VLV.LINEUP ON HPCI GLAND SEAL CONDENSER	PERSONNEL ERROR

IMPROPER VALVE CONFIGURATION

VEN	PLANT	CONT.NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CONMUM	KEY	FAILURE MODE	FAILURE PECHANISM
G	VY1	022252	081478	W	XV	VO1	S	D			VLVS.LINED UP IMPROPERLY TO HI.MN.STM.LN.FLOW SWY.	PERSONNEL ERROR
W	BV1	015073	061276	C	UV	VO1	T	D			VLVS HCV-CV-151,151-1 WERE OPENED IN VIO. OF T.S.	OPER. ERROR,USED IT.S.WHICH VIO.ANOTH.T.S
W	BV1	018835	072577	N	UV	VO1	S	D			IMP.VLV LINEUP,6B PRI GRADE WTR STOR TANK OVERFLW.	PERSONNEL ERROR
W	BV1	020754	021778	N	OV	VO1	T	D			AIR FLOW CALCUL. OF CONT. ROOM FANS OUT OF T.S.--	DAMPERS WERE POSIT.INCCR.//PERSONNL ERROR
W	BV1	020792	022378	N	OV	VO1	T	D			AIR FLOW CALCUL. OF SLCRS FLTR BANKS OUT OF T.S.--	DAMPERS WERE POSIT.INCCR.//PERSONNL ERROR
W	DC1	016648	121776	F	MV	VO1	S	D			CONTAINMENT SPRAY PUMP SUCTION VALVE FOUND CLOSED	PERSONNEL LEFT VALVE SHUT AFTER A TEST
W	DC1	017279	030577	Y	XV	VO1	S	D			DRAIN TRAPS WD-206WD-21 LEFT OPEN	PERSONNEL ERROR
W	DC1	019569	111877	F	UV	VO1	S	D			TWO CONTAINMENT SPRAY VALVES FOUND CLOSED	PERSONNEL ERROR/CLOSED UNIT1 INSTEAD OF 2
W	DC1	021220	042078	C	RM	VO1	S	D			CONT PURGE SUPPLY&EXHAUST VALVES NOT CLOSED AS R---	--EQUIRED PERSONNEL ERROR
W	DC1	022281	060278	H	UV	VO1	S	D			BORON INJECTION THROTTLE VALVES OUT OF ADJUSTMENT	PERSONNEL ERROR/INCORRECT TEST CRITERIA
W	DC2	021079	041678	L	XV	VO1	S	D			HANDWHEEL CAME OFF RHR VALVE POSITIONING IT WRONG	PERSONNEL FAILED TO REPOSITION THE VALVE
W	DC2	021634	061578	N	RM	VO1	S	D			STARTING AIR PILOT VALVES TAGGED OUT FOR WRONG D/G	PERSONNEL ERROR
W	DC2	022350	090378	N	UV	VO1	S	D			CONDENSATE VALVE CLOSED WHEN REQ TO BE OPEN	PERSONNEL ERROR
W	DC2	022581	092278	K	RV	VO1	S	D			PRESSURIZER RV OPENED WHEN REQUIRED TO BE CLOSED	PERSONNEL ERROR
W	DC2	022838	101078	B	XV	VO1	S	D			AUX FEED VALVE FOUND UNLOCKED & OPEN/WRONG LINE-UP	PERSONNEL ERROR
W	IP3	015925	093076	K	UV	VO1	S	D			INADVERTENT CLOSURE OF RHR ISO VALVE	PERSONNEL ERROR
W	JF1	021975	071278	M	UV	VO1	S	D			TWO BORIC ACID TK SUPPLY VALS IN CLOSED POSITION	PERSONNEL ERROR
W	KE1	015262	071576	Y	XV	VO1	T	D			MANUAL ISO.VLVS TO MONITORS R-11612 SHUT WHEN REQ-	-UIRED TO BE OPEN//PERSONNEL ERROR
W	KE1	015295	081376	N	UV	VO1	S	D			WASTE NEUT.DRN.VLV LEFT OPEN,ALLOW.RAD.RELEASE	PERSONNEL ERROR
W	KE1	016789	011977	C	RM	VO1	S	D			CONTINMENT ISO-VALS LEFT OPEN	PERSONNEL ERROR,IMP.VAL.LINEUP

IMPROPER VALVE CONFIGURATION

<u>V</u>	<u>E</u>	<u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>M</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>E</u> <u>T</u> <u>I</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>M</u> <u>P</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
W	KE1	017824	052277	J	UV	V01	S	D					VAL ON B PUMP DISCH IN CLOSED POSITION	PERSONNEL ERROR / IMPROPER VLV LINE UP
W	KE1	019066	071677	N	UV	V01	S	D					PART. OPEN VALS IN DISCH PATH FROM WASTE NEUTR. TK.	PERSONNEL ERROR / IMPROPER VLV LINE UP
W	KE1	018652	072977	Y	XV	V01	T	D					MANUAL ISO. VALS TO MONITORS R-11&12 SHUT WHEN REQ-	REQUIRED TO BE OPEN//PERSONNEL ERROR
W	KE1	021012	032978	N	UV	V01	S	D					SAMPLE VALS FOR MONITOR R-19 IN CLOSED POSITION	IMPROPER VLV LINE UP / PERSONNEL ERROR
W	NA1	022270	081878	N	UV	V01	T	D					IMPROPER VLV LINEUP ON UNIT #2 CHILLED WTR. CHILLER	PERSONNEL ERROR
W	NA1	022565	100478	B	UV	V01	S	D					IMPROPER VALVE LINEUP, AUX FEED PUMP TO A, B, C STMGN	OPERATING PERSONNEL ERROR
W	PR1	016285	102476	N	UV	V01	S	D					INCORRECT VLV LINEUP MADE ON SPENT FUEL PIT	PERSONNEL ERROR
W	PR1	020735	070478	G	XV	V01	S	D					PUMP SUCTION VALVE FOUND NEARLY CLOSED	PERSONNEL/VALVE LINEUP IMPORTANC: STRESSD
W	PR1	021704	062278	E	XV	V01	S	D					ROOF VALVE ON D/G DIESEL OIL TANK LEVEL INST CLOSE	PERSONNEL/ LOCKWIRED OPEN FROM NOW ON
W	PR2	014463	033176	S	XV	V01	S	D					MANUAL VALVE SECURED WHICH VIOLATED LOOP AVAILABLT	PERSONNEL ERROR/TECH SPECS INCONSISTENT
W	PT1	019498	103177	S	UV	V01	S	D					VALVE LINE-UP NOT PROPERLY MADE/RADWASTE DUMP MADE	PERSONNEL/OPERATOR FAILED TO CLOSE VALVE
W	PT1	021627	061478	Y	UV	V01	S	D					IMPROPER VALVE LINE-UP DISCOVERED/POSS RAD RELEASE	PERSONNEL ERROR
W	PT2	019446	101777	X	XV	V01	S	D					ISOLATION VALVE FOR PRESS TRANSMITTER FOUND SHUT	PERSONNEL/ALSO NOT ON ANY CHECK-LIST
W	RG1	021334	041978	G	UV	V01	S	D					OPERATOR OPENED WRONG VALVE/DECREASE BORON CONCENT	PERSONNEL ERROR/PROCEDURE CHANGED
W	R02	022627	042277	N	UV	V01	S	D					COMPRESSED AIR ISO VAL CLOSED, S, B, OPEN	PERSONNEL ERROR
W	SA1	019606	102777	L	UV	V01	S	D					IMPROPER VLV LINEUP ON COMP. COOL. WTR. TO RHR PUMP	PERSONNEL ERROR
W	S01	023179	120578	N	UV	V01	S	D					RECIRC VALVE ON HYDRAZINE PUMP LEFT OPEN INADVERT	PERSONNEL ERROR
W	S01	023136	112978	G	XV	V01	S	D					VALVE MISALIGNMENT ON BORIC ACID TRANSFER	PERSONNEL ERROR
W	S02	015962	082076	H	UV	V01	S	D					OUTSIDE ISOLATION VALVE FOUND OPEN/NORMALLY CLOSED	PERSONNEL/FAILED TO FOLLOW ADMIN CONTROLS
W	S02	019478A	101177	S	XV	V01	S	D					TWO DRAIN VALVES LEFT OPEN AT END OF MAINTENANCE	PERSONNEL ERROR/CAUSED FLOODED PIT ABOVE

IMPROPER VALVE CONFIGURATION

PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CON	KEY	FAILURE MODE	FAILURE MECHANISM
W TR1	019586	101677	L	XV	V01	S	D			RHR DISCHARGE VLV (87288) FOUND LOCKED CLOSED	PERSONNEL ERROR/IMPROPER VALVE LINEUP
W TR1	021419	042578	L	UV	V01	S	D			DRAIN VALVE LEFT OPEN/LEAD TO LOSS OF FLOW	PERSONNEL ERROR
W TR1	022005A	070778	L	UV	V01	S	D			IMPROPER VLV LINEUP ON CONDENSATE STORAGE TANK	PERSONNEL ERROR
W TC4	019421	091377	L	RM	V01	S	D			TWO VALVES INADVERTANTLY OPENED/RWST LEVEL DECREASES	PERSONNEL ERROR/POSSIBLE PROCEDURE PROBLEM
W Z11	016043	100476	G	UV	V01	S	D			VALVE LINE-UP PROBLEM/BORDON CONCENTRATION DILUTED	PERSONNEL ERROR
W Z11	017255	021877	L	UV	V01	S	D			IMPROPER VALVE LINEUP/UNIT-1 VAL CLOSED INSTEAD-2	PERSONNEL ERROR/NEITHER VAL TAGGED FOR ID
W Z11	019175	072777	Y	DV	V01	S	D			OPERATIONS TAGGED WRONG DAMPER OUT OF SERVICE	PERSONNEL ERROR
W Z11	022897	101878	Y	XV	V02	S	D			IMPROPER VALVE LINE-UP CAUSED TRIP OF BLOWER	PERSONNEL ERROR
W Z11	022997	110678	N	XV	V01	S	D			RAD MONITOR NOT VALVED IN WHEN REQUIRED	PERSONNEL ERROR
W Z12	014523	041176	C	XV	V01	T	D			PRESS REGULATOR VALVE SET FOR TOO HI PRESSURE	PERSONNEL ERROR
W Z12	017407	031077	C	UV	V01	S	D			VLVS. 21W015460155 OPEN WHEN REQ. TO BE CLOSED	PERSONNEL ERROR
W Z12	019137	083177	H	UV	V01	S	D			DRAIN VLV OPENED TO 2D ACCUM. INSTEAD OF 2C ACCUM.	PERSONNEL ERROR
B DB1	021213	042378	Y	XV	V02	S	D			DISCHARGE VALVE OF DILUTION BLOWER MISTAKENLY SHUT	PERSONNEL ERROR(WROTE 1-2 INSTEAD OF 1-1)
B DE1	018292	062977	N	UV	V02	S	D			"B" TRAIN PENET. RM. VENT. SUCT. ISO. VLV. CLOSED WHEN R-	-EQUIRED TO BE OPEN//PERSONNEL ERROR
B DE2	015537	070676	X	XV	V02	S	D			HIGH PRESS TRANS ROOT VAL CLOSED ON STARTUP	MAINT. PERS. LEFT VAL WITH IMPROPER LINE UP
B DE3	019884	112077	X	XV	V02	S	D			IMPROPER VLV LINEUP TO CHAN. A NARROW RANGE PRESS.-	-TRANSMITTER//PERSONNEL ERROR
C MY1	015731	091676	C	XV	V02	S	D			INCORRECT VLV LINEUP CNTNMNT ISO SYSTEM PV-15	PERSONNEL ERROR/FAILED TO CLOSE
C PA1	022228	082878	C	RM	V02	S	D			CNTNMNT PURGE & ISO. VALVES OPEN IN VIC. OF T.S.	IMPROPER TAGOUT OF VALVES/PERS. NNEL ERROR
C SL1	022908	110378	L	UV	V02	S	D			ISCL VALVES INADVERT OPENED BETW SPRAY SHUTDOWN --	--COOLING SYSTEMS//PERSONNEL ERROR
G BF1	016053	092376	D	XV	V02	S	D			VALVE FOUND CLOSED TO PRESSURE SWITCH	PERSONNEL ERROR

IMPROPER VALVE CONFIGURATION

KEY	PLANT	CONT. NO.	EVENT DATE	SCHED	FAIL CODE	TYPE	CLASS	CONTR	YR		FAILURE MODE	FAILURE MECHANISM
G	BF2	015392	061976	M XV	V02	S	D				VALVES 2-85-612 AND 2-85-615 FOUND IN CLOSED POS	PERSONNEL ERROR
G	BR2	014650	020676	Q MV	V02	S	D				VALVE E11-F0048 FOUND LINED UP CLOSED/REQ OPEN	PERSONNEL ERROR IN VALVE LINEUP
G	BR2	014633	021176	N AV	V02	S	D				INLET VALVE TO CONT RADIATION MONITOR FOUND CLOSED	PERSONNEL ERROR AFTER FILTER CHANGE
G	BP2	015427	071176	K UV	V02	S	D				BONNET VENT VLS 2-B32-F04686F0478 INADV. LEFT OPEN	PERSONNEL ERROR/NOT CLOSE. AFTER MAINTENAN
G	DR2	014748	052676	N UV	V02	S	D				SAMPLE VALVE ON SUCTION SIDE OF PUMP IN CLOSED POS	PERSONNEL ERROR FAILURE TO OPEN VALVE
G	DR2	022590	092678	W XV	V02	S	D				VALVE TO ISOLATE FLOW SWITCH FOUND VALVED OUT	PERSONNEL ERROR
G	EN1	014790	051076	N XV	V02	T	D				DISCHARGE VALVE DEMIN H2O TO RIVER LEFT OPEN	PERSONNEL ERROR
G	EN1	020687	022678	M XV	V02	S	D				ISO. VLVS TO SWITCHS. C11-N013E6F IN CLOSED POSITION	PERSONNEL ERROR UNCLER PROCEDRES
G	FP1	019768	113077	N UV	V02	S	D				VALVE ON MAIN STM COLLECT SYST INADVERTENTLY OPEN	MAINTAINENCE PERSONNEL ERROR
G	PB3	020845	031078	T UV	V02	S	D				RECOMBINER-COMP INLET-SUMP DRAIN VLV IMPROPER L/U	MAINTENANCE PERSONNEL ERROR
W	BV1	017629	051077	U MV	V02	S	D				FEEDWATER BYPASS OPENED WHEN REQ TO BE CLOSED	MAINT TECH FAILED TO DISCONT PWR SUPPLY
W	DC2	022664	072678	N XV	V02	S	D				TWO MANUAL VALVES WERE OPENED IN VIOLATION OF T.S.	PERSONNEL ERROR
W	JF1	020993	032578	B UV	V02	S	D				MDAPP & TDAFP RECIRC BYPASS ISO VLVS OPEN	PERSONELL ERROR
W	PR1	015919	091076	F XV	V02	S	D				CONTAIN.-TO-ANNULUS DIFFER. PRESS. SWTCH. VLVED OUT-	-BY MISTAKE//PERSONNEL ERROR
W	PT2	023123	120978	X XV	V02	S	D				LOOP A TEMP DETECTOR MANIFOLD VALVED OUT	PERSONNEL ERROR(TOOK OUT SAFETY CHANNELS)
W	RO2	016936	012577	G UV	V02	S	D				IMPROPER VLV LINEUP (BORIC ACID STORAGE TANK)	PERSONNEL ERROR
W	SA1	017198	021177	W AV	V02	S	D				#12 S/G MSIV WAS CLOSED WHEN IT WAS REQUIRED TO R-	-EMAIN CPEN//PERSONNEL ERROR(MAINTENANCE)
W	SU1	022954	111778	N XV	V02	S	D				3 VALVES CLOSED WHEN REQ OPEN(CLOSED TO STOP LEAK-	-RAD MONITORING LCST)//PERSONNEL ERROR
W	YR1	023104	113078	M UV	V02	S	D				VALVE CLOSED WHEN REQ OPEN(TO ISOL ANOTHER VALVE--	--FOR CLEANING//PERSONNEL ERROR(MANAGEMENT)
B	CR3	023095A	100478	L XV	V03	S	D				ISOL VALVE TO FLOW CONTROLLER SHUT(SEE 023095)	PERSONNEL ERROR/VALVE REQUIRED TO BE OPEN

IMPROPER VALVE CONFIGURATION

W	P L A N I	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O M M P	K E Y	FAILURE MODE	FAILURE MECHANISM
B	DB1	019984	121677	B	UV	V03	S	D			AUX.FDWTR VLVS AF5996608 SHUT;MS107A,AF3871672BK.0	PERSONNEL ERROR;IMPROPER VLV LINEUP
B	DB1	019549	032278	H	XV	V03	S	D			HI POINT VENT(HP-72)NOT VENTED AS REQUIRED	PERSONNEL ERROR(REMOVED FROM TEST LIST)
G	BF2	016199	100776	H	XV	V03	S	D			EQUALIZER VALVE ON FLOW INSTRUMENT FOUND OPEN	PERSONNEL ERROR
G	BR2	014647	020576	L	XV	V03	S	D			PRESS SW FOUND ISOLATED AFTER TESTING	PERSONNEL ERROR
G	CO1	016713	111676	K	XV	V03	S	D			ISOLATION VALVES TO PRESS. SWITCH LEFT CLOSED	PERSONNEL ERROR AFTER SURVEILLANCE
G	CO1	019119	081677	X	XV	V03	T	D			VALVE TO LEVEL SWITCH LEFT CLOSED AFTER TEST	PERSONNEL ERROR
G	CO1	020806A	020778	H	XV	V03	T	D			ISOLATION VALVE TO DPIS-76 FOUND CLOSED(SEE020806)	PERSONNEL ERROR
G	DA1	020147	011178	X	XV	V03	S	D			ISO VLVS FOR PS4312C & PS4313C IN CLOSED POSITION	ERROR OF PERSONNEL PERFORM. TESTING
G	DR2	022777	101278	N	XV	V03	S	D			DIFF PRESS SW ISOLATION VALVE FOUND VALVED OUT	PERSONNEL ERROR
G	DR3	022772	101278	N	XV	V03	S	D			DIFF PRESS SW FOUND VALVED OUT	PERSONNEL ERROR
G	EN1	014780	030476	M	XV	V03	S	D			MN STEAM INST FLOW RACK NOT VALVED IN AFTER TEST	PERSONNEL ERROR
G	EN1	017096	011777	L	XV	V03	S	D			PRESS SW FOUND VALVED OUT WHEN REQUIRED OPEN	PERSONNEL ERROR
G	EN1	020029	082977	N	RM	V03	S	D			OPERATION OF CONT.VAL CAUSED VIOL OF CNTNMNT INTEG	TEST CONNECTION PLUG REMOV. FROM VLV/TEST
G	EN1	022733	092878	M	XV	V03	S	D			VALVES ON D/P CELL WERE VALVED IN WRONG	PERSONNEL ERROR(RUINED D/P CELL)
G	FP1	017659	022477	H	UV	V03	S	D			VALVES ON HPCI ROUTE FROM COND TR TO TORUS L/U IMP	OPERATOR ERROR/ TESTING PERSONNEL
G	PB3	021657	060778	A	XV	V03	S	D			SHUT-OFF VALVE ON PS-10-1000 CLOSED,VIOL OF T.S.	VALVE CLOSED DURING INST TEST,NOT REOPEN
G	PB3	021716	062678	X	XV	V03	T	D			SHUTOFF VAL ON PRESS SW PS-3-5-120 CLOSED,T.S.VIOL	TEST PERS CLOSED VLV DUR TEST,NOT REOPEN
G	VY1	016997	011877	L	RM	V03	S	D			M ³ B ³ RHR PMP DISCH.VLVS. SHUT WHEN REQ. TO BE OPEN	PERSONNEL ERROR
M	IP2	015920	080576	H	UV	V03	S	D			SI PMPs COMMON SUC.VLV(846)IN IMPROPER POSITION	PERSONNEL ERROR/DTD NOT OPEN VLV AS REGR.
M	IP3	014604	042976	F	RM	V03	S	D			INCRV.VLV LINUP FOR TEST,CNTMNT SPRY ACCID.TURN ON	PERSONNEL ERROR

IMPROPER VALVE CONFIGURATION

VEN	PLANT	CONT. NO.	EVENT DATE	INITIALS	COND	FAIL CODE	TYPE	CLASS	CN	PH	KEY	FAILURE MODE	FAILURE MECHANISM
B	RS1	C19666	111177	H	MV	V04	S	D				VALVE LINE-UP INCORRECT//NEW VALVES WERE INSTALLED --WITH OPEN/CLOSE INDICATION ATYPICAL	
G	EN1	014140	010976	S	RM	V04	S	D				TWO SERVICE WATER VALVES ISOLATED WHEN REQ OPEN	FROZEN FLOW SWITCHES(HEAT TAPE NEEDED)
W	PT2	018572	072877	H	MV	V04	S	D				MOV FOUND IN INTERMEDIATE POSITION/SINCE PREV TEST	PERSONNEL FAILED TO ASSURE FULLY OPEN
G	EN2	022211	081078	C	RM	V05	S	D				VAC RELIEF VALVE F310 FOUND OPEN WHEN REQ CLOSED	PERSONNEL ERROR(INVERTED SIGNAL)
B	AK1	015207	061276	G	XV	V06	S	D				VALVE SF-22 WAS NOT CLOSED(A SPILL RESULTED)	PROCEDURES WERE INADEQUATE
B	CR3	017176	020777	K	RM	V06	S	D				PER. CYCLED BSV-36 ALLOWING NAOH INTO THE RCS SYSTEM	PROCEDURAL INADEQUACY
B	CR3	017946	042477	R	UV	V06	T	D				VLV. SWV-151 WAS IN SHUT POSI.; GIVING CONT. TEMP. ALA	PROCEDURAL INADEQUACY
B	CR3	018843	081077	R	UV	V06	T	D				VLV SWV-151 WAS CLOSED WHEN REQUIRED TO BE OPEN	PROCEDURAL INADEQUACY
B	CR3	019800	112977	R	UV	V06	T	D				SWV-151(IND. COOL. WTR. SUP. VLV) SHUT WHEN REQ. TO OPEN	PROCEDURAL INADEQUACY; THIRD OCCURENCE
B	CR3	023250	100178	Y	UV	V06	S	D				VALVE WDV-476 WAS LEFT OPEN AFTER SYS MODIFICATION	PROCEDURAL DISCREPANCY(PERSONNEL)
B	DB1	019548	111777	B	UV	V06	S	D				AUX. FLOWTR. VLVS AF5996608 CLOSED; T.S. VIOLATION	PROCEDURAL DEFICIENCY; TEST PROCEDURE REVI
B	DE2	021527	042878	N	XV	V06	S	D				VLV 2LPSW-241 FOUND THROTTLED WHEN REQ. OPEN	DEFECTIVE PROCEDURES
B	DE3	016143	100976	N	AV	V06	S	D				DRAIN VALVE NOT IN PROPER LINEUP	ERROR IN PROCEDURES
B	T11	013949	011076	Y	UV	V06	S	D				IMPROPER VLV. LINEUP TO RM-2A(COOL. LEAK DET. SYS.)	INADEQUATE PROCEDURES
B	T11	014220	022176	G	UV	V06	S	D				IMPROPER VLV LINEUP ON "A" MAKEUP AND PURIF. PUMP	PROCEDURE AND PERSONNEL ERROR
C	CC1	017476	021377	L	UV	V06	S	D				ISO. VLV ADD. TO AUX SPRAYLN DUR. PRIOR OUT. LEFT SHUT	VLV. NOT INCLUDED IN VLV LINEUP/PROCED. ERR
C	CC1	021536	042578	N	RM	V06	S	D				#4 HALON SUBSYSTEM INADVERTENTLY DISCHARGED	INADEQUATE PROCED. RESULTED IN IMP. VLV. LU
C	FC1	023171	122078	K	RV	V06	S	D				TWO PRESS OP RELIEF VALVES OPENED WHEN REQ CLOSED	TECH PULLED FUSES, DEFECTIVE PROCEDURES
C	MI2	022134	072578	C	RM	V06	S	D				CONTMNT PURGE VALVES OPERATED IN IMPROPER MODE	INADEQUATE CONTMNT PURGE PROCEDURES
G	DA1	015750	082776	W	XV	V06	S	D				ROOT VALVE TO LOW PRESS SW PS-1017 IN CLOSED POSIT	VALVE NOT ON PRESTARTUP CHECKLIST

IMPROPER VALVE CONFIGURATION

<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CONTR. NO.</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G DR2	014889	051976	G	UV	V06	S	D			INCORRECT VLV L/U; SBLC SYSTEM-BORON TANK	DISCREPENCY IN PROCEDURES
G FP1	015272	073076	Y	XV	V06	S	D			OFF-GAS SAMPLE VALVE FOUND CLOSED, REQUIRED OPEN	PROCEDURAL ERROR
G MD1	018242	062777	Y	UV	V06	S	D			VAL ON AIR EJECT MONIT SYST POSITIONED IMPROPER	VAL WAS IMPROPERLY TAGGED
G PB3	018160	061677	Q	RM	V06	S	D			BOTH RCIC ISO. VLVS. FOUND CLOSED WHEN REQUIRE. OPEN	DEFECTIVE TEST PROCEDURE
G PI1	019668	120277	M	RM	V06	S	D			STANDBY LIQUID CONTROL VALVE 1101-23 CLSD T.S. VIOL	INADEQUATE PROCEDURES COVERING VALVE POS
W BV1	020496	012178	L	UV	V06	S	D			THE RWST WAS DRAINED TOO LOW DUE TO INCOR. VLV L/U	PROCEDURAL DISCREPENCY
W DC2	021393	052078	C	RM	V06	S	D			CONT. PURGE VALVES OPENED PRIOR TO ALLOWABLE CONDS	PROCEDURES DIFFER BETWEEN UNITS 1 & 2
W JF1	022629	091878	K	RM	V06	S	D			RHR PUMP SUCTION VLV 8701A CLOSED WHEN REQ. OPEN	INADEQUATE PROCEDURES
W KE1	021365	042378	L	UV	V06	S	D			RHR VENT VLV. OPEN, WHEN IT SHOULD HAVE BEEN CLOSED	DEFECTIVE PROCEDURES
W NA1	021506	051478	B	AV	V06	S	D			AUX FEEDWATER VALS PCV-F2-159A, -159B IMP. LINE LP	CHECKOFF SHEET DOES NOT LIST NORM VAL POS
W PR2	017889	051977	B	XV	V06	S	D			PUMP INLET VALVE FOUND NEARLY SHUT/AUX FEED INLET	POSITION REQUIREMENT WILL GO ON CHECKLIST
W RD2	023053	110978	N	XV	V06	S	D			AIR SUPPLY VALVE FOUND OPEN WHEN REQUIRED SHUT	DEFICIENT OPERATING PROCEDURE

APPENDIX P

VALVE REPORTS SORTED BY COMPONENT

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CODES USED IN LER ONE-LINE DESCRIPTIONS

FAILURE MODE

CODE	DESCRIPTION
A	FAILED TO OPEN
B	FAILED TO CLOSE
C	INTERNAL LEAKAGE
D	EXTERNAL LEAKAGE
E	LEAKAGE (CHECK VALVES)
F	RUPTURE
G	OPERATION REQUIRED
H	FAILS TO REMAIN OPEN
I	FAILS TO RELIEF VALVES
J	FAILURE TO REPLACE
K	FINANCIAL REPLACEMENT
L	TECHNICAL SPECIFICATION VIOLATION
M	IMPROPER VALVE CONFIGURATION

FAILURE MECHANISM

CODE	DESCRIPTION
00	UNKNOWN
01	PERSONNEL (OPERATION)
02	PERSONNEL (MAINTENANCE)
03	PERSONNEL (TESTING)
04	DESIGN ERROR
05	FABRICATION/CONSTRUCTION/QUALITY CONTROL
06	PROCEDURAL DISCREPANCY
07	NORMAL WEAR
08	EXCESSIVE WEAR
09	CORROSION
10	FOREIGN MATERIAL CONTAMINATION
11	EXCESSIVE VIBRATION
12	MISCH. CONTROLS/PARTS; FAILED/CUT OF ADJUST.
13	SEAL/GASKET FAILURE/PROBLEM
14	PACKING FAILURE/PROBLEM
15	BEARING FAILURE/PROBLEM
16	ELECTRICAL INPUT FAILURE/PROBLEM
17	BEARING/BUSHING FAILURE/PROBLEM
18	WELD FAILURE
19	LACK OF LUBRICATION
20	ELECTRIC MOTOR OPERATOR FAILURE/PROBLEM
21	SOLENOID FAILURE/PROBLEM
22	LEAKING/RUPTURED DIAPHRAGM
23	FORGUE SWITCH FAILURE/PROBLEM
24	FAILURE OF COMPONENT SUPPLY SYSTEM
25	INITIAL SWITCH FAILURE/PROBLEM
26	PILOT VALVE FAILURE/PROBLEM

EVENT CLASSIFICATION

CODE	DESCRIPTION
D	CHANGE OF STATE
T	AGE
U	UNKNOWN

COMPONENT

CODE	DESCRIPTION
MV	MOTOR OPERATED VALVE (ELEC.)
AV	PNEUMATIC OPERATED VALVE
SV	SOLENOID OPERATED VALVE
HV	HYDRAULIC OPERATED VALVE
RV	REMOTE OPERATED VALVE
XV	MANUAL OPERATED VALVE
CV	CHECK VALVE
RV	RELIEF VALVE
DV	DAMPER VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED

ACTIVITY RESULTING IN DISCOVERY

CODE	DESCRIPTION
D	DEMAND ON COMPONENT
M	MAINTENANCE
N	NORMAL OPERATION
R	RECORDS REVIEW
T	TESTING
U	UNKNOWN

TYPE OF EVENT

CODE	DESCRIPTION
B	RECURRING COMMON CAUSE
C	COMMON CAUSE
R	RECURRING
S	COMMAND FAULT
T	RECURRING COMMAND FAULT

NUMERICAL KEY WORDS

CODE	DESCRIPTION
V	VALVES
A	SOME
VAR	VARIOUS
GEN	GENERAL
OTH	OTHER

NSSS VENDOR

CODE	DESCRIPTION
B	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING
G	GENERAL ELECTRIC
W	WESTINGHOUSE

 CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE ----	PWR ---
A	- AUXILIARY FEED
B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	- ELECTRIC POWER
D	- CONTAINMENT SPRAY INJECTION
E	- CHEMICAL VOLUME CONTROL (MAKE-UP)
F	- HIGH PRESSURE COOLANT INJECTION
G	- COMPONENT COOLING WATER
H	- REACTOR COOLANT
I	- LOW PRESSURE COOLANT INJECTION (RHR)
J	- REACTOR PROTECTION (CONTROL RCCS)
K	- NONSAFETY-RELATED
L	- SYSTEM UNKNOWN/NOT APPLICABLE
M	- CONTAINMENT FAN COOLING SYSTEM
N	- SERVICE WATER
O	- CONDENSATE AND FEED
P	- MAIN STEAM
Q	- REACTOR PROTECTION (PPS)
R	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
S	- FAILED FUEL ELEMENT DETECTION

CODE ----	BWR ---
A	- AUTOMATIC DEPRESSURIZATION
B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	- LOW PRESSURE CORE SPRAY
D	- ELECTRIC POWER
E	- CONTAINMENT SPRAY INJECTION
F	- STANDBY LIQUID CONTROL (SLCRN)
G	- HIGH PRESSURE COOLANT INJECTION
H	- COMPONENT COOLING WATER
I	- REACTOR COOLANT RECIRC
J	- LOW PRESSURE COOLANT INJECTION (RHR)
K	- CONTROL ROD DRIVE HYDRAULIC (SCRAM)
L	- NONSAFETY-RELATED
M	- SYSTEM UNKNOWN/NOT APPLICABLE
N	- REACTOR CORE ISOLATION COOLING
O	- SERVICE WATER
P	- STANDBY GAS TREATMENT
Q	- CONDENSATE AND FEED
R	- MAIN STEAM
S	- REACTOR PROTECTION (PPS)
T	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
Z	- FAILED FUEL ELEMENT DETECTION

MOTOR OPERATED VALVE (ELEC.)

VEN	PLANT	CONT.ND.	EVENT DATE	SY S	COMP	FAIL CCDE	TYPE	CLASS	CUN	KEY	FAILURE MODE	FAILURE MECHANISM
B	CR3	018562	071577	L	MV	AOO	W	U			LECAV HEAT VLV DHV-4 WOULD NOT OPEN FROM CONT.ROOM	CAUSE OF FAILRE UNKNOW
B	RS1	014306	020776	L	MV	AOO		U			RHR MOV FAILED TO OPEN DURING TESTING(MV-26106)	TIGHT PACKING /POSS STICKING SEAT
G	BR1	017330	030677	L	MV	AOO		U			RHR PMP 1D TORUS SUC.VLV E11-F004D WOULD NOT OPEN	CAUSE OF FAILRE UNKNOW
G	BR1	022218	060878	F	MV	AOO		U			FPCI FEED INJ VALVE E41-F006 FAILED TO OPEN AGTC	UNKNOW/TESTING COULDNT DUPLICATE FAILURE
G	BR2	020970	032878	G	MV	AOO		U			R.C.I.C. INJECTION VLV E51-FC13 WOULD NOT OPEN	NO CAUSE FOR FAILURE.FOUND
G	BR2	021663	060378	L	MV	AOO		U			RHR VLV E11-F009 WOULD NOT OPEN FROM CONTROL ROOM	CAUSE OF VLV NOT OPENING, NOT GIVEN
G	DR2	018534	081577	L	MV	AOO		U			SUCTION VALVE MO-2-1501-5A FAILED TO OPEN	CAUSE UNKNOW
G	DR3	019996	121677	F	MV	AOO	R	U			LPCI HX DISCH VALVE MO3-1501-3A FAILED TO OPEN	CAUSE UNKNOW
G	DR3	020602	020778	L	MV	AOO	R	U			VALVE MO-3-1501-5C FAILED TO OPEN	CAUSE UNKNOW
G	EN1	015555	061576	H	MV	AOO	R	U			FPIC VALVE E41-F006 DID NOT FULLY OPEN	CAUSE UNKNOW
G	FP1	017956	061177	H	MV	AOO		U			VALVE 23 MOV 58 FAILED TO OPEN ON TEST SIGNAL	CAUSE UNKNOW
G	VY1	015855	092076	L	MV	AOO		U			LPCI MOV (RHR-258) FAILED TO OPEN DURING TESTING	UNKNOW/WALWORTH AND LIMITORQUE INVESTIG.
W	KE1	020788	030278	F	MV	AOO	R	U			CRIMMNT SUMP ISO VAL WOULD NOT FULLY OPEN	CAUSE UNKNOW
W	PR2	019284	100477	H	MV	AOO		U			SAFETY INJ PUMP SUPPLY VLV MV-32183 FAILED TO OPEN	UNKNOW/ STEM WAS LUBRICATED/NEXT TRY GK
W	SU2	015524	060776	H	MV	AOO		U			CHEMICAL ADDITION MOV-CS-2028 FAILED TO OPEN /TEST	UNKNOW
W	YR1	019641	110277	G	MV	AOO		U			PCV (PL-MOV-547) FAILED TO OPEN DURING TESTING	UNKNOW/SUSPECT DAMAGED MOTOR CABLE
W	ZI1	021337	042178	L	MV	AOO		U			RHR IMCV-8700B FAILED TO OPEN DURING TESTING	UNKNOW/SOMETHING CAUSED THERMALS TO OPEN
W	ZI2	022519	090678	G	MV	AOO		U			RWST OUTLET VALVE 2MOV-VC112E FAILED TO OPEN	UNKNOW
W	SA1	017701	042977	G	MV	AO1		D			MC CONT. ISOLATION VLV (ICV68) FAILED TO OPEN	PERSONNEL/VALVE HAD BEEN JAMMED SHUT
G	BR1	019677	110577	L	MV	AO2		D			RHR VALVE E11-F004A FAILED TO OPEN(MOTOR PROBLEM)	PERSONNEL ERRRC/COVER LEFT LOOSE/WATER LK

ACTOP OPERATED VALVE (ELEC.)

P L A N N T	C O U N T N O .	V E N T D A T E	S T A T E	C O D E	F A I L C O D E	I L L U S T R A T I O N	C O M M E N T S	F A I L U R E M E C H A N I S M
W	311	021802	L	MV	A02	D	MOV-RH-100 FAILED TO OPEN	MAINT ERROR/STEM WAS NOT ENGAGED TO DISC
W	12	014348	N	MV	A03	G	CONTAINMENT SPRAY 2MOV-8608 FAILED TO OPEN / TEST	PERSONNEL ERROR/TERMINAL SLIDER OPEN
G	12	021557	O	MV	A04	U	RCIC COND-STUR.TK-SUC.VLV E51-F010 WOULD NOT OPEN	DESIGN/MTR.DID NOT HAVE SPACE HTR;NEED.IT
G	12	023483	I	MV	A04	D	SM CRUSS CONNECT VLV SW 888 MV FAILED TO OPEN	DESIGN ERROR/IMPALPER TORQUE SWITCH USED
G	12	018985	O	MV	A04	D	HPCI VALVE 2-2301-8 FAILED TO OPEN,VAL DAMAGED	OVER SIZED MTR OPERATORS OVERSTRESS STEM
G	12	022325	O	MV	A04	D	CORE SPRAY INJECTION VALVE 14-MOV-128 FAIL TO OPEN	DESIGN ERROR,NORMAL C.P.TOG SEVERE ON VAL
G	12	019755	I	MV	A08	D	CURE SPRAY MOV 2-1402-248 FAILED TO OPEN / TEST	STEM AND BONNET BAULLY GALLED
G	12	018864	O	MV	A09	T	HPCI SYS.VLV MO-3-23-41 FAILED TO FULLY OPEN	CORRODED VLV STEM DUE TO VLV PACKING LEAK
G	12	019721	I	MV	A10	T	VALVE MO3-1201-1 FAILED IN CLOSED POSITION	DRIED GREASE ON LIMIT SWITCH
W	12	016046	N	MV	A10	T	MOV-65005 FAILED TO OPEN DURING TESTING	BRIC ACID ON VALVE STEM
G	12	018566	O	MV	A12	D	HFI VLV PUV-25 FAILED TO OPEN AUTOMATICALLY	MELD-BINDING OF TIE REVERSING INTERLOCKS
G	12	021557	O	MV	A12	U	DECAY HEAT COOL.1-2 OUTLET VLV OH-14A WOULDNT OPEN	ACTUATOR ARM PAD BECAME MISALIGNED
G	12	015338	O	MV	A12	D	INLET STEAM TRIVALVE WOULD NOT OPEN	VALVE OPERATOR SPINDLE FAILED
G	12	022459	O	MV	A12	D	FCV-88-J WOULD NOT OPEN FULLY,DECR.FLOW RECIR.LP.A	VLV STEM SEPARATED FROM THE GATE
G	12	019967	I	MV	A12	D	RHR CRUSS TIE VALVE FAILED TO OPEN	FRACTURED TEETH ON MCRP AND WORM GEAR
G	12	015154	O	MV	A12	D	VALVE I-10-1 WOULD NOT OPEN	YCKE NUT ADAPTOR & BEVEL GEAR HOUS FAILED
G	12	013590	O	MV	A12	D	RHR INJECTION VALVE MO-10-25A FAILED TO OPEN	MTR SHAFT TO FINION GEAR KEY SHEARED
W	12	022226	B	MV	A12	R	ALX FEED PUMP DISCH VALV2-16A FAILED TO OPEN	EXCESS SEATING PRESS CAUSED BY OVERHEAT
G	12	014584	L	MV	A14	C	IND 24 INCH MOV5 (RHR-27A/B) FAILED TO OPEN / TEST	PALMING MAINTENANCE PROBLEM
W	12	021077	H	MV	A14	R	CONTNNT SUMP ISO VAL WOULD NOT FULLY OPEN	VAL PACKING AT END OF USEFULL LIFE

MOTOR OPERATED VALVE (ELEC.)

P V E N T N O.	C O N T R O L N O.	E V E N T D A T E	S U P P L Y	C O N T R O L	F A I L C O D E	T Y P E	C O N D I T I O N	F A I L M O D E	F A I L U R E M E C H A N I S M
M 001	C22269	081778	L	MV	A16	T		VALVE MOV-18608 FAILED TO OPEN DURING TEST	DRY VALVE PACKING CAUSED LK SW TO TRIP
B 002	016001	101476	L	MV	A16	S	D	VLV LPSW-5 COULD NOT BE OPENED REMOTELY	DIRTY ELEC. CONTACT IN MCTCF CONTROL CENTR
B 003	021047	032078	H	MV	A16	S	D	VALVE HP-24 FAILED TO OPEN	DIRT ON VAL OPER CONTACTS
C 002	023461	122078	J	MV	A16	S	D	FLOW CONTROL VLV 2CV-1029-1 FAILED TO OPERATE	LCCSE MOTOR POWER CONNECTION
C 001	018274	061577	H	MV	A16	S	D	MOV-3011 FAILED TO OPEN	CONTACT FOR "SEAL-IN" CKT ON RELAY FAILED
C 011	015402	052176	F	MV	A16	T	D	MU AUX FEED PUMP STEAM SUPPLY VALVE FAILED TO OPEN	NC SIGNAL TO VALVE/COMMAND FAULT/ELECT
C 011	015507	070976	B	MV	A16	T	D	AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	CLM/PAND/P20 IN CONTROL CIRCUIT/POOR DES
C 011	016660	120876	B	MV	A16	T	D	AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/P20 IN CONTROL CIRCUIT/DESIGN
G 001	016658	120376	Q	MV	A16	S	D	E91-FOOT/RCIC STEAM ZSG(VLV) FAILED TO OPEN	LCCSE WIRE ON VLV MOTOR OPEN CONTACTOR
G 001	017200	021077	D	MV	A16	S	D	CCRE SPRAY VALVE FAILED TO OPEN AT REQUIRED PRESS	SETPOINT ON CONTROLLING INST DRIFTED HI
G 001	023622	020578	K	MV	A16	S	D	VALVE B32-F031A FAILED IN CLOSED POSITION	FLUSES BLOWN IN CONTROL CKT(DESIGN-RCOT)
G 001	022052	072878	L	MV	A16	T	D	VALVE F068B FAILED TO OPEN	BLOWN FLSE
G 001	022052A	080278	L	MV	A16	T	D	VALVE F068B FAILED TO OPEN	BLOWN FLSE/FOUND GRND WIRE IN LOGIC CKT
G 001	020600	011778	J	MV	A16	S	D	COOLING VALVE REC-711MV DID NOT OPEN	FAILURE OF VALVE ELECT-INTERLOCK SWITCH
G 003	016655	101276	L	MV	A16	S	D	VALVE 3-1501-27A FAILED TO OPEN ELECTRICALLY	LCCSE TERMINAL IN VALVE CONTROL CIRCUIT
G 001	022413	070278	L	MV	A16	S	D	RHR MOV E11-F024A FAILED TO OPEN	DIRT IN INTERLOCK ON BREAKER CAUSED BIND
G 001	021022	040678	L	MV	A16	S	D	RHR ISULATION VALVE ICMOV18 INOPERABLE (CLOSED)	CONTROLLER AUXILIARY CONTACT FAILURE
G 001	019054	053077	L	MV	A16	T	D	"8" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT. CIRCUITRY DID NOT CLOSE
G 001	018955	082877	L	MV	A16	T	D	"8" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT. CIRCUITRY DID NOT CLOSE
G 001	014413	040176	F	MV	A16	S	D	ICRUS SPRAY VLV V-21-15 FAILED TO OPEN ON AUTO-SIG MOTOR CNT. (INTR. BRKR. FAILED TO OPERATE	

ACTOR OPERATED VALVE (ELEC.)

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FAILURE MODE

FAILURE MECHANISM

COUNT-NO.	EVENT DATE	S U M P	C O D E	F A I L	Y A	T	C	D E F E C T	M E C H A N I S M
G 001 018375	062076	F	MV	A16	S	D		VLV V-21-18 FAILED TO OPEN ON AUTO START SIGNAL	DEFECT SWITCH IN VLV.POTOM CONTROL
G 001 016479	120176	D	MV	A16	S	D		CCRE SPRAY ISO.VLV V-20-15 FAILED TO OPEN ON SIGNAL INTERMIT.GRND.SHRT.IN VLV.MIR.CPER.PWR.FD	
C 001 018623*	072777	E	MV	A16	S	D	02	CORE SPRAY ISO.VLVS V-20-40 & V-20-15 FAILED TO F--LLY CFEN//IMP.CKT.BRKR.OVERLOAD SETTING	
C 001 023144	120478	F	MV	A16	S	D		CCMT SPRAY VALVE V-21-78 FAILED TO OPEN ON TESTING BREAKER 'O VALVE NOT RACED IN PROPERLY	
G P83 014032	010576	E	MV	A16	S	D		PC-3-14-128(B CORE SPR.LP.INJ.VLV) FAILED TO OPEN PROBLEM WITH MAGNET.TRIP DEVICE MTR. BRKR	
G P83 014475	021776	L	MV	A16	S	D		PHR INJ. VLV.MD-10-25A FAILED TO FULLY OPEN BROKEN WIRE TO OPENING TONGUE SWITCH	
G P83 014655	050876	K	MV	A16	T	D		RECIRC.PMP.DISCHG.VLV MD-53B FAILED TO OPEN GROUNDED CABLE AT MTR CSING.DUE TO VIBRAT	
* B V1 018050	101476	S	MV	A16	S	D		*8*HDR-DISC.VLV TO RIVER MTR.PMP. DID NOT OPEN DIRTY ELEC.CONT.GN-OPER.LINE STARTER	
* P R2 020125	122377	B	MV	A16	S	D		022 TURB.DRIVEN AFW PUMP STR.SUP.VLV.FAILED TO CP--EN//MOTOR LEAD GROUNDED TO JUNCTION BOX	
* P R2 020023	120377	L	MV	A16	S	D		PHK VALVE 7448 FAILED TO OPEN CIRCUIT THERMAL OVERLOAD DEVICE TRIPPED	
* S L1 014871	031876	B	MV	A16	S	D		ALX.FEEDWTR.PUMP GISC.VLV.MOV-FW-151A FAILED TO O--PEN//TIPPING RELAY FAILURE	
* T R1 016250	102876	H	MV	A16	S	D		WST SUCTION VALVE (MD-1120) FAILED TO OPEN/DEMAND BREAKER SUPPLYING POWER FAILED/COMMAND	
* Z T1 017040	012677	F	MV	A16	T	D		VALVE 1MOV-S18808A FAILED TO OPEN COMMAND/AUX CONTACTS IN COMTL CKT STUCK	
* Z I1 017223	012877	H	MV	A16	T	D		VALVE 1MOV-S18808B FAILED TO OPEN COMMAND/AUX CONTACTS CONTROL CKT,STUCK	
* Z I1 017251	012877	F	MV	A16	T	D		VALVE 1MOV-S18808C FAILED TO OPEN/COMMAND ALX CONTACTS IN CONTROL CIRCUIT STUCK	
* Z I2 014253	021376	H	MV	A16	T	D		28 SI PMP.SUC.VLV 2MOV-S18923B FAILED TO OPEN DIRTY CNT.GN CKT.BRKR.TO MTR.COPERATOR	
* Z I2 018212	060477	L	MV	A16	S	D		PHR VALVE(2MOV-RH6700B) FAILED TO OPEN DURING TEST COMMAND/AUX CONTACTS STUCK IN MCC	
G D R3 018936	061177	L	MV	A19	T			VALVE MD-3-1501-208 FAILED TO OPEN VALVE STEM NOT ADEQUATELY LUBRICATED	
* T P1 020516	010478	H	MV	A19	T			MOV-88807A FAILED TO OPEN DURING TESTING VALVE STEM LACKED LUBRICATION	
* A T1 017154	012177	N	MV	A19	T			CONTAINMENT SPRAY 1MOV-C500C2 FAILED TO OPEN STEM STICKING DUE TO LUBRICATION PROBLEM	

MOTOR OPERATED VALVE (ELEC.)

PLANT	UNIT	CONT. NO.	EVENT DATE	S. P.	FAIL CODE	Y A L N K	FAILURE MODE	FAILURE MECHANISM
W	Z11	G21357	050378	F	MV A19	T	CONTAINMENT SPRAY VALVE 1MOV-CS002 FAILED TO OPEN LACK OF LUBRICATION	
B	CR3	G17168A	020377	L	MV A20	R	DECAY HEAT VLV DHV-4 WOULD NOT OPEN REMOTE ACTUATOR MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG	
B	CK3	G17168B	020377	L	MV A20	R	DECAY HEAT VLV CHV-41 WOULDNT OPEN REMOTE ACTUATOR MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG	
L	FL1	G15246	071076	U	MV A20	D	VALVE MOV-A-04 FAILED TO OPEN ELECTRICALLY	FAILURE VALVE OPERATOR, WORN WORM GEAR
G	0F1	G18126	050977	H	MV A20	D	HPCI TURB. STM. SUP. ISO. VLV. FCV 1-73-16 FAIL. TO OPEN BRUEN TEETH ON MTR PINION CLUTCH GEAR	
C	0K1	016661	112176	C	MV A20	T	E41-F001(HPCI STM. SUP. VLV) WOULD NOT OPEN	BRUSHES ON VLV MOTOR WERE STICKIN
C	0K2	017247	022377	C	MV A20	T	E51-F045(STM. INL. TO RCIC TURB.) WOULD NOT OPEN	MTR OPER. FAILED DUE TO MOIST. IN WINDINGS
G	0K2	G20513	040378	L	MV A20	D	SHUTDOWN COOL. OUTB. SUC. VLV E11-F008 WOULDNT OPEN	ELECTR-MECHANICAL BRAKE ON VLV-OP. FAILED
C	0C1	016008	050776	C	MV A20	D	VALVE CMS-MV-128 FAILED TO OPEN	THE REPAIR CLUTCH AND COMPONENTS FAILED
C	0C1	023049	091878	L	MV A20	D	VALVE RHR-MC-65B FAILED TO OPEN	SET SCREEN ON VALVE OPERATOR LOOSTENED
G	FPI	015058	082076	H	MV A20	U	HPCI TURB. SUCTION VALVE FAILED TO OPEN	SHORT IN OPERATOR MOTOR
C	FPI	G15237	070376	L	MV A20	D	RFR VALVE 10 MOV 25A FAILED TO OPEN	SUSPECT OPEN CIRCUIT IN MOTOR WINDINGS
G	FPI	G16269	102676	C	MV A20	D	RHR SYSTEM VALVE 10-MOV-24A WOULD NOT OPEN	VALVE MOTOR OPERATOR BURNED OUT
C	FPI	G16497	111976	H	MV A20	D	HPCI VALVE 23-MOV-57 FAILED TO OPEN	FAILURE OF VALVE MOTOR WINDINGS
G	FPI	G2359C	042478	N	MV A20	D	12-MOV-15 IMPERABLE TORQUE SW PROBLEM CAUSED--	BURNED UP MOTOR AND BROKEN GEARS
G	M11	G1669C	121876	C	MV A20	U	VALVE 1-CU-3 DID NOT OPEN	BURNED OUT MOTOR
G	NM1	G1466C	021576	L	MV A20	U	SHUTDOWN COOL SYST ISO VALVE 38-C2 FAIL TO OPEN	OPEN MOTOR WINDINGS
C	PE2	G15952	010776	L	MV A20	U	PC-10-25B RHR INJECTION VLV FAILED TO OPEN	MOTOR ON VLV OVERHEATED AND DAMAGED WINDING
C	PE3	G23062	111678	L	MV A20	D	RHR VALVE MD:348 FAILED TO OPEN ON TESTING	MOTOR & SEVERAL OPERATOR PARTS REPLACED
W	RC2	G1935C	081677	B	MV A20	D	VALVE V2-168 FAILED TO OPEN AS REQUIRED	LIMITSWITCH VALVE OPERATOR FAILED

MOTOR OPERATED VALVE (ELEC.)

P Y N	L A N	CCNT-NO.	EVENT DATE	S Y S	C O D E	FAIL CODE	T Y P E	C L A S S I F I C A T I O N	FAILURE MODE	FAILURE MECHANISM
M	R02	019352	081777	B	MV	A20	R	D	VALVE V2-16A FAILED TO OPEN	LIMITORCLE VALVE OPERATOR FAILED
M	R02	019667	162677	L	MV	A20	U	U	RHR VALVE 7598 FAILED TO OPEN	MOTOR WINDINGS WERE SHORTED
M	SAL	021910	052378	H	MV	A20	D	D	MCV 13J1 (HPIS) FAILED TO OPEN DURING TEST	WINDING FAILED/INCORRECT MOTOR SIZE/PERSM
M	JAI	022425	082278	C	MV	A20	U	U	MUV (10C190) FAILED TO OPEN	MOTOR OPER FAILED / SERVICE H2O FLOODED
M	TRI	015723	082676	R	MV	A20	D	D	CCW SYS MOV-3293 FAILED TO OPEN DURING TESTING	VALVE MOTOR OPERATOR COIL SHORTED OUT
M	ZI2	017661	051977	F	MV	A20	D	D	VALVE 2MCV-S18800C FAILED TO CLOSE	LIMITORCLE MOTOR OPERATOR FAILURE
M	API	020667	011378	B	MV	A23	D	D	VALVE CV-2667 FAILED TO OPEN REMOTEY	TORQUE SWITCH DEFECTIVE
M	CR3	018561	071977	L	MV	A23	R	T	VLV DHV-41 WOULD NOT OPEN FROM CONTROL ROOM	CAUSED BY SHIFT IN TORQUE SWITCH SETTING
M	DE2	017225	011377	C	MV	A23	U	U	VALVE 2BS-2 FAILED TO OPEN	TORQUE & LIMIT SWITCHS OUT OF ADJUSTMENT
M	DEJ	020592	026378	F	MV	A23	U	U	VALVE BS-3 FAILED TO OPEN	TORQUE SWITCH FAILURE
M	RS1	016556*	111176	L	MV	A23	B	T	02	TWO DECAY HEAT MOVES FAILED TO OPEN FOR MONTH TEST
M	CCI	016443	111776	H	MV	A23	R	D	ALX-MI-PRESS-LP-ISO.VLV SI-617 FAILED TO OPEN	TORQUE SWITCHS NEEDED RESET/TESTED NEERLY
M	SL1	023141	112178	F	MV	A23	D	D	MOV 07-1B IN IB ECCS TRAIN FAILED TO OPEN ON TEST	DEFECTIVE TORQUE SWITCH;BURNED CONTACTS
M	BF2	016807	111676	H	MV	A23	R	D	HPCI TURB-STM.SUP.VLV 2-FCV-73-16 FAILED TO OPEN	TORQUE SW FAULTY,REPLACED SWITCH
M	BF3	018637	070577	F	MV	A23	R	D	HPCI TURB-STM.SUP. 3-FCV-73-16 FAILED TO OPEN	TCR-SMT.GEAR ASS.PIN FOR VLV OPER.SHEARED
M	BR2	020729	030678	Q	MV	A23	U	U	PCIC VALVE ES1-F045 FAILED TO OPEN	TCR-SMTF.GEAR ASS.SHEARED;CAUS.UVLD ON MT
M	DAL	016445	110476	M	MV	A23	R	U	MSIV LEAKAGE CONTROL VALVE MCV8401A FAILED TO OPEN	TORQUE SW FAILED
M	DAL	019210	071877	M	MV	A23	D	D	MOV 8401C FAILED TO OPEN ON TEST	TORQUE SW SETTING WRONG
M	DR2	018568	080277	H	MV	A23	U	U	HPCI VALVE 2-2301-8 FAILED TO OPEN	SUSPECT PROBLEM WITH TORQUE SWITCH
M	FPI	019169	052877	Q	MV	A23	U	U	PCIC TURBINE STEAM SUPPLY MOV 131 FAILED TO OPEN	TORQUE SWITCH NEEDED RESET

MOTOR OPERATED VALVE (ELEC.)

UNIT	CONT. NO.	EVENT DATE	SYM	CODE	FAIL CODE	TYPE	DESCRIPTION	FAILURE MODE	FAILURE MECHANISM
G	FP1 C21142	100477	L	MV	A23	D	LPCI MOV 25A FAILED TO OPEN ON TEST		LOW TORQUE SWITCH SETTING
G	FP1 C21229	042978	F	MV	A23	D	HPCI 23-MOV-15 WOULD NOT OPEN		TORQUE SWITCH WAS RESET
G	OC1 022576	051478	L	MV	A23	T	VALVE V-14-37 WOULD NOT OPEN, BKR TRIPPED		SET SCREW ON TORQUE SW LOOSENED, SET DRIFT
G	PR2 C16779	122876	C	MV	A23	U	ACIC STM SUPPLY ISO VAL FAILED TO OPEN		TORQUE SWITCH FAILURE
G	PR3 C14470	030274	K	MV	A23	U	RECIRC-PMP-DISCHG-VLV BYPASSING--5A)FAIL TO OPEN		DEFECTIVE TORQUE SWITCH CAUSED FAILURE
G	QC1 020264	111877	H	MV	A23	D	HPCI MOV 1-2301-4 FAILED TO OPEN DURING TESTING		MGV HAD DEFECTIVE TORQUE SWITCH
M	KEL 015268	052376	M	MV	A23	D	SERV MAT VAL FCR FAN -JLL UNIT DID NOT OPEN		BROKEN TORQUE SWITCH
M	PR1 C14758	051376	L	MV	A23	R	MOV FAILED TO OPEN DURING TEST (MV-32069)		TORQUE SW PROBLEM/ADJUSTED IT (LIMIT TORQUE)
M	PR2 016284	102576	F	MV	A23	R	MCV/BURIC ACID SUPPLY MV-32184 FAILED TO OPEN		TORQUE SW MALFUNCTIONED/WAS REPLACED
M	PT1 014549	061676	S	MV	A23	R	MCV-SM2869 FAILED TO OPEN ELECTRICALLY DURING TEST		TORQUE SW CORRUPTED FOLLOWING WETTING
M	PT1 C20062	122177	S	MV	A23	R	MCV-2907 FAILED TO OPEN DURING TESTING		TORQUE SW SETPOINT WRONG/ADJUSTED
M	PI2 C15186	070176	B	MV	A23	R	MCV-2M5-2019/STEAM TC AUX FEED PUMP FAILED TO OPEN		TORQUE SW SETPOINT CAUSED TIGHT CLOSING
M	TR1 016250A	102876	H	MV	A23	U	RMST SUCTION VALVE(MG-112E) FAILED TO OPEN/DEMANC		TORQUE SW SET TOO LOW/VAL WOULDNT UNSEAT
O	DB1 C20989A	031678	B	MV	A26	D	AUX.FD/MP.1-1 STOP VLV AF387C FAILED TO OPEN		LIMIT SWITCH ON VLV MTR NOT ADJUSTED PROCP.
C	CC2 019740	111577	H	MV	A26	T	MCV-627-AUX HI PRESS HOR STP LP 118-WOULDNT OPEN		OPEN LIMIT SWITCH CONTS. WERE DIRTY
G	DA1 016451	102976	M	MV	A26	R	MSIV-L45 MCV8401A FAILED TO OPEN DURING TEST		INSUFFICIENT LIMIT SWITCH CONTACT PRESS
G	DA1 016361	111276	M	MV	A26	R	MSIV LEAKAGE CONTROL VALVE MCV8401B FAILED TO OPEN		LIMIT SWITCH CUT OF ADJUSTMENT
G	DA1 020135	122777	M	MV	A26	T	VALVE MOV 2700 FAILED TO OPEN FULLY		LIMIT SWITCHES OUT OF ADJUSTMENT
G	DR2 C47182	021777	L	MV	A26	U	LPCI CROSS-TIE VALVE MC2-1501-32B FAILED TO OPEN		LIMIT SWITCH OPENED BEFORE VALVE OFF SEAT
G	EN1 014752	050176	F	MV	A26	R	HPCI DISCHARGE VALVE E41-F006 FAILED TO OPEN		FAILURE OF A SNAP LOCK LIMIT SWITCH

MOTOR OPERATED VALVE (ELEC.)

PLANT	UNIT NO.	EVENT DATE	STATUS	OPER	FAIL CODE	TYPE	CLASS	CN	MP	KEY	FAILURE MODE	FAILURE MECHANISM
W RD2	022523	082578	S	MV	A26		D				VALVE V6-120 FAILED TO OPEN	LIMIT SWITCH FAILURE
B UE2	019066	041977	C	MV	B00		U				ISO VAL 2CS-5 WOULD NOT CYCLE FROM OPEN TO CLOSE	CAUSE UNKNOWN / REQUIRED EXC. TORQUE
G DA1	015080	070476	Q	MV	B00		U				RCIC MOV 2401 FAILED TO CLOSE FOR TEST	NO REASON LISTED, NOT REPRODUCIBLE
G DA1	016530*	112276	C	MV	B00		U 02				MOV 8401B AND 8402B FAILED TO FULLY SEAL	CAUSE UNKNOWN
G DA1	019963	112377	F	MV	B00		U				HPCI INJECTION VALVE MOV 2312 FAILED TO CLOSE	CAUSE UNKNOWN
G MO1	021243	042178	C	MV	B00		U				RX-WTR. CLEANUP OUTBD. ISO. VLV (MO-2398) FAIL. TO CLOSE	CAUSE UNKNOWN
C SL1	015000	052476	C	MV	BC2		D				MOV (I-MV-15) FAILED TO CLOSE / PREOP TESTING	PERSONNEL MAINT PROBLEM / DIRTY TORQ SW CLNT
W IP3	016469*	121776	W	MV	B02	R	D 02				TWO-28IN MC VS FAILED TO CLOSE	SHAFT BINDING DUE TO IMPROP ADJ OF SLAND
G CR3	020222	122877	N	MV	B04		D				RB PURGE EX. AUST VLV AHV-1B DID NOT AUTO CLOSE	DESIGN PROB / OPEN LIMIT SWITCH NOT ACTIVATE
W SU2	022543	092678	S	MV	B04		D				CIRC H2O OUTLET MOV-CW-2000 FAILED TO CLOSE	DESIGN / TORQUE SW CAM WEDGED ON SCREW
G DR2	014344	032476	J	MV	B06		D				CCSW VAULT DRAIN VAL 4999-74 BLOCKED OPEN MECH	FUNCTIONAL TEST REQUIRE. NOT IDENTIFIED
C BF1	017594A	032177	L	MV	B08		D				VLV FCV 74-52 WOULD NOT GO COMPLETELY CLOSED	WORN BRNG. LOCKNUT, WRENUT, GASKETS
W DC1	018266	062477	C	MV	B10		T				CHARGING HEADER MC ISOLATION VALVE FAILED TO CLOSE	BERIC ACID CRYSTALS ON STEM
E DE2	017541	040577	G	MV	B12		U				VALVE 2LP-21 FAILED TO CLOSE	LOOSE SET SCREW ON PINION GEAR OF MTR SFT
C CC1	014166	011976	N	MV	B12		D				MOV-5463 STUCK IN THE INTERMEDIATE POSITION	LOCK. DEVICE / BRASS BUSH. LOOSE / UNCLAMP. STM
G BM1	017290	030177	Q	MV	B12		D				HPCI MIN. FLOW VLV E41-FQ12 FAILED TO CLOSE	ANTI-ROT. KEY SET SCREW HAD UNSCREWED
G FP1	021924	072278	D	MV	B12		D				OUTBOARD INJECTION VALVE 14-MOV-11B FAILED TO CLOSE	OPERATOR SHAFT KEY SHEARED
G MC1	015768	090276	F	MV	B12	R	D				VALVE MO-2008 FAILED TO OPEN	STEM CLAMP SET SCREWS SHEARED
G PB2	016390	110976	D	MV	B12		D				CORE SPRAY VALVE MO-26A FAILED TO CLOSE	MTR OPER GEAR TRAIN FAILED
G PB3	018072	071377	G	MV	B12	R	D				RCIC OUTER ISO. VLV (MO-16) FAILED TO CLOSE	OPER. HAD STRIPPED THREADS ON STEM NUT

MOTOR OPERATED VALVE (ELEC.)

PLANT	UNIT	EVENT DATE	SYMPTOM	CLASSIFICATION	FAILURE MODE	FAILURE MECHANISM
G	P11	018325	L MV 812	R D	VALVE MD-1001-30A FAILED TO CLOSE, RHR PUMP OPERAT	KEY WHICH PREVENTS STEM ROTATION SHEARED
G	DR2	017514	K MV 814	I	B RECIRC PUMP SUCTION VALVE WOULD NOT CLOSE	VALVE PACKING TOO TIGHT
G	P83	443347	G MV 814	D	RCIC ISOL VALVE MD-13-15 FAILED TO FULLY CLOSE	COCKED PACKING FOLLOWER JAMMED STEM
M	Z12	016535	H MV 814	T	BIT OUTLET MOV (2MOV-5180018) FAILED TO CLOSE/TEST	PACKING FRCS/GLANC MISALIGN/LACK OF LUB.
G	CR3	017656A	C MV 816	S D	MUV-258 FAILED TO CLOSE; CONTAINMENT ISOLATION VLV.	INOPERABLE DUE TO DIRTY CONTROL CONTACTS
G	BR1	016860	C MV 816	S D	MIN.FLCV VLV.(E01-F012) DID NOT CLOSE FULLY	VLV MTR CKT PRESS-SWITCH OUT OF CALIBRATION
G	BR2	014416	C MV 816	S D	SPRAY LINE VALVE (E11-F022) FAILED TO SHUT/TEST	MC POWER/AUX CONTACTS FOR INTERLOCK STUCK
C	CU1	0189CC	S MV 816	S D	SERVICE H2O VALVE, SM-MC-89A FAILED TO CLOSE	RELAY CONTACTS SUPPLYING PWR FAILED
G	CC1	020343	L MV 816	S D	RHR INJ BLOCK VALVE FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON RELAY WIRING ERROR
G	DA1	021123A	C MV 816	S D	VALVE MOV 8402B FAILED TO FULLY CLOSE	MOTOR STARTER CONTACTOR COIL FAILED
G	DR3	01475C	C MV 816	S D	MD 3-1402-258 TRIPPED WHILE BEING CLOSED	WONG SIZE OVERLOAD FEATER
G	DR3	022561	L MV 816	S U	LPCI VALVE 3-1501-20A FAILED TO CLOSE ON TESTING	STUCK CONTACTOR IN MCC
G	FP1	021112	H MV 816	S D	HPCI VALVE 23-MOV-15 FAILED TO CLOSE	DEFECTIVE TEMP SWITCHING SIGNAL TO CLOSE
G	UC1	017472	C MV 816	S D	CURE SPRAY ISO.VLV V-2C-15 INOPERABLE IN OPEN POS.	VLV.MTR. OPERATOR BREAKER TRIPPED
G	UC1	019060	C MV 816	S D	CURE SPRAY ISO.VLV V-20-15 FAILED TO CLOSE	DEFECTIVE CKT.BRRP. TO MOTOR
G	P82	014925	K MV 816	S U	RECIRC PUMP DISCH VLV MD-2-02-53A WOULD NOT CLOSE	BROKEN WIRE, CLOSING CONTROL CIRCUIT
G	P83	01438C	K MV 816	T D	3B RECIRC.PMP.DISCHG.VLV(MD3-2-03) FAILED TO CLOSE	2 CNT.CKT.WIRES TO VLV OPER.WERE BROKEN
G	P83	014741	K MV 816	T D	3B RECIRC.PMP.DISCHG.VLV(MD-3-2-53B) FAIL TO CLOSE	SEVERAL BROKEN WIRES AT TERMINAL CONNECT.
C	QC1	018109*	C MV 816	S D 02	CNT. ISO.VLV. MD 1-1001-506 63 FAILED TO CLOSE	FAILURE OF THE 595-118 RELAY
G	CC4	0205CC	C MV 816	S D	RCIC INBOARD STM.ISO.VLV.MD-2-1301-16 WOULDNT CL-	-DISE//FAIL.OF VLV.BRKR.AUX.CLOSING CNT.

MOTOR OPERATED VALVE (ELEC.)

PLANT	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	L U M P	KEY	FAILURE MODE	FAILURE MECHANISM
W BV2	016279	102276	H	MV	B16	S	D			VCT DISCH VALVE FAILED TO SHUT ON SI SIGNAL	NO PWR/ALLIS CHALMER LINESTARTER FAILED
W BV1	016356	102576	F	MV	E16	S	D			DRAIN VALVE ON ACCUMULATOR 1C FAILED TO SHUT	NO PWR/THERMAL OVERLOAD OF LINESTARTER
W DC1	020694	020878	B	MV	B16	S	D			ALX FEED MOV FAILED TO CLOSE	COMMAND/LOOSE ELEC CONNECTION/CONTROL
W DC1	023114	112878	B	MV	B16	S	C			AFW THROTTLE VLV. WOULD NOT CLOSE ELECTRICALLY	BROKEN LEAD ON MTR OPERATOR
W RC2	021414	051178	S	MV	B16	S	D			VALVE V6-120 FAILED IN OPEN POSITION	BLOWN FUSE ON MTR OPERATOR CONTROL PWR
W SA1	022720	052478	C	MV	B16	S	D			PCV(1CC131) FAILED TO CLOSE / TEST/COMMAND FAULT	CONTACTS FAILED IN CONTROL POWER CIRCUIT
W SU1	017928	101876	J	MV	B16	S	D			MOV-CW-100A FAILED TO CLOSE ON AUTO SIGNAL	LOOSE TERMINAL SCREW A BREAKER
W SU1	021294	042378	S	MV	B16	S	D			CONDENSER OUTLET MOV (CW-100A) FAILED TO CLOSE	COMMAND FAULT/WIRE DISCONNECTED/PERSONEL
W TR1	020554	012878	C	MV	B16	S	L			CONTAINMENT ISOL MOV-5660 FAILED TO CLCSE	COMMAND/LOOSE ELECTRICAL CONNECTION
W YR1	019477	101977	N	MV	B16	S	D			MOV FAILED TO CLOSE / COMMAND FAULT	AN OPEN OVERLOAD HEATER IN CONTACTOR
W Z12	014219	021376	C	MV	B16	S	D			CHRG PUMP VALVE 2 MOV-VC8106 FAILED TO CLOSE/TEST	COMMAND/STUCK CONTACTS IN MCC BREAKER
B T11	021361	120877	N	MV	B17		D			PROCESS SAMPLING MOV CA-V13 FAILED TO CLOSE	BUSHING FAILED DUE TO WEAR/POSS LUB PROB
C CC1	016406	102276	C	MV	B17		L			WHILE DRAIN.CONT.SUMP,MOV-5483 WOULD NOT SHUT	STEM BUSHING INTERNAL THREADS WERE STRIP.
G DR2	023497	122078	K	MV	B19		T			RECIRC PUMP DISCHARGE BYPASS FAILED TO CLOSE	SUSPECT STEM LUBRICATION PROBLEM
G MC1	018093	053177	C	MV	B19		R			ISO VALVE MO-2076 FAILED TO CLOSE	DETERIORATED GREASE,MAIN+LIM 56 GEAR TRAN
W Z11	017038	012877	G	MV	E19		T			CHARGING LINE VLV(IMOV-VC8106) VLV FAILED TO CLOSE	LACK OF STEM LUBRICATION CAUSED BINDING
C DB1	021160	032578	U	MV	B20		D			MN.FDWTB.BLOCK VLV Fw-779 DID NOT CLOSE COMPLETELY	MTR.OPERATOR NEEDED ADJUSTMENTS
B DE1	018308	070777	K	MV	B20		T			VALVE RC-6 FAILED TO CLOSE	FINGER ON MOTOR CONTACTOR DIRTY
B T11	016116	092276	C	MV	B20		D			CONTAINMENT ISOLATION MOV (CA-V4A) FAILED TO CLOSE	LOOSE LOCKNUT ON VALVE OPERATOR
C SL1	020639	020978	B	MV	B20		D			ALX FEED PUMP VALVE (MV-09-11) FAILED TO CLOSE	MOV MOTOR WINDING PARTIALLY SHORTED

MOTOR OPERATED VALVE (ELEC.)

W F N	P L A N T	CONT.NO.	EVENT DATE	SYS	COMF	FAIL CODE	T Y P E	C L A S S	C N T R O L S C H E M E	K E Y	FAILURE MODE	FAILURE MECHANISM
G	BF1	0175948	032177	L	MV	B20		D			VLV FCV 74-52 WOULD NOT CLOSE;MTR TRIP,THERMAL O.L	MOTOR SHAFT WAS BENT
G	BM1	017061	011977	G	MV	B20		T			HPCI STM.SUP.VLV E41-F003 WOULD NOT CLOSE	DIRTY COPMUTATOR IN VLV OPERATOR
G	BR1	019624	120377	L	MV	B20		U			VALVE E11-F040 FAILED IN OPEN POSITION	MOTOR FCLND TO BE OPEN(UNDETERMINED WHY)
G	BR1	0210898	041578	C	MV	B20		K D			DURING AN ACT.HI.STMLN.FLOW,VLV E41-F003 FAIL.TC.S	DIRT.CONT.GN LIMIT SWT.6POCR SEAT.MTR.BR.
G	CC1	017201	021977	L	MV	E20		R D			MOTOR OPERATED VALVE RHR-MO-34 WOULD NOT CLOSE	SHEARED KEY BETWEEN VALVE AND OPERATOR
G	NC1	023403	121878	K	MV	B20		D			MO-2-54A FAILED TO CLOSE	DECLUTCH SHAFT PROBLEM,MOTOR WONT ENGAGE
G	QC1	016162	090276	F	MV	B20		D			MOV FAILED TO CLOSE DURING TESTING(MO-1-1001-26-A)	EXCESS GREASE/COMPACTION/HYDRALLIC LOCK
W	SU2	020158	010878	N	MV	B20		R U			CIRC H2O OUTLET MOV-CS-2008 FAILED TO CLOSE	MOTOR WAS GROUNDED
W	SU2	022240	080978	N	MV	B20		D			CIRC H2O OUTLET MOV-CN-2000 FAILED TO CLOSE	KEY SLIPPED OUT OF MOTOR OPER DRIVE TRAIN
W	SU2	022647	100778	S	MV	B20		D			MOV-SW-2028 FAILED TO CLOSE GIVEN A TEST SIGNAL	MOTOR DAMAGED DUE TO FLOODED PIT
B	CR3	019010	062777	L	MV	B23		T			CORE FLOOD DR.VLV FOR B CORE FL.TK.WOULDNT CLOSE	DRIFT OF TORQUE SWTCH SETTING;VLV CFV-12
B	CR3	0207528	021078	C	MV	B23		D			VLV CAV-1 FAILED TO CLOSE; VIOLATED T.S. REQ.	VLV HAD INCORRECT TORQUE SWITCH SETTING
B	DE3	020488	020278	C	MV	B23		U			VALVE 3PR-9 FAILED TO CLOSE	TORQUE SWITCH FAILURE
B	TI1	016629	052076	C	MV	B23		D			CONTAINMENT ISOLATION MOV FAILED TO CLOSE(WDG-V3)	TORQUE SW PROBLEM(POSS TIGHT PACKING)
B	TI1	017343	030977	C	MV	B23		D			NO SPRAY PUMP SUCTION VALVE FAILED TO CLOSE/TEST	GREASE IN SPRING PREVENTED TORQUE SW OPER
G	BF1	018864	081477	N	MV	B23		D			CONT.ISO.VLV CAC-V23 WOULD NOT CLOSE FULLY ELECT.	CLOSING TOR.SWTH FOR CAC-V23 FAILED
G	DM1	0211238	040678	C	MV	B23		T			VALVE MOV 8402C FAILED TO FULLY CLOSE	MOTOR OPERATOR TORQUE SWITCH CONT.DIRTY
G	FP1	019310	100877	H	MV	B23		D			HPCI STEAM ISOL VALVE FAILED TO CLUSE ELECTRICALLY	TORQUE SWITCH NEEDED ADJUSTMENT
G	MI1	016688	121776	L	MV	B23		U			ISO COND INBOARD STM SUPVAL FAIL TO CLOSE	TORQUE SW SET INCORRECTLY
G	HI1	016689	121876	L	MV	B23		U			CONDENSATE RETURN VAL 1-IC-4 FAILED TO CLOSE	TORQUE SW SET INCORRECT

MOTOR OPERATED VALVE (ELEC.)

<u>VEH</u>	<u>PLAN Y</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C U M P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C U N I T</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	MC1	015C26	060376	C	MV	B23	T				FPCI STM LINE ISO VAL FAILED TO CLOSE	TORQUE SW SETTING DRIFTED TOO LOW
G	PB2	021482	061278	W	MV	B23	U				VALVE MO-2-74 FAILED TO RESPOND TO A CLOSE SIGNAL	TORQUE SWITCH ON ISO VALVE DEFECTIVE
G	PB2	022707	101978	W	MV	B23	R U				MAIN STM LINE DRAIN ISO VAL MO-2-74 FAIL TO CLOSE	TORQUE SWITCH ON ISO VALVE DEFECTIVE
G	PB3	016476	112376	C	MV	B23	U				CORE SPR.B FULL FL.TST.RET.VLV FAILED TO CLOSE	TORQUE SWITCH SETTING WAS TOO LOW
G	PB3	018373	071177	Q	MV	B23	D				RCIC INNER ISO.VLV(MO-15) FAILED TO CLOSE MAN.CGNT	MALFUNCTION IN VLV TORQUE SWITCH. CIRCUIT
G	QC1	021436	050478	F	MV	B23	T				FPCI PMP SUCTION VLV MO-1-2301-6 WOULD NOT CLOSE	VLV.TORQUE SWITCH WAS BORN OUT
G	QC2	021129	040978	U	MV	B23	D				RCIC INBD.STM.INLET ISO.VLV.MO-2-1301-16 WOULD NO-	-T CLOSE//FAILED TORQUE SWITCH
W	KE1	020767	022878	J	MV	B23	T				ISO VAL ON EXCESS LETDOWN HX WOULD NOT CLOSE	DIRTY CONTACTS ON TORQUE SWITCH
W	MA1	022935	110778	M	MV	B23	T				MCV-05102A FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON TORQUE SWITCH
W	PT1	018192	061577	S	MV	B23	R T				MGV-2816 FAILED TO CLOSE DURING TEST SIGNAL	TORQUE SW READJUSTED/POSSIBLE OVER TORQUE
W	SU1	014868	042976	G	MV	B23	U				MOV (1381) FAILED TO CLOSE	TORQUE SW CONTACT PROBLEM
W	SL2	014844	042276	S	MV	B23	T				SERVICE H2O MOV-SW-2028 FAILED TO CLOSE / TEST	TORQUE SW CONTACTS WERE CORRODED
W	SU2	017396	030977	N	MV	B23	R U				CIRC H2O OUTLET MCV-CW-2000 FAILED TO CLOSE	TORQUE SWITCH PROBLEM/JAMMED/ADJUSTED IT
W	Z12	017811	052077	C	MV	B23	T				2MOV-VC8111 FAILED TO FULLY CLOSE	TORQUE SW SETTING OUT OF ADJUSTMENT
G	BR1	021089A	041078	C	MV	B26	R T				VLV E41-F003 FAILED TO ISOLATE DURING TESTING	DIRT.CCN1.ON LIMIT SWT.&POCR.SEAT.MTR.BR.
G	CO1	017298	012577	C	MV	B26	T				GRYWELL PURGE VALVE WOULD NOT CLOSE FROM CGNT SW	CORRODED LIMIT SWITCH CONTACTS
G	EN1	014768	020676	Q	MV	B26	T				RCIC PUMP SUCTION ISOLATION VALVE FAILED TO CLOSE	CORRODED CONTACTS ON TORQUE LIMIT SWITCH
G	BR2	019023*	050677	C	MV	CO0	U 02				MHR TORUS COOL.RETRN.LN.ISOS.E11-F0248628B LEAKING	VLVS FAILED TO SEAT PROPERLY/UNKNOWN
W	RG1	018076A	020776	C	MV	CO0	U 02				TWO MOV (8136814) LEAKED THRU DURING LEAK TEST	UNKNOWN
W	SU2	016664	123076	G	MV	CO0	U				VALVE IN BORON SYSTEM LEAKING THRU REDUCING PPM	UNKNOWN

MOTOR OPERATED VALVE (ELEC.)

<u>PLANT</u>	<u>CCNT. NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>C U P P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C L N U M B</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W SU2	019566*	103177	G	MV	G00	R U	C2			PCV-2867C/D LEAKED THRU/BIT ISOLATION VALVES	UNKNOWN/RECURRING
W SU2	019743*	110977	G	MV	L00	R U	02			MCV-2867C/D LEAKED THRU / BIT ISOLATION VLVS	UNKNOWN/RECURRING
G MC1	019466	091077	C	MV	C10	R T				VALVE MO-2373 LEAKING INTERNALLY	FOREIGN PATRL ON VAL SEAT
W Z12	018537*	072177	G	MV	C12	B D	02			VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BCRON	DARLING 4" GATE VALVES REQUIRED ADJUSTMNT
W Z12	038720	081177	G	MV	C12	R D				VALVE 2MOV-VC8801B LEAKING THRU DILUTING BCRON CON	DARLING 4" GATE VALVE REQUIRED ADJUSTMENT
W Z12	019500*	101277	G	MV	C12	B T	02			VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BCRON	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
G MC1	022806*	102278	C	MV	C14	T	02			REACTOR CLEANUP ISO VALS MO-2397,-2398 LEAK EXTRNL	EXCESS PACKING GLAND LEAKAGE, IMP T.S. ADJ
G BR1	019367	102577	C	MV	L20					B CORE SPRAY LOOP FULL FLOW TST. VLV E21-F015B LEAK	VLV OPER. HAD STRIPPED OPERATING GEARS
G QC1	014657	011476	L	MV	C23	R T				VALVE MO-1-1001-37A FAILED LEAKRATE TEST	TORQUE SW OUT OF ADJUSTMENT/LIMITORQUE
G QC1	014056	012676	N	MV	C23	R D				VALVE 1-1201-2 FAILED LEAKRATE TEST	TORQUE SW MALFUNCTION/REPLACED/LIMITORQUE
G QC1	020531	032077	C	MV	C23	T				LEAKTEST SHOWED EXCESSIVE LEAKAGE THRU DRAIN VALVE	TORQUE SW OUT OF ADJUSTMENT
G QC1	014064	010376	W	MV	C25	U				EXCESSIVE LEAKAGE THRU MS DRAIN VALVE MO-1-220-1	SEAT-DISC PROBLEM/CRAKE 3 INCH GATE 783-U
G QC1	020531B	032077	C	MV	C25	T	02 V			EXCESS LEAKAGE THRU SPRAY VALVES DURING TEST	INPROPER SEATING OF VALVE
W YR1	023102	112778	M	MV	C25	T				CS-MCV-540 LEAKING THRU	GATE WAS LAPPED AND RETURNED TO SERVICE
W SU2	020236	012078	L	MV	D09	T				18 GPM LEAK FROM MOV-RH-2700 PACKING GLAND	CORROSION FAILED STUDS HOLDING PACKING
W DC1	018418	070677	B	MV	D11	T				ALX FEED WATER VALVE FOUND WITH CRACK IN BODY	WATER HAMMER AND VIBRATION
G PB2	016987	020877	H	MV	D12	U				EXTERNAL STM LEAK VAL MO-2-23-16	VAL PACKING LLBE PLUG LEAKING
B T11	016362	110676	L	MV	D13	D				EXTERNAL LEAK INCREASED WHEN MOV (DH-V1) OPENED	LEAKAGE PAST SEAL RING GASKET/SPUT VALVE
G FP1	020929	040478	L	MV	D14	T				VALVE 10MOV27A LEAKING EXTERNALLY	FAILURE OF VALVE PACKING
G PB2	019718	111277	G	MV	D14	T				ISO VAL MO-16 LEAKING EXTERNALLY	PACKING FAILURE

MOTOR OPERATED VALVE (ELEC.)

VEH	PLANT	CONT. NO.	EVENT DATE	SY S	CO MP	FAIL CODE	TYPE	CLASS	CH MU PM	KEY	FAILURE MODE	FAILURE MECHANISM
G	PB2	019553	113077	K	MV	D14	T				VALVE MO-2-2-65 LEAKING EXTERNALY	PACKING FAILURE
G	PB3	014266	022476	C	MV	D14	T				RCIC STM. OUTBOARD ISO VLV LEAKING EXTERNALLY	PACKING LEAK DUE TO NORM. PACK. COMPRESSION
C	PB3	020723	030578	K	MV	D14	R T				RECIRC PUMP DISCHARGE VALVE, MO-2-53B LEAK EXTERNAL	FAILURE OF DISCHARGE VALVE PACKING
W	IP2	014004	010376	L	MV	D14	T				EXTERNAL LEAKAGE FROM VALVE MOV-731	PACKING GLAND LEAKAGE
W	IP2	016039	092776	L	MV	D14	T				14-IN VAL ON RHR SYST LEAKING EXTERNALY	EXCESSIVE PACKING GLAND LEAKAGE
B	CR3	020266	026478	L	MV	F00	U				STROKE TIME FOR FEEDWTR ISO FVW-15 GRT. THAN T.S. L	DEFINITE CAUSE IS NOT KNOWN/BEING ANALYZD
E	RS1	019798	111977	H	MV	F00	U				HPI INJECTION ISOLATION VALVE FAILED TO CYCLE/TEST	UNKNOWN
G	DR3	022591	092278	L	MV	F00	U				LPCI HX VALVE MO3-1501-3A FAILED TO OPERATE	CAUSE UNKNOWN
W	LC2	022069	071978	L	MV	F00	U				RHR PUMP SUCTION MOV FAILED TO CYCLE/TIME-WISE	UNKNOWN WHY CYCLE TIME EXCEEDED
W	SL2	015525	061476	N	MV	F00	R U				CONDENSER OUTLET MOV-CW-2008 FAILED TO OPERATE	UNKNOWN
G	DR3	019189	092477	Q	MV	F01	R D				BREAKER FOUND OPEN TO MO-3-4102	PERSONNEL ERROR
G	DC1	020467	011978	N	MV	F01	D				ISC COND VAL V-14-35 FAILED TO OPERATE	VALVE SEAT OVERTIGHTENED BY OPER. PERSON.
G	VY1	014230*	021776	L	MV	F01	U 02				RHR VLVS. 25A6B WOULD NOT STROKE ELECTRICALLY	PERSON. ERROR (PUS! STRU. VLVS. MANUALLY 1ST)
S	DA1	014100	011476	Q	MV	F02	D				VALVE RCIC MO 2516 SEPERATED FROM OPERATOR	BOLTS SHEARED, NOT TORQUED PROPERLY
C	DA1	019372	140677	N	MV	F02	D				ISCLATION VALVE MOV 2740 CLOSING TIME OUT OF SPEC	MAINT. PERS. FAILED TO ADJ. LIMIT SWITCH
G	FF1	021227	050678	D	MV	F02	D				POWER REMOVED FROM CORE SPRAY VALVE MOTOR	PERSONNEL ERROR
G	PB2	014153	020976	Q	MV	F02	R D				RCIC O.B. STM ISO VAL MO-13-16 AILED TO STROKE	VALVE PACKING TOO TIGHT / PERSONNEL ERROR
W	KE1	019312	160377	F	MV	F02	U				MAINT. MAN DEENERGIZED 2 SW VLV. WHEN ONLY ALLOW. T-	-C DEENER. 1 VLV//PERSONNEL ERROR
G	DR2	020857	032178	Q	MV	F03	U				ISOL COND VALVE MO 1301-3 RENDERED INOPERABLE	PERSONNEL ERROR, LOSS OF POWER TO VALVE
G	MC1	019050	090977	C	MV	F04	R D				VALVE MO 2009 FAILED TO OPERATE PROPERLY	SET CLAMP SCREWS UNDERSIZED

MOTOR OPERATED VALVE (ELEC.)

V F N	P L A N T	CCNI.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C L A S S	C H A P T E R	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DA1	017043	021177	C	MV	F05	D					CLUTCH HOUSING FOR MOV 2115 FRACTURED DUR. TEST	MATERIAL TOO BRITTLE
G	GC1	C19489	053077	C	MV	F05	D					CORE SPRAY VALVE 1-14G2-25B FAILED TO OPERATE	CRACKED YOKE/PROB SINCE INSTALLATION
G	DA1	016071*	101576	M	MV	F06	D	C3				MTR.OPER.VLVs.(MSIV-LC SUBSYS A,B,C)NOT PROP.ADJUST	LACK OF EXPER.6PROCEED. TO DETERM.OPT.SET
G	MC1	018463	061677	C	MV	F06	D					TORQUE SW NOT ADJ PROP. OUTBRD RCIC STP ISO VLV	MRA IMPREPERLY PROCESSED
B	DE1	C22343	082978	K	MV	F12	D					VALVE LPSW-21 FAILED TO OPERATE PROPERLY	MISALIGNMENT OF GEARING BETW VAL +OPER
B	GE3	C20593	020778	F	MV	F12	D					VALVE BS-2 FAILED IN INTERMEDIATE POSITION	VALVE STEM FAILURE
C	MA2	C17113	C12077	G	MV	F12	D					VALVE 2-CH-514 WOULD NOT OPERATE	VALVE FAILED DUE TO INTERNAL BINDING
V	SL1	C18271	C01077	C	MV	F12	D					MOV (I-MV-15-1) FAILED TO OPERATE	FAILED ACTUATING NUT ON MOTOR DRIVE
G	BF3	024524	021378	L	MV	F12	R	D				VLV FCV.3-74-52 WAS FOUND IMPERABLE	UPPER BRNG.LOCKNUT STRIPPED FROM NOR. POS
G	BF3	021245	042878	L	MV	F12	R	D				VLV FCV 3-74-52 WAS FOUND IMPERABLE	UP.BRNG.LOCKNLT STRIPPED FROM NOR.POSIION
G	DR2	016453	111376	H	MV	F12	D					HPCI INJECTION VALVE MD2-2301-8 FAILED	VALVE STEM SHEARED
G	FP1	021023	040878	H	MV	F12	D					VALVE 23MOV14 SEPERATED FROM OPERATOR	FAILURE OF MECHANICAL FASTENERS
G	MC1	019158	092377	C	MV	F12	D					VALVE MD-2008 FOUND FAILED DURING MAINTENANCE	SEAT RING THREADS STRIPPED
G	PR2	015142	061876	L	MV	F12	D					RHR SD COOL SUCT ISO VAL MD-2-10-18 FAIL TO STROKE	VALVE STEM BENT
G	P11	019669	110477	L	MV	F12	T					MTR OPER FOR VAL MD-1001-188 OVERLOADED,BURNED OUT	MGRN GEARS ALLOWED MTR TO RUN AFT VLV CLS
G	QC1	015257	070176	F	MV	F12	D					LCSP SPRAY VALVE FAILED TO OPERATE(MD-1-1001-23-8)	LCSE BELTS HOLDING OPERATOR TO VALVE
M	DC1	016367	110176	L	MV	F12	U					RHR VALVE FAILED TO CYCLE DURING TESTING	PACKING GLAND WAS TOO TIGHT
M	LC1	019309	100777	J	MV	F12	U					MD HEAT EXCHANGER OUTLET ISOLATION VALVE NOT OPER	BINDING OF INTERNALS/TORQUE INCREASED
M	KE1	013463	010876	F	MV	F12	D					VALVE SI-28 DID NOT OPERATE	SCREW HOLDING TRIP LEVER BACKED OUT
M	SC1	021207	041878	F	MV	F12	D					MOV-850C FAILED TO OPEN IN REQUIRED TIME / TESTING	SHAFT DISTORTED/PROB DUE TO EXCESS TORQUE

MOTOR OPERATED VALVE (ELEC.)

PLANT	UNIT	CONT. NO.	EVENT DATE	SYM	FAIL CODE	STATUS	DESCRIPTION	FAILURE MODE	FAILURE MECHANISM
W	SU2	C15526	061576	L	MV F12	D	LF15 NOV-28628 FAILED TO OPERATE FROM CONSOLE		THERMAL OVERLOAD DUE TO VALVE PLUG BIND
W	RC2	G20222	011178	L	MV F13	T	VALVE RM-7448 FAILED TO FUNCTION PROPERLY		OIL LEAK INTO MOTOR CAUSING SHORT
B	DL4	019866C	010477	N	MV F16	S	DISCHG.VLV.1PR-19 ON PENET.RM.EXH.FAN IMPERABLE		DIRTY CONTACT ON MTR.CONT-CENTER
C	CC1	C14465	030576	H	MV F16	S	HFSI LP.ISC.VLV 1-NOV-616 WOULD NOT OPER. REMOTELY		BLOWN CONTROL CIRCUIT FUSE CAUSED FAILURE
G	BF3	022087	070878	G	MV F16	S	RCICS DISCHARGE VALVE IMPERABLE		SHORT IN IND LITE ASS CAUSED FUSES TO BLO
G	BRI	016402	111976	L	MV F16	S	MFR INJECTION VALVE(E11-F015A) FAILED TO OPERATE		UNDERSIZED BRP/DESIGN PROBLEM(RGCT)
G	DA1	016075	102176	M	MV F16	S	MOV 8402D IMPERABLE DUE TO TRIPPED OVERLOAD RELAY		TRIP SETPOINT INCREASED SLIGHTLY
G	DA1	016529*	102176	M	MV F16	S	MOV-8401B AND 8403D WOULDNT OPERATE		CONTROL RELAYS NOT MAKING ELEC CONTACT
G	DK3	016474	111976	F	MV F16	S	HPCI LOGIC DESIGN WIRING CAUSING VALVES TO CYCLE		DESIGN ERROR
G	EM2	022024*	071778	L	MV F16	S	MFR VALVES HAD POWER LOST TO THEM		BREAKER TRIPPED DUE TO BLOWN FUSES
G	FPI	022223	081678	K	MV F16	S	LOSS OF POWER TO BYPASS VALVE 02-MOV-548		UNIT BLOWN FUSES CAUSE UNKNOWN
G	M01	023365	112178	L	MV F16	S	MU-2014 LPCI A ADMISSION VALVE IMPERABLE		BLOWN FUSE IN CONTROL POWER CIRCUIT
G	PB2	015140	062076	C	MV F16	S	ISO VAL MO-2-14-71 FAILED TO STROKE		GROUND WIRE AT MTR CONT CENTER
C	PB2	C19094	091377	H	MV F16	S	FPCI TURB EXHAUST VAL MTR DAMAGED		SHORT IN VAL CONTROL CIRCUIT
C	CC1	C15706	080976	M	MV F16	S	REACTION MTR-CLEANUP SYS.ISC.VLV.MO-1-1201-2 IMPER		RELAY SHORTED & BURNED UP CONTROL TRANSF.
W	BV1	C16746	C10577	L	MV F16	S	DYNAMIC INSTABILITY OF FEEDWATER REG VALVE		NEW TRIP CIRCUIT NEEDED
W	CC1	021011*	032278	F	MV F16	S	POWER FOUND OFF TO 3 ECCS VALVES		3 BREAKERS FOUND TRIPPED ON MCC
W	FT2	C17035	012777	F	MV F16	S	CCMT-SPRAY PMP-DISCHG.VLV.2-8608 IMPERABLE		VALVE OPERATOR BREAKER WAS OPEN
W	TA1	C18588	050277	R	MV F16	S	AIA COOLER BYPASS VALVE FAILED TO OPERATE/TESTING		COMMAND/PERSONNEL INCORRECTLY WIRED CIR
P	RS1	C19536	100177	L	MV F20	U	8WS 150L VALVE FAILED TO OPERATE (SFV-25003)		LIMITORQUE OPERATOR(MSB)FAILED(EXCESS CP)

MOTOR OPERATED VALVE (ELEC.)

Y M D	CONT. NO.	EVENT DATE	SU SP	C S	FAIL CODE	Y P E	T S E	C M K R U D U R D D U U T D D U U T D U T D U T D U O2 T T C O4 C O2 T D D	FAILURE MODE	FAILURE MECHANISM
6	BRI 022089	071678	b	MV	F20	R	U		CUTBOARD MN-STALN-DR-150-VLV B21-F019 WOULDNT OPR MTR-BRUSH-NOT MAKING PRCP-CONT.W/COMMUTAT	
6	BRI 022020	102878	w	MV	F20	R	U		MN-STALN-DR-150-VLV B21-F019 FAILED TO OPERATE	FALLTY PTR. BRUSH HOLDER
6	CCI 014329	012476	L	MV	F20	R	D		VLV RHR-MO-34A WOULD NOT OPERATE BY MTR-OPERATOR	SHEARED W/CDRUFF KEY-IN MTR-OPERATOR
6	COI 015717	081076	C	MV	F20	D	D		VALVE CS-MO-128 WOULD NOT OPERATE	TRIPPER PIN IN OPERATOR DISLODGED
6	COI 018004	042077	C	MV	F20	U	U		CCRE SPRAY PUMP VALVE IMPERATIVE,MOTOR RUNS	MOTOR GEAR SET SCREW ON VAL OPER LOOSE
6	ENI 014785	040776	L	MV	F20	U	U		VALVE E11-F047A FAILED TO OPERATE ELECTRICALLY	A MOTOR WINDING FAILURE OCCURRED
6	EN2 022075	102778	H	MV	F20	T	T		HPCI VALVE 2E41-F001 FAILED TO OPERATE	FAILURE OF MOTOR SHUNT FIELD INSULATION
6	FPI 016374	110176	Q	MV	F20	D	D		RCIC ISOLATION VALVE 13-MOV-16 FAILED CURING TEST	VALVE MOTOR OPERATOR BURNED OUT
6	FPI 022119	080678	N	MV	F20	D	D		SUCTION VALVE 23-MOV-57 WOULD NOT OPERATE	VALVE MOTOR BURNED OUT
6	PE3 014265	022576	K	MV	F20	U	U		MC-538 RECIRC.PMP-DISCHG. VLV. INOPERABLE	SHRT-CNT. OF WIRING IN VLV-MTR-OPERATOR
6	PE3 022070	061278	w	MV	F20	T	T		MAIN STEAM LINE DRAIN ISO VAL,M0-74,INOPERABLE	VALVE MOTOR OPERATOR CIRCUIT GROUNDED
6	PRI 018341	061877	B	MV	F20	D	D		AUX FEED PUMP DISCHARGE VALVE FAILED TO OPERATE	OPEN LEAD IN OPERATOR/LIMITORQUE SMB-000
6	PTI 013945	010876	R	MV	F20	D	D		MCV-4020 AUX FEED PUMP DISCHARGE FAILED STUCK/TEST	VALVE OPERATOR RING WORN/GEAR REPLACED
6	SRI 016939*	011077	F	MV	F20	U	O2		MTR-BRKR5-T0 VLV5 15J162 TRIPPED WHEN VLV5 WERE C-	PENED/80TH MTR-OPERATORS HAD FAILED
6	SU1 016202	100376	G	MV	F20	T	T		CHEM ADDITION MOV (MOV-CS-102B) FAILED TO OPERATE	SHORTED MOTOR/CONTACTS CORRUDED
6	SU2 014643	041276	N	MV	F20	R	T		CONDENSER OUTLET MOV-CW-200A FAILED TO OPERATE	OPERATOR PROBLEM/IT CONTAINED WATER
6	SU2 019478*	101177	S	MV	F20	C	O4		4 MOV5 IN SERVICE H2O SYS FAILED TO OPERATE	PIT CONTAINING THEM WAS FLOODED
6	TRI 016064*	120976	C	MV	F20	C	O2		CONTAINMENT VALVES (MO-5063/5671) FAILED TO OPERATE	FRICITION IN OPERATOR/INCREASED CLOSE TIME
6	TRI 020325	112777	B	MV	F20	T	T		AUX FEED VLV (CV-300482) FAILED TO OPERATE	MOTOR OPER FAILED/WATER CAME THRU GASKET
6	ZI2 022518	090378	C	MV	F20	D	D		VALVE 2MOV-VC8105 FAILED TO OPERATE DURING TEST	JAMMED MOTOR OPERATOR/LIMITORQUE SMB-00

MOTOR OPERATED VALVE (ELEC.)

P V F N Y	PLANT	UNIT	EVENT DATE	EVENT TIME	CLASSIFICATION	FAILURE CODE	FAILURE MECHANISM		
B	DE1	018427	070777	N	MV	F23	Y	VALVE 1LPSW-18 FAILED TO OPERATE	
G	DR3	021679	066678	F	MV	F23	D	VALVE MD3-1501-288 FAILED WHILE BEING CYCLED	MECHANICAL FAILURE OF TORQUE SWITCH
G	P82	015139	082076	M	MV	F23	D	MAIN SIM LINE DRAIN ISC VAL MD-2-74 FAIL TO STROKE	DEFECTIVE SHAFT PIN ON TORQUE SWITCH
G	P83	018525	080977	Q	MV	F23	R	RCIC CLIER ISO.VLV(MD-16) FOUND INOPERABLE	TORQUE SWITCH FAILURE
M	UC2	021218	042278	J	MV	F23	T	MCV FAILED TO OPERATE DURING TESTING	BROKEN LLG ON TORQUE SWITCH TERMINAL
M	PT2	021766	081678	F	MV	F23	D	CONT SPRAY VALVE(MCV) FAILED TO OPERATE FOR TEST	TORQUE SWITCH CONTACTS NEEDED BURNISHING
M	KC2	020323	010478	S	MV	F23	U	VALVE V6-33C FAILED TO FUNCTION PROPERLY	SMB-00 LIMITORQUE SW FAULTY/REPLACED
M	JL1	01726C	021977	C	MV	F23	D	CHEM ADDITION MOV (GS-102A) FAILED TO OPERATE	TORQUE SWITCH MALFUNCTIONING
L	CC1	02176C	060778	C	MV	F26	D	CONT NLR SMP T50 (MOV-5463)DID NOT SHUT IN REC YIM	TORQUE SW FAILED TO DEENERGIZE MCTOR
G	BR2	02024G	010478	H	MV	F26	T	CLOSING TIME ON E41-F002 EXCEEDED. TS LIMIT (HPCI)	OPEN LMT.SWITCH.WAS OUT OF ADJ.(PROCEDURE)
G	DR2	01537E	071176	D	MV	F26	D	CCME SPRAY INJECTION VAL MD2-1402-248 FAILED	LIMIT SWITCH(OPEN) OUT OF ADJUSTMENT
L	PAL	020230	122377	H	MV	G16	S	MOV-3011(HPCI ISO.VLV) FAILED TO REMAIN OPEN	BROKEN LIMIT SWITCH CONTACT BLOCK
M	TR1	014504	022176	L	MV	G16	S	RHR VLV CLOSED WHEN IT WAS REQUIRED TO REMAIN OPEN	BAD SWITCH CAUSED CLOSING CONT.TO STICK
M	TR1	021668*	032078	L	MV	G16	S	DEENERGIZING PROTECTION SYS CAUSED RHR VALVES TO--	VCLT.FLLC.ON INSTRUMENT AC BUS
C	MYA	022461*	082478	K	MV	I01	R	THERM.OVERLD.LINK.NOT REMOVED FROM ACS LOOP ISO.V-	--CLOSE//PROCEDURAL DEFICIENCY
G	DP2	018181	066377	L	MV	I01	C	LPCI VALVE 2-1501-3A, CLOSING VALVE BENT STEM	--LVS BRKRS.AS REQUIRED//PERSONNEL ERROR
B	TI2	02236C	090776	C	MV	I02	D	DISCOVERED MOV THAT DIDNT HAVE CONT GRADE SWITCHES	PERSONNEL ERROR
B	TI2	023076*	090878	C	MV	I02	D	MOV(MU-V2A/B)FOUND WITH CONNECTIONS NOT TAPED	--AND MCTOR(MDL-V-2711//PERSONNEL ERROR
C	MY1	020761	021678	K	MV	I02	R	THERM.OVERLD.LINK.NOT REMOVED FROM #1 LP. COLD LE-	PERSONNEL ERROR(INSTALLED SHRINK TUBING
G	FPI	021455*	061678	C	MV	I04	D	3 VALVE OPERATOR MOTORS HAVE WRONG CLASS WINDINGS	--G ISO.VLV.BRKR.//PERSONNEL ERROR(MAINT.)
									MOTORS REMOVED WITH CLASS F INSULATION

MOTOR OPERATED VALVE (ELEC.)

PLANT	CCN1-NO.	EVENT DATE	S U P	C	FAIL CODE	T Y P E	C L A S S I F I C A T I O N	FAILURE PCDE	FAILURE MECHANISM	
N Y			S	P						
G	001 021127*	042178	H	MV	104	C	D 02	V	GE NOTIFIED QC THAT RECIRC SUCTION VALVES COULD---	---CLOSE SPURIOUSLY/DISABLED ELECTRICALLY
C	FC1 021022*	111678	P	MV	105	D	30		30 LIMITIQUE VALVES FOUND WITHOUT STARED LOCKMUTS MANUFACTURER ERROR	MANUFACTURER ERROR
C	SL1 022165*	072878	P	MV	105	C	D 05	Z	VENDOR NOTIFIED PLANT OF POTENTIAL MOV FAB PROBLEM LOCKMUTS STAKED WRONG ON SOME/REPAIR SAME	LOCKMUTS STAKED WRONG ON SOME/REPAIR SAME
C	PI1 014476	041376	C	MV	105	D			WELD ON HPCI SYSTEM VALVE NO 2301-4 CRACKING	ORIGINAL WELD FABRICATION VARIANCE
M	DC1 014430	042076	B	MV	105	D			ALX FEED WATER VALVE FOUND INSTALLED BACKWARDS	CONSTRUCTION/CC ERROR/INLET-OUTLET REVERS
M	SU2 021587*	071278	F	MV	106	B	D 02		INSPECTION OF MOV'S AFTER MAINT/EXCESS LUB ON SEATS VALVES FAD TO BE CLEANED/PROCEDURAL PROC	ACTUAL CAUSE UNKNOWN
G	EAI 014438*	030276	P	MV	110	U	03	S	EXCESS OIL FOUND IN SEVERAL VALVE MOTOR OPERATORS	EXCESS VIBRATION LOOSENED MECH. PARTS
G	DA1 016450	111776	C	MV	111	T			LOOSE COMPONENTS ON ACIC VALVE MOV 2405	2 TEETH MISSING ON VALVE OPERATOR GEAR
G	CG1 020052	112177	L	MV	112	D			VALVE CS-HC-22B NOISY IN OPERATION	REQUIRED WIRING CHANGE TO FIX
d	081 019377	101077	L	MV	116	S	D		DECAY HEAT ISOL. VLV 00-12 MIGHT INADVERT. CLCSE	PERSONNEL/HANDWRITTEN LINE-UP SHEET USED
M	PR2 046945	010877	H	MV	101	C			4 SAFETY INJ VALVES NOT TAGGED AS PER TECH SPECS	PERSONNEL FAILED TO LOCK BREAKERS OPEN
M	JF1 023282	120678	F	MV	102	D			T.S. REQUIRED BREAKER TO VALVES LOCKED OPEN	PERSONNEL ERROR
p	CP3 020265	011178	X	MV	101	S	D		BRKR. FOR HPI ISO-VLV MOV-25 OPEN/TAG. CONT. TO T.S PERSONNEL ERROR	
G	RR2 015416	070376	C	MV	101	S	D		RHR VLV 2-E11-FO03A SHUT WHILE MTR REMOVED. IGV. LCC PERSONNEL ERROR/VLV COULDN'T BE CP. REMOT	
M	CC1 010648	121776	F	MV	101	S	U		CONTAINMENT SPRAY PUMP SUCTION VALVE FOUND CLOSED	PERSONNEL LEFT VALVE SHUT AFTER A TEST
G	BR2 014650	020676	Q	MV	102	S	D		VALVE E11-FO04B FOUND LINED UP CLOSED/REQ OPEN	PERSONNEL ERROR IN VALVE LINEUP
M	8V1 017825	051077	U	MV	102	S	D		FEEDWATER BYPASS OPENED WHEN REQ TO BE CLOSED	MAINT TECH FAILED TO DISCONT PHR SUPPLY
C	MS1 019660	111177	H	MV	104	S	D		VALVE LINE-UP INCORRECT//NEW VALVES WERE INSTALLED	---WITH OPEN/CLOSE INDICATION ATYPICAL
M	PT2 018572	070877	F	MV	104	S	D		MOV FOUND IN INTERMEDIATE POSITION/SINCE PREV TEST PERSONNEL FAILED TO ASSURE FULLY OPEN	

PNEUMATIC OPERATED VALVE

UNIT NO.	EVENT DATE	SYM	FAIL	CL	CON	REMARKS	FAILURE MODE	FAILURE MECHANISM
G BR2 014642	C2C376	P AV A10			T	VAR. LEG ISO. VLV 2-821-F0468 DID NOT OPEN		VLV OPER. WAS STICKY/MOIS. IN INST-AIR LMS
B DB1 023C02	100578	S AV A12			D	SER. WIR. OUTLET VLV 5M-1424 FAILED TO UPFN		NUT MISSING FROM VLV ACTUATOR LINKAGE
G PR2 015518	022476	N AV A12			D	PURGE EXHAUST VLV AD-2507 FAILED TO FULLY OPEN		ALIGNMENT KEY BTWN. ACTU. & VLV SHEARED
N SA1 022422	082478	E AV A12			D	ALX FEED PUMP STEAM VLV (15M132) FAILED TO OPEN		STEM WAS FOUND DISENGAGED FROM ACTUATOR
C CC1 015124	052776	G AV A22			D	THE VCT MAKE-UP STOP FAILED TO OPEN		RUPTURE OF VLV CONTRCL DIAPHRAGM
G BR1 020774	022678	C AV A22			D	RX. INSTR. PENE. VLV B21-X34-C FAILED CLOSED		VLV. CLOSED DUE TO SMALL LEAK IN DIAPHRAGM
B CK3 019525	102877	C AV A24			S D	VALVE MSV-130 WOULD NOT OPEN		FOREIGN PARTICLES IN ACTU. OF AIR SOL. VLV
C FC1 016666	112076	N AV A24			T D	RAW WATER VALVE HCV-401E WOULD NOT OPEN ON TEST		ELECTRIC TO PNEUMATIC CONVERTER FAILED
C FA1 020231	010878	L AV A24			S D	VALVE CV-3025 FAILED IN CLOSED POSITION		WATER IN AIR LINE TO VALVE OPERATOR
C SL1 022227	073178	C AV A24			S D	ADV (FC-25-8) FAILED CLOSED/AIR TO VALVE SECURED		SOV DIAPHRAGM LEAKED/COMMAND FAILY
G BF3 018945	090777	N AV A24			S D	PRI. ISO. VLV 3-FCV-24 WOULD NOT OPERATE		FAIL. OF SOL. PSV-77-3A IN AIR SUP. LINE
G BR2 014643	021476	N AV A24			S D	INC VALVES FOUND CLOSED(2-CAC-PV-344163442)		INST AIR LINES TO VALVES CLOGGED W WATER
G DC1 022970	101778	N AV A24			S D	GAS SYSTEM 11 DISCHARGE VALVE FAILED TO OPEN		STUCK SOLENOID IN AIR SUPPLY TO OPERATOR
G QC2 023383	111678	C AV A24			T D	RX CONT VALVE 2-1601-20A FAILED TO OPEN ON TEST		SOV(2-1601-50A) FAILED INC AIR TO AIR-OP VL
G QC2 023400	112578	C AV A24			T D	CRYWELL VENT AD 2-1601-23 FAILED TO OPEN		SOV(SO 2-1601-52A) FAILED TO SUPPLY AIR
B TI2 021277	040478	L AV A27			U	RHR ADV (NS-8838) FAILED TO OPEN DURING TEST		FAILURE OF SOLENOID OPERATED PILOT VALVE
G GC1 022169	082278	N AV A27			T	AD PURGE VALVE 1-1601-56 FAIL TO OPEN		SOLENOID PILOT VALVE DIRTY/REPLACED SOV
G VY1 017127	012877	N AV A27			D	ADV (SB-3A) FAILED TO OPEN DURING LEAKRATE TEST		ASCC SOLENOID PILOT VALVE FAILED
G DA1 021664	061778	C AV B00			U	TORUS PURGE INLET VALVE CV4308 FAIL TO CLOSE		CAUSE UNKNOWN
G MC1 015316	072576	C AV B00			U	VALVE AD-2381 FAILED TO CLOSE (TORUS PURGE INLET)		CAUSE UNKNOWN

PNEUMATIC OPERATED VALVE

V M N	P L A N T	CONT. NO.	EVENT DATE	S T S	C O M P	FAIL CODE	T Y P E	C L A S S	C L A S S M U L A T I O N	K E Y	FAILURE CODE	FAILURE MECHANISM
G	PB2	C165e8A	120176	C	AV	B00	U				ISC VALVE AD-2-2-39 FAILED TO CLOSE	CAUSE UNKNOWN
W	PT1	C17855	022677	W	AV	B00	U				MAIN STEAM STOP VALVE FAILED TO CLGSE ON SIGNAL	UNKNOWN/CONSIDERED RANDOM/30 IN AIR-OP CV
W	DC2	C21674	06C378	W	AV	B02	D				AIR-OP PZR SPRAY VALVE FAILED TO CLGSE	GASKET INSTALLED IMPROPERLY IN POSTIONER
G	BR2	C15542	081176	N	AV	B04	B	D			ISC.VLV 2-CMC-PV-1260 WOULD NOT CLGSE FULLY	DESIGN PROB./CLOSING SPRING NOT STRONG EN
G	CC1	C23542	122778	C	AV	BC4	D				DRYWELL OUTBD. VENT ISC.VLV.PC-246AV NOT SHUTTING--	-FULLY//DESIGN ERROR IN PNEUM.OPERATOR
W	Z11	C13942	C10776	C	AV	B08	R	D			NITROGEN GILL VLV (15I0800) FAILED TO CLGSE	GALLED VALVE INTERNALS
W	Z11	C14920	051876	L	AV	B08	R	U			NITROGEN FILL VALVE(15I0800) FAILED TO CLGSE	GALLED VALVE INTERNALS/PROCEDURES REVISED
W	TR1	C20876	031578	W	AV	BC9	T				MS BYPASS VALVE CV-2279 FAILED TO CLGSE	RUST BUILDUP ON VALVE STEM/OUTSIDE VALVE
G	M11	C22584	091478	C	AV	B10	T				DRY WELL VENT BYPASS VAL 1-AC-9 FAILED TO CLGSE	DIRT AND SCALE IN AIR OPERATOR
G	CC1	C23259	121278	N	AV	B10	T				SGTS VALVE V-28-30 FAILED TO CLGSE DURING TEST	DIRT & CORROSION IN PISTON CYLINDER
G	CC2	C14421	031976	W	AV	B10	T				MSIV AD-2-203-1C FAILED TO CLGSE / NGRNAL SHLTDOWN	FOREIGN PATERIAL IN PILOT ASSEMBLY
G	VY1	C15628	081676	Y	AV	B10	T				AIR SAMPLE ADV (FSU-109-75B-2) FAILE TO CLGSE	DIRT IN VALVE STEM
G	BF1	C16811	010377	C	AV	B12	D				DRYWELL SUP.VAC.BKR.VLV 64-28E REMAINED OPEN AF.IE	VLV.AIR ACT.CYL.PST.ROD BINDING WI.BUSHNG
G	BR2	C20841	031378	C	AV	B12	T				RX.PENET.VLV CAC-PV-1209B DID NOT INDICATE SHLT	ACTILATER SPRING DID NOT PREVICE POS.SEAT.
G	DP2	C20642	C22478	C	AV	B12	D				TORUS VACUUM BREAKER 2-1601-208 WOULD NOT CLGSE	OPERATOR MOUNING BOLTS SHEARED
G	M11	C14477	042276	C	AV	B12	D				VALVE 1-AC-9 FAILED TO CLGSE	INTERNAL VALVE BINDING
W	RC1	C17899	C22876	C	AV	B12	U				AC BUTTERFLY VALVE FAILED TO CLGSE FULLY	SCORED PISTON SHAFT/EXCESSIVE FRICTION
W	Z12	C18264*	C62677	C	AV	B12	D	O2			ISOLATION VALVES (2ADV-SS9394A/B) FAILED TO CLGSE	WEAK CLGSG SPRING/STEM MISALIGNMENT
G	QC1	C20174	121277	C	AV	B14	T				ADV 1-1601-33E FAILED TO CLGSE DURING TESTING	DEFECTIVE PACKING BOUND UP STEP
G	QC1	C21785	C52778	C	AV	B14	T				VACUUM BREAKER FAILED TO CLGSE (1-1601-33E)	PACKING PROBLEM/SHAFT BINDING/NEW PACKING

PNEUMATIC OPERATED VALVE

P I N N O	CCNT. NO.	EVENT DATE	S P	C M	SYM	FAIL CODE	T L C U N K M U E S P M Y	FAILURE MODE	FAILURE MECHANISM
G	QC1 021561	070778	C	AV	B14	T		SUMP DISCHARGE VALVE FAILED TO CLOSE (1-2001-15)	PACKING REQUIRED ADJUSTMENTS
M	Z12 013951	010876	C	AV	B14	R	T	SAMPLE ISOL ADV (2559356A) FAILED TO CLOSE	STEM BINDING ON PACKING/LOGS/SEENED PACKING
E	QC2 020544	011878	N	AV	B16	S	D	ADV AD 2-5408 FAILED TO CLOSE / COMMAND FAULT	PERSONNEL HOOKED UP ELECTRICAL WRONG
M	RC1 014166	020776	C	AV	B16	S	D	SUMP A DISCHG. ADV FOR CONT. ISO. WOULD NOT CLOSE	FAILURE OF MC-6 RELAYS IN "M" SAFEGUARDS.
G	CO1 021166*	041978	T	AV	B19	B	T	02	LACK OF VALVE PISTON+CYLINDER LUBE
M	Z14 014043	010576	C	AV	E19	R	T	VALVES AR-153AV+AR-154AV FAILED TO CLOSE	MECHANICALLY BOUNDED/NEEDED LUBRICATION
R	CK3 019306	091477	C	AV	B23	T		SAMPLE VALVE (2559355B) FAILED TO CLOSE	SHIFT IN TORQUE SWITCH SETTING
B	DE3 019959	082276	U	AV	B24	S	D	CCNT. ISO. VLV GAV-126 WOULD NOT CLOSE	SULEN. 6 SPR. IN AIR SUPPLY TO VLV FAILED
C	FC1 016558	011177	N	AV	B24	T	D	VALVE 3FDM-108 FAILED TO CLOSE	ELECTRIC TO PNEUMATIC CONVERTER FAILED
C	M12 042565	122778	C	AV	B24	S	D	VALVE HCV-345 OPENED PARTIALLY WHEN REQ CLOSED	SOV IN AIR LINE TO VALVE REPLACED
G	BF2 023352	121978	N	AV	B24	S	D	ISOL VALVE 2-SW-3-2A FAILED TO CLOSE	SOV IN AIR LINE TO VALVE REPLACED
G	CC1 018603	041777	C	AV	B24	S	D	DRYWELL AIR COMP. SUC. VLV FCW-32-62 FAILED TO CLOSE	ELECTRIC/PNEUMATIC CONTRL VLV FAILURE
G	DR2 020601	022578	N	AV	B24	S	D	CONTAINMENT VALVE H+V-296AV WOULD NOT CLOSE	SOLENOID VALVE LEAKING AT CYLINDER PORT
G	DR2 022569	110878	C	AV	B24	S	D	ISOLATION VALVE 92078 FAILED TO CLOSE	PILOT VALVE ASSY LEAKING (AIR SUPPLY)
G	DR2 023338	121778	C	AV	B24	T	D	AD-2-1601-24 FAILED TO CLOSE REMOTELY	AJR+OPER+SOV+VLV+STUCK IN THE OPEN POSIT.
G	FP1 022225	081778	N	AV	B24	S	D	AC 2-9207A FAILED TO CLOSE	ASSC SOV FOLMC STICKING
G	M14 017601	012577	C	AV	B24	S	D	ISOLATION VALVE 2C-ADV-95 WOULD NOT CLOSE	SOLENOID FOR ADMISSION VALVE FAILED
G	GC1 017543	042377	M	AV	B24	S	D	VALVE 1-AC-9 FAILED TO CLOSE	DIRT IN AIR LINE
G	FR2 0165688	120176	C	AV	B24	S	D	MSIV NS04A FAILED TO CLOSE//CONT.SYS FAILURE#	DEFERRED GASKET BLOCKED AIR VENT FOR SOL.
G	FR3 015854	092176	C	AV	B24	T	D	ISO VALVE AD-2-2-40 FAILED TO CLOSE	STUCK SCENOID IN SUPPLY SYSTEM
								ISO. VLV AD-523510AYWELL TO NITRO. COMP/FAIL. TO CLOS	SOLENOID VLV IN AIR SUPPLY LINE FAILED

PNEUMATIC OPERATED VALVE

VENT	PLAN I	CONI.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C U M P M	K E Y	FAILURE MODE	FAILURE MECHANISM
G	PB3	016215	102176	N	AV	B24	S	D			DRYWELL FL.DRM.INBD.ISC.(AO-3-20-82)FAIL.TO CLOSE.	SOLENOID IN AIR SUPPLY FAILED
G	PB3	016488	113076	C	AV	B24	T	D			ISC.VLV AO-5235(DRYWL.TO NITRO.CCMP)FAIL.TO CLOSE	SOLENOID VLV IN AIR SUPPLY LINE FAILED
G	PB3	018473	072277	W	AV	B24	S	D			INBURD MSIV 80 D FAILED TO CLOSE ON REMOVE SIGNAL	FAILURE OF SOLENOID IN AIR SUPPLY LINE
G	PB3	020452	021078	C	AV	B24	S	D			NITROGEN COMP SUCTION VALV AO-5235,FAILED TO CLOSE	SOLENOID VALVE STICKING IN AIR SUPPLY
G	QC1	018106	041277	F	AV	B24	S	D			DRAIN VALVE FAILED TO CLOSE/COMMAND FAULT	AIR SUPPLY SV FAILED/AIR WOULDNT VENT OFF
G	QC1	023585*	121978	N	AV	B24	S	D	02		TWO VENT DAMPERS FAILED TO CLOSE(1-5741AG8) TEST	SCV SUPPLYING AIR TO OPERATOR FAILED
G	QC2	015381	071276	C	AV	B24	S	D			AO 2-1601-56 FAILED TO CLOSE / COMMAND FAILURE	SCV FAILED IN AIR SUPPLY TO PURGE PILOT
G	QC2	020595*	012478	S	AV	B24	S	D	02		TWO ADV FAILED TO CLOSE/COMMAND FAULT/NO AIR	SCV SUPPLYING AIR FAILED/HI TEMP&HUMIDITY
W	BV1	022139	070978	H	AV	B24	S	D			BDRGN INJECTION TANK RECIRC.VLV.WOULD NOT CLOSE	WORN INTERNALS IN SOLENOID SUPPLYING AIR
W	NA1	022569*	092778	C	AV	B24	S	D	02		CONTNMENT ISO VALVES TV-CC-102D,102F FAILED TO CLOSE	FAILURE OF SOLENOID SUPPLY VALVES
W	PT2	020355	090877	C	AV	B24	T	D			ISOL VALVE FAILED TO CLOSE/COMMAND FAILURE	3/4 SOLEN VAL FAILED DUE TO WEAK SPRING
W	PT2	022842	052878	K	AV	B24	S	D			PZR,SPRAY VLV. 4318 WOULD NOT SHUT FULLY	FAILURE OF ELECTRO-PNEUMATIC TRANSDUCER
W	TR1	020901	022178	W	AV	B24	S	D			PAIN STEAM ISOLATION VALVE CV-2216 FAILED TO CLOSE	ACTUATING SOLENOIDS RUSTED/COMMAND FAIL
W	TU3	021916	070678	W	AV	B24	S	D			MSIV-3B FAILED TO CLOSE / COMMAND FAULT	SOLENOID SUPPLYING AIR,FAILED TO OPERATE
W	Z11	015842	081176	C	AV	B24	T	D			VENT ISOLATION VALVE (1FCV-VN028) FAILED TO CLOSE	COMMAND FAULT/SCV FAILED/CONTROL AIR
W	Z11	015843	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-WD17A) FAILED TO CLOSE/TEST	COMMAND FAULT/SCV FAILED/CONTROL AIR
W	Z11	015844	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SCV CONTROLLING AIR FAIL
W	Z11	017727	042577	C	AV	B24	T	D			SAMPLE ISOLATION VLV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SCV FAILED/NO AIR TO ADV
W	Z11	018568	072377	C	AV	B24	T	D			BLOWDOWN SAMPLE VLV (1FCV-SS02) FAILED TO CLOSE	COMMAND FAULT/SCV FAILED/NO AIR TO ADV
W	Z11	018569	072377	C	AV	B24	T	D			S/G BLOWDOWN VLV (1FCV-BD17) FAILED TO CLOSE	COMMAND FAULT/SCV FAILED/NO AIR TO ADV

PNEUMATIC OPERATED VALVE

PLANT	CONT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CLN	HL	PM	KEY	FAILURE MODE	FAILURE MECHANISM
W ZII	G20565	012578	C	AV	B24	T	D					CONTAINMENT VALVE (1FCV-VMO2A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W ZII	G21138	040878	C	AV	B24	T	D					S/G BLOWDOWN VALVE 1FCV-SS02 FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W ZII	G21140	040878	C	AV	B24	T	D					CONTAINMENT VALVE (1FCV-VMO2A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W ZII	G21973	070778	C	AV	B24	T	D					CONTAINMENT VALVE (1FCV-PR24B) FAILED TO CLOSE	COMMAND/RECURRING SOV FAIL/OIL IN AIR
W ZII	G22514*	083078	C	AV	B24	T	D	03				VALVES 1FCV-WD17A/-PR20A/-PR24B FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W ZII	G22848*	091478	C	AV	B24	T	D	C2				VALVES 1FCV-PR24B/-WD17A FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W ZII	G23125*	112078	C	AV	B24	T	D	C2				VALVES 1FCV-PR24B/1FCV-WD17A FAILED TO CLOSE	ASCC SOV FAILED IN AIR SYS(OIL IN SYS)
F ZII	G18256	052477	C	AV	B27	T						AC VALVE RB-47 FAILED TO CLOSE DURING TESTING	ASCC SOLENOID PILOT VALVE FAILED/DIRT
G NM1	G20252	012078	W	AV	B27	U						MSIV 01-03 WOULD NOT CLOSE	PILOT VALVE OPERATOR FAILED
G PE3	G13989	010276	W	AV	B27	T						OUTBOARD MSIV 86C FAILED TO CLOSE	VLV OPER.PILOT ASS. SEAT SURF.WAS DAMAGED
G QC2	G18122	051477	N	AV	B27	D						ACV FAILED TO CLOSE (AD-2-16C1-24)	SEAL LEAK IN SOLENOID OP PILOT VALVE
G QC2	G20545	030678	N	AV	B27	U						SJAE SUCTION VALVE AC2-5401A FAILED TO CLOSE	STICKING SOLENOID PILOT VALVE/REPLACED
G VY1	G19857	062077	T	AV	B27	D						ACV (FCV 108-W) FAILED TO CLOSE DURING TESTING	SOLENOID PILOT VALVE HAD SHORTED SOLENOID
C VY1	G20465	120977	W	AV	B27	R	F					MSIV-86C FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INOPERABLE/DIRT
G VY1	G20468	020478	W	AV	B27	R	D					MSIV-80A FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INOPERABLE
G BF1	G19557*	090877	W	AV	G00	C	U	C7				7 MSIV'S WERE ABOVE ALLOWABLE INDIVIDUAL LEAK RATE	CAUSE OF LEAKAGE NOT GIVEN
G BF3	G22461*	091778	W	AV	G00	R	U	04				FOUR MSIV'S FCV-1-14,1-26,1-51,1-52 EX.T.S.LEAK LM	CAUSE OF EXCESSIVE LEAKAGE IS NOT KNOWN
G DR2	G14377	031576	C	AV	G00	U						VALVE 1601-23 LEAKING INTERNALLY	CAUSE OF LEAKAGE PAST SEAT NOT GIVEN
G MC1	G19465	101377	W	AV	G00	R	U					MSIV AC-2-80A LEAKING IN EXCESS OF T. S.	NO APPARENT CAUSE
W DC2	G22838A	107078	B	AV	G00	U						PNEUMATIC TEST VALVE LEAKED THRU	UNKNOWN

PNEUMATIC OPERATED VALVE

W F M	P L A N I	CONT. NO.	EVENT DATE	S Y S	C L M P	FAIL CODE	T Y P E	C L A S S	C L M F R	K E Y	FAILURE CODE	FAILURE MECHANISM
W	RG1	018076*	020776	C	AV	CG0	B	U	02		CV PURGE EXH & SUP VALVES LEAKED THRU DURING TEST	UNKNOWN
W	ZI1	C14432	031276	Y	AV	CG0					LEAKAGE THRU AG DIAPHRAGM VALVE	UNKNOWN
G	NM1	C17849	031777	W	AV	CG2					MSIV NO. 111 LEAKING INTERNALLY	VALVE PUPPET INCORRECTLY INSTALLED
G	BF1	C23C7G*	120578	W	AV	CG7			06		6 MSIVS EXCEEDED THEIR LEAKAGE LIMITS	DEGRD. CF SEAT SURF. THRU NORMAL OPERATH
W	PT2	C14158	022076	C	AV	C10	R			T	LRT BETWEEN PURGE SUPPLY VAVES SHOWED INTERNL LEAK	DIRT IN VALVE/CLEANING STOPPED LEAKAGE
W	ZI1	C17254*	021377	C	AV	C10	B			T	VALVES 1A0V-RV0002/RV0004 LEAKED THRU	EXTRANECLS MATERIALS CAUGHT IN THEIR SEAT
G	MC1	C2281G	101478	W	AV	C12				D	CLTBGARD MSIV AD-2-86A LEAKING INTERNALLY	VALVE STEM BENT, LOWER GUIDE RIB WORN
B	TI1	C1397G	010276	W	AV	C24	S			D	INADVERTANT RELEASE THRU ACV-NDL-4125	PERSONNEL/OPER FAILED TO BLEED OFF AIR
B	RS1	C19535*	092177	C	AV	C25	C			T	RB PURGE INLET & OUTLET VALVE LEAKED THRU ON LLRT	SEAT DEGRACATION ON 86 IN BUTTERFLY VALVE
C	PA1	C14522	032876	C	AV	C25				T	ISO VAL CV-1101 LEAKING INTERNALLY	TEFLON VALVE SEATS WORN (NORMAL WEAR)
C	PA1	C194C6	081477	C	AV	C25				T	PURGE AIR EXHALST ISC VLV LEAKING INTERNALLY CV-18	WORN RUBBER VAL DISK SEAT
L	PA1	C19546*	101877	C	AV	C25			02	V	CNTNMNT PURGE ISO VALVS LEAKING AFTER MODIFICATION	VALVES NOT SEATING PROPERLY
G	MC1	C19471	091077	W	AV	C25				T	MSIV AD2-86A LEAKING INTERNALLY	VALVE SEAT FAILURE
G	MC1	C22811	101478	W	AV	C25				D	D OUTBOARD MSIV AD-2-86D LEAKING INTERNALLY	SCRATCH FOUND ON MAIN VALVE SEAT
C	DC1	C177C2	042377	W	AV	C25				T	MSIV NS04B LEAKING INTERNALLY	TIGHT CRACKS AROUND ENTIRE VALVE SEAT
G	DC1	C22357C	091678	W	AV	C25				D	MSIV NS03A LEAKING INTERNALLY IN EXCESS OF T.S.	FAILURE CF MAIN PUPPET TO SEAT PROPERLY
C	PB2	C14412*	033076	W	AV	C25				T	MSIVS 86A, 86B, 86C, 86D, 86D LEAKING EXCESSIVELY	SLIGHT DISTORTION ON VALVE SEAT
C	PB3	C14C35	01C776	H	AV	C25				1	HPCI EXHAUST LINE DRAIN VLV AD-9248 -EXCESS LEAK.	PCGR MATING BETWEEN PLUG & SEATING SURF.
C	QC2	C20396*	C11578	W	AV	C25	C			T	3 MSIV HAD EXCESSIVE THRU LEAKAGE ON LEAKRATE TEST	SEATING SURFACES WERE LAPPED
W	RG1	C13995*	C11176	C	AV	C25	B			U	CV PURGE SUPPLY&EXHAUST VALVE LEAKED THRU/TESTING	RUBBER SEAT SHOES REALIGNED/LOW TEMP PROB

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PNEUMATIC OPERATED VALVE

<u>V E N I</u>	<u>P L A N I</u>	<u>CGNT. NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C O M P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C L N F M</u>	<u>KEY</u>	<u>FAILURE CODE</u>	<u>FAILURE MECHANISM</u>
W	Z11	C16047A	091676	H	AV	C25		D			NITROGEN VALVE (1HCV-S1943) LEAKED THRU	LEAKING SEAT OF #0 PLUG VALVE
W	Z11	C16L44	052176	C	AV	C25	R	T			CONTAINMENT PURGE ADV-RV0002 LEAKED THRU	BULGE ON SEATING SURFACE OF BUTTERFLY VAL
W	Z11	C16377*	110476	C	AV	C25	B	T	02		VALVES 1A0VRV0002/1ACVRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	C16609*	112276	C	AV	C25	B	T	02		VALVES 2A0VR0002/2A0VR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	C17C42*	011677	C	AV	C25	B	T	02		VALVES 1A0VRV0002/1ACVRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	C19165*	090177	C	AV	C25	B	D	02		VALVES 1RV0001/1RV0003 LEAKED THRU	SEATS WERE OUT OF ADJUSTMENT
W	Z11	C20000	120877	C	AV	C25	R	T			VALVE 1A0V-RV0002 LEAKED THRU	SEAT CONTRACTION DUE TO LOW TEMPERATURE
W	Z17	C15163	031576	C	AV	C25	R	T			CONTAINMENT PURGE ISOLATION ADV LEAKED THRU	VALVE SEAT INADEQUATELY TORQUED/42" BUTFLY
W	Z1L	C17728	040577	C	AV	C25	R	T			CONTAINMENT PURGE VALVE (2A0V-RV0002) LEAKED THRU	SEATS CONTRACTED/LOW TEMP/42" BUTTERFLY
W	Z1L	C20262	010978	C	AV	C25	R	T			CONTAINMENT VLV (2A0V-RV0002) LEAKING THRU	SEAT SEPARATED FROM VALVE DISC/LOW TEMP
G	DR2	C19656	110877	N	AV	C27		T			ISOLATION VALVE 9207A LEAKING INTERNALLY	PILCT VALVE SEAT LEAKAGE
W	Z11	C16047	091676	H	AV	D13		T			NITROGEN FILL VALVE (1S10875B) LEAKED EXTERNALLY	BODY TO BONNET LEAK OF #0 PLUG VALVE
G	DR2	C14176	031576	C	AV	D14		T			VALVE 2-1601-56 LEAKING EXTERNALLY	EXCESSIVE PACKING LEAKAGE
C	DC1	C22357B	091678	W	AV	D14		T			MSIV NS04B LEAKING EXTERNALLY IN EXCESS OF T.S.	FAILURE OF STEM PACKING MATERIAL
G	PR2	C17262	030177	Q	AV	D14		T			VALVE AU-2-23-42 LEAKING EXTERNALLY	PACKING FAILURE
G	PR2	C19096	091477	H	AV	D14		T			VALVE AU-53 LEAKING EXTERNALLY	PACKING FAILURE
G	QC1	C14063	010476	W	AV	D14		T			MS STUF ISOL VALVE EXCESS LEAKAGE DURING TEST	PACKING TIGHTENED AND RETIRED THE VALVE
W	IP3	C16717	011577	N	AV	D14		T			VALVE PCV-455B LEAKING EXTERNALLY	VALVE PACKING FAILED
G	QC1	C22357A	091678	W	AV	D18		D			MSIV NS04A LEAKING EXTERNALLY IN EXCESS OF T.S.	CRACKED STELLITE WELD IN BODY SEAT RING
G	DR2	C14428*	032376	C	AV	D19		T	02		VALVES 2-1601-32A#32E LEAKING EXTERNALLY	DETERIORATION OF WATERLESS GREASE ON SHFT

PNEUMATIC OPERATED VALVE

V E N E N T	F L A N T	C C N T. N O.	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N T R O L L I N G	K E Y	FAILURE MODE		FAILURE MECHANISM	
											FAILURE MODE	FAILURE MECHANISM		
G	BF2	021092A	042078	W	AV	U25	T	G2	V		MSIV'S LEAKING BY SEATING SURF.GREAT.THAN TS LIMIT	SEATING SURFS.DETERIOR.THROUGH NORM.OPER.		
C	MI2	01778C	042577	W	AV	F00	U				A MSIV TAKES TOO LONG TO CLOSE	CAUSE UNKNOWN		
C	GC1	017250	031477	N	AV	F40	U				DIA.OPER.VLV FAILED(LLBE SYS FOR GAS SAMPLE PPP.)	CAUSE UNKNOWN		
W	ZI1	017252	020377	C	AV	F00	U				PENETRATION PRESSURIZATION VALVE FAILED TO OPERATE	FAILED BOOSTER RELAY IN VALVE CONTROLLER		
C	PA1	021493	080478	C	AV	F02	D				THE T-RING IN CY-1806 WAS NOT PRESSURIZED	INCORRECT REASSEMBLY OF AIR SUP TO CY1806		
W	PC2	02337C	121778	W	AV	F02	D				MSIV C STEM FAILED TO TRAVEL FULL TEST DISTANCE	PERSONNEL ERROR(MALADJUSTED PACK GLAND)		
G	MC1	020700	022878	Y	AV	F10	T				VALVE BV-4 WOULD NOT FUNCTION TO ALLOW MINIMUM FLO	FOREIGN MATERIAL IN BV-4 POSITIONER		
B	LB1	023424	123078	S	AV	F12	D				SER.WTR.OUTLET VLV SW-1424 WOULD NOT OPERATE PROP.	LINK.BETWEEN VLV.6 OPERATOR OUT OF ADJUST		
B	UE3	020044	010378	L	AV	F12	D				VALVE 3LP-14 FAILED TO CYCLE MANUALLY	MECH PARTS LOOSE/OUT OF ALIGN		
C	MY1	017682	060277	C	AV	F12	D				LETDWN PRESS.CCNT.VLV LD-F-16 OSCILLATING RAPID.	BELTS ON OPER. LOOSE / OPER. FELL OFF		
G	DR2	023334*	112378	W	AV	F12	R	U	G2		2 MSIV FAILED TO CLOSE IN REQUIRED TIME	MINOR ADJUSTMENTS TO SPEED CONTROL VALVES		
G	DR3	022421	110478	W	AV	F12	R	U			MSIV 3-203-2A FAILED TO CLOSE IN PROPER TIME	SPEED CONTROL OUT OF ADJUSTMENT		
C	FP1	023366	122078	C	AV	F12	U				FOUND COUPLING KEY MISSING FROM 27-ADV-115	KEY REPLACED,REASON UNKNOWN FOR MISSG KEY		
G	PI1	021096	041178	W	AV	F12	D				MSIV-AD-203 DECLARED INOPERABLE	STEM SHEARED AT LCC WHERE PLT STG TAPERED		
G	GC1	014538	040276	W	AV	F13	T				VALVE FAILED TO OPERATE PROPERLY DURING TESTING	NEW SEAL RING IN VALVE OPERATOR		
G	GC1	017468	030577	C	AV	F13	T				VALVE ACTUATOR FAILED/VALVE FAILED TO OPERATE	TEFLON C-RINGS IN AIR CYLINDER REPLACED		
G	GC1	019430A	101177	T	AV	F16	S	G			VAL ON STBY GAS TREAT SYST NOT FAIL TO OPER PROP	FLOW SENSING PROBE DISPL (VLV V-29-26)		
G	GC1	022574*	091578	C	AV	F19	T	G2			VACUUM BREAKERS V-26-16,V-26-18 INOPERABLE ON TEST	LACK OF LUBRICATION,VALVE BINDING		
B	DB1	020275	011278	S	AV	F24	S	D			SW-1424 NOT OPER. PROP.;SOMETIMES STUCK OPEN,SHUT	SOLENOID VLV IN CCNT SYS BURNED OUT		
B	DE1	01553C	081076	C	AV	F24	T	D			VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS EXH.		

PNEUMATIC OPERATED VALVE

VEN	PLANT	CUNT.NO.	EVENT DATE	SYS	CDMP	FAIL CODE	TYPE	CLASS	CUMPM	KEY	FAILURE MODE	FAILURE MECHANISM
B	CE1	017473	032677	C	AV	F24	T	U			VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
C	CC1	019206	100377	S	AV	F24	T	D			SERVICE H2O CONT VALVE OPERATED ERRATICALLY IN AUT	PROBLEM WITH PNEUMATIC CONTROLLER TO VALV
C	CC1	019203	100477	S	AV	F24	T	D			SERVICE H2O CONT VALVE OPERATED ERATICALLY IN AUTO	PNEUMATIC CONTROLLER NEEDED CALIBRATION
C	LC2	019763	112577	S	AV	F24	T	D			SERVICE H2O CONT VALVE MALFUNCTIONED IN AUTO MODE	CONT AIR & FEEDBACK TUBING INSTAL'D WRNG
G	BK2	014627	031076	K	AV	F24	S	D			RECIRC.SYS.WTR.SAMP.VLV 2-B32-F019 CLOSED TOO SLOW	OPEN.AIR PRESS.TO VLV OPER. DRIFTED HIGH
G	CA1	014340	032476	C	AV	F24	S	D			VENT VALVE CV4301 NOT CLOSING WITHIN T.S. TIME LIM	DIRTY PILOT SOLENOID VALVE IN AIR SUPPLY
G	DR2	022542	090778	C	AV	F24	S	D			VALVE 2-1601-24 FAILED TO OPERATE IN TIME LIMIT	FOREIGN PATTERN LODGED IN AIR SUP. SOLEN.
G	DP2	022778	093078	C	AV	F24	S	D			VACUUM RELIEF VALVE AD-1601-208 FAILED OPEN	AIR OPERATOR SOLENOID VALVE SHORTED
G	MI1	014290	021276	L	AV	F24	S	D			1 OF 2 FEEDWTR.REG.VLVs LOCKED IN THE AS IS POSITION	FAILURE IN 3 WAY PRESSURE REGULATOR
G	MI1	018414	071377	U	AV	F24	S	D			"B" FEEDWTR.REG.VLV EXPERIENCED CONTROL PROBLEMS	FAILURE CAUSED BY DIA.FAIL.IN SUP.SYS.VLV
G	MI1	018625*	080677	U	AV	F24	S	D	C2	V	FEEDWTR.REG.VLVs. LOCKED UP "AS IS"	LOSS OF INSTRUMENT AIR PRESS.CAUSED FAIL.
G	OC1	019430B	101177	T	AV	F24	S	D			VAL ON STBY GAS TREAT SYST NG1 FAIL TO OPER PROG	FLO CONT PLUNG ON PILOT SV DETERIORATED
W	DC1	014549*	050576	C	AV	F24	S	D	02		VALVES CCR-4605462 FAILED TO CLOSE IN REQUIRED TIME	WRONG SIZE TUBING(VENT)FROM VALVE(DESIGN)
W	IL4	022585*	092078	W	AV	F24	S	D	03		3 MSIVS HAD DEFECTIVE SOLENOID COILS/PREV MAINT.	COMMAND FAULT/SOLENOIDS CONTROL AIR
W	ZI1	016181	093076	C	AV	F24	T	D			CONTAINMENT VALVE (1FCVIA010) FAILED TO OPERATE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
W	ZI2	021709*	060578	C	AV	F24	T	D	02		TWO AIR OPERATED CONTAINMENT VALVES FAILED TO OPER	COMMAND/CIL IN AIR SYS FAILED SCVS
G	CC1	017360	012377	W	AV	F26	T				MSIV AD-1-203-1A FAILED TO OPERATE DURING TESTS	LIMIT SWITCH FAILED DUE TO EXCESS HEAT
G	CC1	017361	021177	W	AV	F27	T				MSIV FAILED TO CLOSE IN REQUIRED TIME DURING TEST	FALTY PILOT VALVE VITRON O-RINGS
G	CC2	019224	052277	W	AV	F27	T				MSIV FAILED TO OPERATE PROPERLY	FALTY 4-WAY PILOT/O-RING DAMAGED
G	VY1	022744	101478	W	AV	F27	U				MSIV (V2-86C) CLOSED FASTER THAN DESIGN TIME	SPEED CONTROL VALVE BECAME LOOSE

PNEUMATIC OPERATED VALVE

V E N T	P L A N T	CONT.NO.	EVENT DATE	S Y S	C U M P	FAIL CODE	T Y P E	C L A S S	C U M P M	K E Y	FAILURE MODE	FAILURE MECHANISM
											FAILURE MODE	FAILURE MECHANISM
W	BV1	017554	032877	S	AV	G22	R	U			1B RCP COOL.WTR.SLP.CONT.ISO.VLV FAILED SHUT	FAILED DIAPHRAGM IN VLV. OPERATOR
W	BV1	020439	011478	J	AV	G22	R	U			1A RCP COOLING WATER INLET ISO. VLV FAILED SHUT	RUPTURED VLV OPER. DIAPHRAGM CAUSED FAIL.
B	CRJ	022360*	082178	N	AV	G24	S	D	02		DAMPERS TO AHF-14B & D WENT CLOSED/PRENT WAS REVERS	SCVS IN AIR SLP. HAD DEFECTIVE CONT.VLVs.
W	BV1	015909	091076	F	AV	G24	S	D			COOL WATER CONT ISOLATION VALVE WENT CLOSED	AIR PRESS TO VAL DROPPED/AIR SYS(DESIGN)
W	BV1	017697*	042077	W	AV	G24	S	D	02		1A & 1B MN STM ISO. VLVs WENT PARTIALLY CLOSED	LOW AIR PRESS TO TH PSIVS VLV POSITIONER
W	HNI	023582*	122978	N	AV	G24	S	D	04		4 S/G BLOWDOWN LINE VALVES CLOSED WHEN REQ OPEN	AIR SUPPLY TO VALVES TRIPPED(COP CAUSE)
G	VY1	014297	030276	Y	AV	G27					ACV FAILED TO OPERATE(AS DESIGNED)/CLOSED IN EVERY	SCLENCIC OPERATED AIR PILOT CLOSED INADV.
d	L*1	020707*	021078	L	AV	102			02		MECH.STOPS FOR DH14A&14B INCORRECTLY SET	PERSONNEL ERROR;MAINTENANCE DONE INCORREC
G	DA1	017368	021977	N	AV	102					INCORRECT SV REPLACED ON TORUS V.B. CV-4304	MAINTENANCE PERSONNEL ERROR
C	PA1	014721*	043076	M	AV	104			02		VALS CV-2113,-2115 DO NOT MEET STRESS CODE CRIT.	CHANGE OF CALCULATION TECHNIQUE / DESIGN
C	PA1	019405	091677	C	AV	104					CONTINUIT PURGE ISO VLVs NEED REDUNDANT AIR SUPPLY	DESIGN ERROR IN CRIG SYST DESIGN
G	GC1	017257	011977	N	AV	V01	S	D			VALVE LINE-UP INCORRECT/RADWASTE DISCHARGE	PERSONNEL ERROR
G	BR2	014633	021176	N	AV	V02	S	D			INLET VALVE TO CONT RADIATION MONITOR FOUND CLOSED	PERSONNEL ERROR AFTER FILTER CHANGE
W	SA1	017198	021177	W	AV	V02	S	D			#12 S/G MSTV WAS CLOSED WHEN IT WAS REQUIRED TO R-	-EMAIN OPEN//PERSONNEL ERROR(MAINTENANCE)
E	CE3	016143	100976	N	AV	V06	S	D			DRAIN VALVE NOT IN PROPER LINEUP	ERROR IN PROCEDURES
W	NA1	021566	051478	E	AV	V06	S	D			AUX FEEDWATER VALS PCV-F2-159A,-159B IMP.LINEUP	CHECKOFF SHEET DOES NOT LIST NORM VAL POS

SOLENOID OPERATED VALVE

P Y E N T	C M T N O	S E R I E S	S Y M B O L	F A I L C O D E	T Y P E	C A U S E	F A I L U R E M E C H A N I S M
G	0P3	023363	E SV A00	U	U	FUEL OIL TRANS PUMP GUILLET VALVE FAILED TO OPEN	SCV WAS STUCK, VALVE REPLACED
M	1P2	021333	S SV A00	U	U	SERVICE WATER VLV FCV-1276A DID NOT FULLY OPEN	CAUSE OF EVENT COULD NOT BE DETERMINED
G	0P2	015408	K SV A02	U	U	CAC-PV-3441 SERIES EFFLUENT VLV WOULD NOT OPEN	SOLENOID WAS DAMAGED DURING LAST OUTAGE
C	0C2	021991	S SV A08	D	D	#21 DG SER. MTR. SUPPLY VALVE FAILED TO OPEN	BADLY WORN PLUNGER SEAT CAUSED SOL. TO STK
G	MH1	014580	N SV A12	U	U	VLV B202-37 IN #11 EMERG. VENT. SYS. FAILED TO OPEN	SEAL HAD CRACKED NYLON TIP ON PLUNGER
G	0B1	021451	Y SV A21	T	T	SOLENOID VLV CAC-SV-1263-1 FOUND IN STUCK SHUT POS	DEFECTIVE PLUNGER IN SOLENOID
G	0B2	015400	N SV A21	R	R	AIR SUPPLY VLV 2-CAC-PV-3442 FAILED TO OPEN	BROKEN RETAIN-RING ON SOLENOID COIL
G	0P2	015409	N SV A21	K	K	CAC-PV-3442 SERIES EFFLUENT VLV WOULD NOT OPEN	VLV SOLENOID WAS STICKING/SEATS WERE LEAK
G	0P2	015894	N SV A21	C	C	CCNT-SAMPLE VLVS CAC-PV-3441&3442 FAILED TO OPEN	SOLENOIDS ON VLVS WERE STICKING
G	0P4	022974	C SV A21	R	R	AD 1603-96 FAILED TO OPEN	SHORTED CUT COIL ON SOLENOID
G	0P2	014751	Y SV A21	U	U	15G VAL ON RET TO DRYWELL LINE CLOSED	DEFECTIVE SOLENOID COIL
M	5A1	023317	N SV A21	U	U	SOV 155M57 FAILED TO CONTROL SER H2O FLOW	SOLENOID COIL OPEN CIRCUIT
B	1R1	019530	E SV A23	D	D	VLV AF3872 FAILED TO STRIKE WHEN GIVEN OPEN SIGNAL	OPEN TCRQUE SWITCH WAS DEFECTIVE
B	013	022307	E SV A23	T	T	VALVE 3LPSW-24 INOPERABLE IN THE CLOSED POSITION	TORQUE SWITCH FAILED DUE TO CORROSION
B	0H3	020752A	C SV B00	K	K	VLV CAV-2 FAILED TO CLOSE/VIOLATED T.S. REQ.	CAUSE OF FAILURE NOT GIVEN
M	MH1	023502A	N SV B01	D	D	VALVE MECHANICALLY BLOCKED OPEN OVERRIDING TRIP	PERSONNEL ERROR
M	MH1	014607B	N SV B10	I	I	MSIV NO 2 FAILED TO CLOSE IN REQUIRED TIME	LIMIT SW HAD INTERNAL CORROSION
M	YFA	021013	Y SV B10	T	T	CONTAINMENT VALVE (MV-SOV-1) FAILED TO CLOSE	DIRT AND OIL BUILD-UP IN VALVE INTERNALS
M	Z11	017041	C SV B10	R	R	CONTAIN INST AIR SOV (CV-1A01B) FAILED TO CLOSE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
M	Z12	017862	C SV B10	R	R	INST AIR ISOL VALVE (2FCV-1A01B) FAILED TO CLCSE	SCV FAILED DUE TO IMPURITIES IN AIR SYS.

SOLENOID OPERATED VALVE

P L N T	LCN/NO.	EVENT DATE	S M	C M	FAIL CODE	T Y E	C M R K	FAILURE MODE	FAILURE MECHANISM
W	Z12	018259	C	SV	B10	R	T	INST AIR ISOL VLV (2FCV-1A01B) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS
W	Z12	021451	C	SV	B10	R	T	INST AIR ISOL VALVE 2FCV-1A01A FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/HEAT-VARNISH
W	Z12	021928	C	SV	B10	R	T	INST AIR ISOL VALVE 2FCV-1A01B FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/RECLRINGJ*
G	BR2	014954	N	SV	B21	T	T	DRYWELL NITRO-INLET VLV 2-CAC-V6 WOULD NOT CLOSE	4-WAY SOLENOID VLV LEAKING AIR
G	EP3	022675	C	SV	B21	T	T	ISOLATION VALVE 3-2001-6 WOULD NOT CLOSE	DETERIORATED SEALS IN SOLENOID VALVE
G	FP1	014667	C	SV	B21	U	U	CONTAINMENT ISOLATION VALVE FAILED TO CLOSE/TEST	DEFECTIVE SOLENOID
G	FP1	015064	N	SV	B21	U	U	SAMPLE STREAM E VALVE 27SOV1238 FAILED TO CLOSE	BURNED CLT COIL
W	BY1	016943	L	SV	B21	U	U	WAKE-UP TRIP VLV FAILED TO TRIP ON HIGH CONDUCTIV.	VLV SOLENOID WAS DEFECTIVE
W	HR1	014074	W	SV	B24	S	D	PSIV NO 2 FAILED TO CLOSE IN REQUIRED TIME	SOLENOID IN AIR OPERATOR PROZE
G	RF3	018624	Y	SV	G00	R	U	SSCO SOLENOID VALVE LEAKING AIR TO OXYGEN ANALYZER	UNKNOWN(SN 97C09A) FSV-76-428
G	MO1	014515	Y	SV	G00	U	U	SOLENOID VALVE LEAKING (INSTR-AIR TO NITRO. SYS)	CAUSE UNKNOWN
W	PB3	015632	C	SV	G10	R	T	YCRUS ATMOS-SAMP-INBD-ISC.VLV LEAKED THROUGH	VALVE SEAT NEEDED CLEANING
G	PI1	023143	M	SV	F00	U	U	TWO SCRAM PILOT VALVES FOR CRD 46-39 NOT BLEEDING	VALVES REPLACED FROM STOCK
C	SL1	022569*	N	SV	F01	D	04	FOUR SOVS FAILED TO OPERATE(MADH ADDITION SYS)	NO PWR TO SOLENOIDS,FUSE FOUND REMOVED
G	BR2	016358*	N	SV	F02	D	02	DRN-POT INL-SOL-VLVS ON MONITORS 125941263 DISCONN	PERSONNEL ERROR/NOT RECONN-AFTER MAINTENA
D	AR1	016566	R	SV	F10	R	T	VLV CV-6202 WOULD NOT REMAIN IN CLOSED POSITION	SOLENOID VLV ACTU. WAS NOT FUNC. PROPERLY
G	MC1	018467	T	SV	F10	T	T	GAS FLGM CONT VAL FCV-7489A FAILED	DIRT IN VALVE SEAT AND DISK
G	PR2	022639	C	SV	F10	T	T	OXYGEN ANALYZER SYSTEM ISD VAL-SV-26716,FAILED	VALVE SEAT DIRTY,PLUNGER STICKING
G	VY1	043980	T	SV	F10	T	T	ASCO 3-WAY SOLENOID VALVE FAILED TO OPERATE	DIRT BUILDUP IN ACTUATING MECHANISM
W	Z12	021769A	C	SV	F10	R	T	INST AIR ISOL VALVE 2FCV-1A01A FAILED TO OPERATE	OIL IN AIR SYS FAILED SOV/VARNISH BUILDUP

SOLENOID OPERATED VALVE

U S A N K	CONTR. NO.	EVENT DATE	SYM S	U S P	FAIL CODE	Y E S	U N C E S S F U L	FAILURE MODE	FAILURE MECHANISM
G MC1	021715	060578	M	SV	F12	R	D	SCRAM PILOT VALVE FOR CRD 00-19 WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVE BROKEN
G MU1	021985*	072878	P	SV	F12	R	D	SCRAM PILOT VALVES FOR CRDS WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVES BROKEN
C CC2	022116	100278	M	SV	F12	D		SCRAM SOLENOID VALVE 118 MALFUNCTIONED	CORE SPRING DETACHED FROM CORE OF SV
E DF1	017526	022577	C	SV	F21	U		MPI LETDOWN ISQ.VLV.P1HP-9, FAIL (CONT.ISQ.VLV.)	ELECTRICAL FAILURE OF THE SOLENOID COIL
G CR3	014071	010476	M	SV	F21	U		NO.2 CONTROL VALVE FAILED TO OPERATE	MALFUNCTION OF FAST ACTING SOLENOID VALVE
G FP1	013958	010676	N	SV	F21	D		DRY WELL PARTICULATE SAMPLING VALVE FAILED TO OPER	ELECTRIC SOLENOID BURNED OUT
G FP1	047840	073076	N	SV	F21	D		VALVE IN DRYWELL MOISTURE LINE FAILED TO OPERATE	FAILURE OF VALVE SOLENOID
G VY1	022253	081478	Y	SV	F21	U		PURGE MAKEUP VLV V16-223 CAUSED A FUSE TO BLOW IN-	-THE PCIS LOGIC//FAULTY SOLENOID OPERATOR
B CR1	022651	051776	Y	SV	F22	T		RADIATION MONITOR PMP DISCP. VLV FAILED TO OPERATE	DIAPHRAGM IN VLV WAS CRACKED/DUE TO HI TM
J AP1	017303	021877	J	SV	F24	T	U	VALVE CV6202 WOULD NOT REMAIN CLOSED	IND AIR SUPPLY BLOCK VALVES FAILED
M IP2	015732	091276	K	SV	F24	S	D	INST AIR PRESS LOST BY MALFUNCTION OF 4-WAY VALVE	CAUSE UNKNOWN
M YR1	020693	022178	N	SV	T01	U		HYD-VENT SYS.SOL.VLV5 HV-SOL-162 NOT TESTED ON T1-	--RE//PERSONNEL ERROR
G FP1	015065	062976	Y	SV	VCL	J	D	SOV-135A AND B FOUND CLOSED WHEN REQUIRED OPEN	PERSONNEL ERROR(PANEL MARKED POORLY)

HYDRAULIC OPERATED VALVE

<u>FLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>CUMV</u>	<u>FAIL CODE</u>	<u>T</u>	<u>P</u>	<u>E</u>	<u>C</u>	<u>L</u>	<u>A</u>	<u>S</u>	<u>C</u>	<u>C</u>	<u>N</u>	<u>H</u>	<u>M</u>	<u>P</u>	<u>M</u>	<u>K</u>	<u>E</u>	<u>Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>		
W SA1	Q16738	122976	W	HV	A24	T	D																	MSIV (12MS167) FAILED TO OPEN / COMMAND	OIL LINE TO OPERATOR FRACTURED	
W BV1	Q18C88	091976	W	HV	B00																			*B* MAIN STEAM TRIP VLV FAILED TO SHUT	CAUSE IS NOT KNOWN	
W ZI1	C23355	121178	W	HV	B10																			GAMPER VALVE FAILED TO CLOSE DURING TESTING	FROZEN(DUE TO COLD TEMP) CYLINDER	
C CC2	C22742	102378	W	HV	B24	S	D																	#21 MSIV FAILED TO SHUT WITH ISOLATION SIGNAL	IPPROP.ACTU.SOL.VLVs-USED IN VLV ACTUATOR	
W TR1	C1457C	022976	L	HV	B24	S	D																	HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/AIR IN HYDRAULIC LINE	
W TR1	C14568	032876	L	HV	B24	S	D																	HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/OIL LEAKED INTO SOV	
W TR1	C16251	101676	L	HV	B24	S	D																	FEEDWATER BYPASS VALVE (MO-29730) FAILED TO CLOSE	COMMAND FAULT/LOCAL CONTROL VLV FAILED	
W TR1	C16442	111276	L	HV	B24	S	D																	FEEDWATER ISOLATION VLV (MO-29710) FAILED TO CLOSE	HYDRAULIC SELECTOR VALVE FAILED/RIVETT CO	
W TR1	C18589	070677	U	HV	B24	S	D																	HYDRAULIC FEEDWATER VLV (MO-29710) FAILED TO CLOSE	SOLENOID IMPROPERLY ASSEMBLED/MANUFACTUR	
W TR1	C18992	082177	L	HV	B24	S	D																	HYDRAULIC FEEDWATER VLV (MO-29738) FAILED TO CLOSE	SOLENOID VALVE BECAME WET/STEAM LEAK	
W ZI1	C21446	050678	W	HV	B27	R	D																	MSIV 18 FAILED TO CLOSE AFTER MAINT. ON VALVE	REXROTH 4WAY DIRECTIONAL VALVE JAMMED	
W ZI2	C15192	060376	W	HV	B27	R	I																	MSIV B FAILED TO CLOSE DURING TESTING	PILOT FAILURE(TELEDYNE)DC SOLENOID FAILED	
W ZI2	C22797	101578	W	HV	B27	R	T																	MSIV 20 FAILED TO CLOSE / RECURRING EVENT	PROBLEMS WITH PILOT SOLENOID VALVES	
G BR1	C23061	111478	H	HV	C00																			STM. LEAKING PAST SEAT OF HPCI E41-F001	NO CAUSE FOR STM.LEAK. GIVEN	
C CC1	C20163*	012578	W	HV	F00																			02 BOTH MSIV'S FAILED TO CLOSE WITHIN REQ. TIME(3.6S)	CAUSE UNDER INVESTIGATION	
G PB2	C17461	040777	W	HV	F00																			MSIV 86B CLOSE TIME GREATER THAN T.S. LIMIT	CAUSE UNKNOWN	
C PB3	C15222	071476	W	HV	F00																			MSIV 86B VLV CLOSURE TIME GREATER THAN T.S. LIMIT	SPECIFIC CAUSE UNDETERMINED	
G PI1	C17675	041777	W	HV	FC7																			MSIV-AC-203-18 CLOSING TIME TOO FAST	NORMAL WEAR IN HYDRAULIC CIRCUIT	
W HN1	C19245	100377	W	HV	F07																			VALVE VERY SLOW TO RESPOND	COMPONENT WEAR (HYDRAULIC SERVO MOTOR	
L CC1	C21994	072178	W	HV	F13																			#12 MSIV DECLAR.INOP.DUE TO ACCUMULATORS DEPRESS.	MSIV ACTUATOR CAP & SEAL WERE FAILED	
G FP1	C20517	021078	Q	HV	F16	S	D																	RCIC TURBINE STEAM INLET VALVE FAILED TO OPERATE	COMMAND/SUPPLY BREAKER RELAY OVERLOADED	
W SC1	C22336	081878	B	HV	F16	S	D																	VALVE OPENED ACCIDENTLY DURING CIRCUIT MAINTENANCE	SIGNAL TO VALVE/COMMAND FAULT/MAINTEN	
G BF3	C21406	051378	W	HV	F24	T	D																	MSIV 1-38 CLOSED IN 1 SEC. EXCEED. T.S. REQUIREMNT	DASHPOT WAS LOW ON OIL	
G BF3	C21761	062678	W	HV	F24	T	D																	OUTBOARD MSIV 8CV 3-1-78 CLOSED FASTER THAN T.S. AL	VLV'S DASHPOT ASS. WAS LOW ON FLUID	
G BR2	C14916	052576	W	HV	F24	S	D																	OUTBOARD MSIV B21-F028C STROKED TOO FAST/2.2 SECS.	MIT.PRESS.GHYDR.FL.LCW/LEAK. VENT PLUGCKN	
W SA1	M16940*	011677	W	HV	F24	T	D	02																THE HYDRAULIC ACTV WOULDNT OPERATE/COMMAND FAULT	HYDRAULIC LINES TO VALVES RUPTURE/FITTING	
W ZI1	C19410	100777	W	HV	F24	S	D																	WHILE RECHARGING HYDRAULICS/MSIV OPENED PARTIALLY	COMMAND FAULT/PRESSURE*COMMAND*IT OPN	
W ZI1	C19863	126377	W	HV	F27	R	U																	MSIV 1B FAILED TO OPEN OR CLOSE IN REQUIRED TIME	3WAY SELECTOR(TELEDYNE)DC SOLENOID FAILED	
W ZI1	C21110	046178	W	HV	F27	R	T																	MSIV FAILED TO OPERATE IN REQUIRED TIME	REXROTH 4WAY DIRECTIONAL CONTROL VAL FAIL	
W ZI2	C23161*	026578	W	HV	F27	B	D	02																TWO MSIVS FAILED TO OPERATE IN TIME REQUIRED	PILOT FAILURE/2 TELEDYNE DC SOLEN FAILED	
C CC1	C14122	C10376	W	HV	J13																			T	GROSS OIL LEAK CLOSING SIDE OF #11 MSIV OPERATOR	FAILED *CM-RING HI PRESS.SIDE OF VLV OPER

REMOTE OPERATED VALVE

VEN	PLANT	CONT.NO.	EVENT DATE	SYM	CDMP	FAIL CODE	TYPE	CLASS	CLN	KEY	FAILURE MODE	FAILURE MECHANISM
B	CR3	021775	062178	L	RM	AC0		U			DECAY HEAT REMOV. VLV DHV-111 WOULD NOT OPEN REMOT.	CAUSE OF EVENT IS UNDETERMINED
C	PA1	021962	062776	C	RM	AC0		L			CONT. PLRGE SUP. VLV (CV-1808) FAILED TO OPEN	NO APPARENT REASON FOUND FOR FAILURE
C	SL1	019504	081777	F	RM	AC0		U			CONTAINMENT SPRAY VALVE FAILED TO OPEN/TESTING	UNKNOWN/ LOCKED OPEN HANDWHEEL
C	SL1	019509	052577	F	RM	AC0		U			CONT. SPRAY HDR. ISG. VLV FCV-07-1B NOT FULLY OPEN	UNKNOWN (CONT. SPRAY VLV. STICKING)
G	M11	019326	101277	F	RM	AC0		U			TORUS SPRAY VLV FAILED TO OPEN ON SIGNAL	CAUSE OF OCCURRENCE IS UNKNOWN
G	OC1	016486	111176	F	RM	AC0		U			VALVE V-21-5 FAILED TO OPEN/CKT BRKR TRIPPED	CAUSE UNKNOWN / VLV OPENED HARD MANUALLY
W	RC2	017540	032677	B	WM	AC0		U			VALVE V2-14A FAILED TO OPEN	INCREASE IN TENSION BETWEEN SEATING SURF.
W	KE1	014240	022076	F	RM	AG1		D			VALVE ICS-5B FAILED TO OPEN (CONT. SPRAY DISCH. VLV)	VALVE MANUALLY TORQUED DOWN TOO TIGHT
W	OC1	022332*	082878	N	RM	AG2		C	D	02	TWO VALVES TO MAIN COND AIR EJECTORS FAILED CLOSED	IMPROPER REPAIRS PERFORMED ON THE VALVES
W	RC2	015570	081776	B	RM	AG4		R	D		VALVE V2-16A FAILED TO OPEN	LIMITORCLE OPER FAILED TO OPEN VALVE
W	IF3	021388	050678	W	RM	AG8		D			LP SIM DMP VAL NO 3 FAILED TO OPEN FULLY	PLUG AND CAGE WAS SCORED
B	AP1	015243	062876	R	RM	A12		D			VALVE CV-3812 FAILED TO OPEN ON COMMAND	BINDING IN VALVE BETWEEN STEM AND BUSHING
B	TI1	013556	010676	J	RM	A12		D			RIVER PUMP DISCHARGE VALVE (NR-V1A) FAILED TO OPEN	16 IN BUTTERFLY BINDING/OPERATOR DAMAGED
G	PB2	015374	082076	F	RM	A12		U			CONDENSATE CONT. VLV FAILED IN CLOSED POSITION	DEFECTIVE POSITIONER ON CONTRLL VALVE
W	PR1	015215	062976	S	RM	A12		D			PUMP DISCHARGE VALVE FOUND CLOSED AND INOPERABLE	PIN FELL OUT OF REMOTE OPERATOR LINKAGE
J	CR3	021166	040578	N	RM	A16		S	D		FSV-240 FAILED TO OPEN	CONTRCL CKT BOARD SHORTED
C	M12	014461	030976	B	RM	A16		S	D		AUX. FEED PMP. STM. INLET VLV. CYCLED, WOULD NOT REOPEN	FAILURE OF VALVE OPERATING CIRCUIT
G	BR1	019394	101877	Y	RM	A16		S	D		VLV NP-CV-2713, NITROGEN INLET TO LOOP A WDN'T OPEN	CIRCUIT BRKR CONT. VLV FOUND IN OFF POSITN
G	BR2	014624	030976	C	RM	A16		T	D		PENET VALVE X70F FAILED TO OPEN DURING TEST	REMOTE SWITCH STUCK/NO POWER TO VALVE
G	BR2	015423*	070976	C	RM	A16		I	D	02	TWO CONT VALVES (PENETS X570EX 2E) FAILED TO OPEN	TWO PUSHBUTTON SWITCHES STUCK ON TESTING

REMOTE OPERATED VALVE

P L M N	C U P T	C U P T	S P E	F A I L C O D E	T I M E	C A U S E	F A I L U R E M E C H A N I S M
G 882	015929	C RM	A16	T D		CONT VALVE FOR PENETRATION XT6C FAILED TO OPEN	PUSHBUTTON SW FAULTY DURING TEST
G 882	023034	L RM	A16	S D		RHR VLV E11-F008 WOULD NOT OPEN AT REQ. SETPOINT	FAIL. CF RX-STM-DCME HIGH PRESS-SWITCH
G 001	036658	L RM	A16	S D		VALVE RHR MU-17 FAILED TO OPEN	BROKEN RELAY COIL KEPPER LODGED IN COHT.
G 0A1	014730	M RM	A16	S D		MSIV 8403D FAILED TO CYCLE OPEN DURING TEST	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
G 0F2	014430	F RM	A16	S D		FPCI STEAM SUPPLY VALVE 2-23C1-4 FAILED TO OPEN	DIRTY CONTACTS IN BREAKER SUPPLYING VALVE
G 0E2	022207*	C RM	A16	S U	02	PLURIF CONTAINMENT VALVES FAILED TO OPEN	INCORRECT WIRING FROM SWITCH CONNECTIONS
G 0B2	019057	N RM	A16	S U		STOBY.GAS TREATMENT "A" FILTER TRAIN INL.VLV. AD--	--20475-1 DID NOT OPEN//CONTACT PROBLEM
M 0K1	020123	C RM	A16	S D		011 CONT.VAC.BRRR.ISC.VLV. FAILED TO OPEN ON DEMND	FAILURE CF BARTON DIFFER-PRESS-SWITCH
G 0P1	016572*	M RM	A19	T O2		MSIV 80B AND 80C FAILED TO OPEN FULLY	VALVEGUILLE ROCS REQUIRED LUBRICATION
G 0R3	017652	X RM	A23	U		MAKE-UP VLV MUV-24 FAILED TO OPEN ON MAN.MPI INITI	TORQUE SWITCH SETTING TOO LOW
M 0V1	018725	B RM	A23	D		ALX. FEEDWATER CONT VLV WOULD NOT OPEN ELECTRIC.	BINDING TORQUE SWITCH
G 0C2	02062E	N RM	A24	S D		VLV 2-CV-5291 IN CONT.ATM-SMPL.LN. COULD NOT BE CP	SOLENOID VLV IN SUPPLY LN FAILED
L 0L1	022465	B RM	A24	S D		VAL YCV-1045 FAILED TO OPEN(AUX.FG.PRP-STM-INL.)	INSTRUMENT AIR SUPPLY T. VAL CLOSED
M 0A1	01925C	R RM	A25	T		VALVE (115W58) WOULD NOT OPEN DURING ROUTINE TEST	BINDING CF DISC ON RUBBER SEAT GASKET
G 0K1	019950	Y RM	A26	U		VALVE NP-2713 FAILED TO OPEN	OPEN LIMIT SW CUT OF ADJUSTMENT
G 0R2	014618	H RM	A26	D		VALVE 2-EA1-PV-1219D FAILED TO OPEN DURING TEST	LIMIT SW WAS CUT OF ADJUSTMENT
G 0A1	014728*	M RM	A26	T O4		MSIV VALVES 8401A,B,C,D DID NOT FULLY OPEN	LIMIT ANG TORQUE SWITCHES CUT OF ADJUST
M 0A1	021373*	K RM	A26	R T O2		SAMPLE ISO.VLV5 1551C76104 WOULD NOT OPEN	VLV-POSITION LIMIT SWITCHES CUT OF ADJUST.
G 0E1	018347	C RM	A27	U		VACUUM BREAKER 648-F3288 FAILED TO OPEN	LIMIT SW REPLACED AND A SOLENOID VALVE
B 0R3	019013	L RM	800	U		CORE FLOOD SAMP.150.VLV CFV-11 WOULDNOT CLOSE	CAUSE CF FAILURE UNKNOWN

REMOTE OPERATED VALVE

Y E A R	F L A N G	C O N T. N U. .	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C L A S S N U M B E R	K E Y	F A I L U R E M O D E	F A I L U R E M E C H A N I S M
B	DE1	016295	061577	L	RM	800	K	U			CONT. ISO. VLV IF0W-108 FAILED TO CLOSE	NO DEFINITE REASON FOUND FOR FAILURE
B	T12	022385	090878	C	RM	800		U			CONTAINMENT ISO. VALVE (WOL-V1125) FAILED TO CLOSE	UNKNOWN/COULD NOT BE REPEATED
G	CC1	016659	111776	C	RM	800	R	U			VALVE PC-238 AV FAILED TO CLOSE FULLY	CAUSE UNKNOWN, BELIEVED OPERATOR RELATED
G	DR2	019609	112477	C	RM	800		U			ISOLATION VALVE AC2-1601-63 WOULD NOT CLOSE	CAUSE COULD NOT BE DETERMINED
G	FP1	017741	042577	C	RM	800		U			FLOOR DRAIN LINE ISOLATION VALVE FAILED TO CLOSE	CAUSE UNKNOWN
G	PB3	016389	111076	Q	RM	800	R	U			RECIRC INBD. STM. SUP. ISO. (MO-3-13-15) FAILED TO CLOSE	CAUSED CF FAILURE NOT GIVEN
W	MA1	021150	042878	H	RM	800		U			STEAM LUMP VAL 408E STUCK OPEN FELL. TRIP	CAUSE NOT GIVEN
W	PR2	016284A	102576	F	RM	800		U			HGT LEG SAMPLE LOOP VLV CV-31807 FAILED TO CLOSE	UNKNOWN/RETEST WAS OK
W	SC1	020609	013078	F	RM	800		U			CONT SPRAY VLV (CV-517) FAILED TO CLOSE FOR TEST	UNKNOWN/POSSIBLE LUBRICATION PROBLEM
W	SU1	017654*	012577	M	RM	800	R	U	02		TWO SAMPLE SAVES (TV-SS-106A/106B) FAILED TO CLOSE	UNKNOWN/COLD SHUTDOWN NEEDED FOR MAINTEN
W	SU1	021295	042478	W	RM	800		U			MAIN STEAM TRIP VALVE B FAILED TO CLOSE	UNKNOWN/VALVE ACTUATOR TYPE UNKNOWN ALSO
W	SL2	017920	040976	N	RM	800	R	U			SAMPLE VALVE (TV-SS-201A) FAILED TO CLOSE	UNKNOWN/TESTED SAT BEFORE MAINT DONE
G	FP1	017237	030377	C	RM	801		D			FLOOR DRAIN ISOLATION VALVE FAILED TO CLOSE	VALVE OPERATOR IN OPEN OVERRIDE POSITION
S	I11	016661	120776	N	RM	802	K	L			48 INCH BUTTERFLY VALVE FAILED TO CLOSE/TESTING	PERSONNEL ERROR/INADEQUATE MAINTENANCE
G	DR2	019155	091277	K	RM	802	R	U			RECIRC SUCTION VALVE 202-48 WOULD NOT CLOSE	VALVE PACKING TOO TIGHT MAINT ERROR
W	YR1	018204	061177	C	RM	802		D			DRAIN VALVE (TV-209) FAILED TO CLOSE / TESTING	PERSONNEL MAINTENANCE/PACKING TOO TIGHT
W	CR3	017656B	041577	C	RM	804	R	D			VLV. CAV-2 FAIL. TO CLOSE; CONTAINMENT ISOLATION VLV	CLOSURE SPRING NOT STRONG ENOUGH
G	EN2	022500*	091078	L	RM	804		U	02		RHR VALVES 2E11-F003A, FC47A FAILED TO CLOSE	VALVE GATES SAG+BIND IN FULL OPEN POSIT
W	SL2	019752	111477	C	RM	804	R	D			SAMPLING VALVE TV-SS-202A FAILED TO CLOSE	DESIGN DEFICIENCY/CLOSING SPRING TOO WEAK
G	FP1	015240	071376	N	RM	806		D			VALVE ON RHR PROCESS SAMPLE LINE FAILED TO CLOSE	INCORRECT PROCEDURES USED

REMOTE OPERATED VALVE

PLANT	CONT.NO.	EVENT DATE	SYSTEM	FAIL CODE	TYPE	CORRECTIVE ACTION	FAILURE MODE	FAILURE MECHANISM
G VY1	019653	110177	C RM B09		T		VENTILATION SYSTEM VALVE (HVAC-10) FAILED TO CLOSE	CORROSION ON OPERATORS GUIDE RODS
B DE3	017661	012677	C RM B10		T		CONTNMENT ISO VAL 3RC-7 FAILED TO CLOSE	PAINT ON VLV STEM PREVENT. PROP. FUNCT.
C MY1	020762	021678	C RM B10		T		VALVE DR-A-6 FAILED TO FULLY CLOSE	PARTICLE LODGED IN VALVE SEAT
G BF1	019660	112377	Y RM B10		I		LIG.NITRO.TNK.PRESS.CONT.VLV FAILED IN OPEN POSIT.	CAUSE OF VLV FAILURE/FROZEN OPEN
W BV1	022135	080178	L RM B10		T		1B LOW HEAD SAFETY INJECTION PMP.HEAD.ISO.NOT CLOS	VLV FAIL.TO CLOSE DUE TO BORIC CRY.IN PAK
B DE1	014669	041476	N RM B12		D		ES VALVE PR-7 FAILED OPEN	VLV SPIND. BROKEN/LMT 6 TORQ SWT. INOPER.
G BR2	014625	030976	N RM B12		I		VLV 2-CAC-PV-1260 NOT INDICATING CLOSED/NOT CL.FUL	VLV PLUG REQUIRED RESIZING/LPER.SEALS REP
G PB2	016469	111876	W RM B12		D		MSIV AG-22-86B FAILED TO CLOSE	GGUGED VALVE STEM
G PB3	014471	030176	L RM B12		R D		B RHR OUTBOARD INJECTION VLV MO-1546 FAIL.TO CLOSE	VLV DISC SEPARATED FROM VLV STEM
E PB3	020373	011378	G RM B12		D		GAS CHARG VALVE TC 3A SBLC PUMP ACCUM FAILED OPEN	FAILURE DUE TO MECH BINDING OF VAL INTERN
W DC1	016607	120776	C RM B12		D		S/G SAMPLE ISOLATION VALVE FAILED TO CLOSE	LCUSE BLECK BETWEEN STEM AND ACTUATOR
W IP3	015134	061476	N RM B12		D		VALVE 956E WOULD NOT CLOSE	VALVE STEM HAD SLIGHT BOW
W IP3	022410	082978	E RM B12		U		CONTRGL VALVE LCV-1209B FAILED TO CLOSE	ACTUATOR FAILLRE
W SU2	014154	020476	W RM B12		D		MAIN STEAM TRIP VALVE (TV-MS-201A) FAILED TO CLOSE	SHAFT MISALIGNED IN STUFF BOX/DISC BOUND
W SU2	019211*	091077	N RM B12		R D 02		SAMPLING VALVES (TV-SS-206A/201B) FAILED TO CLOSE	OPERATOR LINKAGE NEED ADJUSTMENTS
E DE1	017418	031677	L RM B14		R T		VALVE 1FDW-108 FAILED TO CLOSE	VALVE PACKING FAILED (HARDENED)
E DE3	017451	032277	C RM B14		T		FEEDWATER CONTNMENT ISO VAL 3FDW-106 FAIL TO CLOSE	HARDENING OF VALVE PACKING
E DE3	070359	010578	L RM B14		R T		VALVE FDW-108 FAILED TO CLOSE	VALVE PACKING FAILURE
B T11	014988	052176	C RM B14		T		CONTAINMENT ISOLATION VALVE PU-V28 FAILED TO CLOSE	BINDING OF PACKING AND/OR STEM(ROCKWELL)
W IP4	022164	072878	W RM B14		D		MS 1 FOR LOOP 23 FAILED TO CLOSE COMPLETELY	STEM PACKING RESTRICTED VAL MOTION

REMOTE OPERATED VALVE

PLANT	UNIT	COMP. NO.	EVENT DATE	SYM	SO	CODE	FAIL CODE	TYPE	CLASS	DESCRIPTION	FAILURE MODE	FAILURE MECHANISM
KEL	C1675	011777	C	RM	814	T				VALVE BT-3A FAILED TO CLCE (BLOWDOWN ISO VLV)	OVERTIGHT PACKING	
KEL	020479	020178	W	RM	814	T				BLOWDOWN LINE ISO VLV FAILED TO CLCE FULLY	DRY HARC PACKING	
CR3	017655	041677	L	RM	816	S	D			VALVE FHV-3964G FAILED TO CLCE	DOC PRESS TRANSMITTER DIDNT SUPPLY SIGNAL	
CH3	018560	071577	C	RM	816	S	D			CONT ISO VALVE SWV-47 FAILED TO CLCE	LOOSE WIRE/CONTROL PWR TO LIMIT SWITCH	
TL1	015021	052676	N	RM	816	S	D			LIQUID RELEASE VLV FAILED TO CLCE ON AUTO SIGNAL	FAILED RELAY IN INTERLOCK CIRCUIT	
TL1	015180	062276	Y	RM	816	S	D	02		TWO VALVES FAILED TO CLCE GIVEN HI RADIATION SIG	COMMAND FAIL/MAINT REMOVED RELAY	
TY12	023429	121378	C	RM	816	S	D	04		FOUR CONT ISO VALVES FAILED TO CLCE ON TEST	RELAY FAILED TO PROVIDE LOGIC SIGNAL	
FC1	014261	041476	H	RM	816	S	D			HCV-383-4 FAILED TO CLCE ON TEST	BINDING CONTACT IN BREAKER TO VALVE	
MI2	019531	101477	C	RM	816	S	D			CONT ISO VLV 2-RC-002 FAILED TO SHUT ON COMMAND	CONDUCTORS FOR VLV OPERATOR WERE SHORTED	
SL1	018060	052777	U	RM	816	S	D			WATER FEEDWATER REG VLV FAILED OPEN	BLOWN FUSES	
BR2	014618	031976	Q	RM	816	S	D	02		TWO RCIC VALVES (E51-FC078F008) FAILED TO CLOSE/TEST	TWO RELAYS CONTROLLING VALVES FAILED	
CO1	020806	020778	F	RM	816	T	D			HPCI VALVE FAILED TO CLCE DURING TEST	NO SIGNAL FROM OP SWITCH	
DR3	014440	032476	J	RM	816	S	D			DRAIN VALVE 2-4999-74 BLOCK OPEN/DISCON. ELECTRIC.	FUNCTIONAL TESTING NOT IDEN IN PROCEDURES	
EN1	020028	090977	N	RM	816	S	D	02		RACU PUMP SUCTION VALVES FAILED TO ISOLATE SYSTEM	JUMPER WIRE LEFT IN CONTROL PANEL	
DC1	023117	112978	C	RM	816	S	D			MIN STEAM DRAIN VALVE V-1-106 FAILED TO CLCE	NO POWER TO VALVE, REFORMED FUSE HOLDER	
PB2	014154	050676	N	RM	816	S	C			LIG. WASTE DISCH. VLV AC-20-308 FAILED TO ISL. FLW	FLOW-INDIC. XMIT. DID NOT OPERATE PROPERLY	
PB4	020481	020678	N	RM	816	S	D			WASTE DISCHARGE VALVE FAILED TO CLCE/TESTING	COMMAND/RELAY FAILED IN CONTROL CIRCUIT	
PV1	015915	083076	Y	RM	816	S	D			CONTAINMENT VALVE FAILED TO CLCE/CONT VAC DROPPED	WIRING ERROR DURING FABRICATION	
HN1	022167	080478	K	RM	816	S	D			PRESS SPRAY VLV. STUCK IN INTERMEDIATE POSITION	FAILED TRANSISTOR IN WORTHINGTON SIGNAL-CM	
MA1	021152	041278	W	RM	816	S	D			TV-MS-101C FAILED TO CLCE REMOTELY	RELAY SCHEMATIC FOR VLV HAD AN OPEN COIL	

REMOTE OPERATED VALVE

Y N I	CCN1-NO.	EVENT DATE	C S P	U M S	RM	COOL	Y P E	C L C U M S P M Y	FAILURE MODE	FAILURE MECHANISM
	W Z11 02152	051878	L	RM	B16	S	D		FEEDWATER ISOLATION VALVE FAILED TO CLOSE/TESTING	CCMND/DIRTY CONTACTS ON CONTROL RELAY
	B OE1 019081	112977	U	RM	B19	R	T		VALVE FDM-108 FAILED TO CLOSE	VAL-STEM NEEDED LUBRICATION
	B OE1 021226	031578	U	RM	B19	R	T		VALVE 1FMD-108 FAILED TO CLOSE	VAL STEP NEEDED LUBRICATION
	B OF2 019862*	111677	L	RM	B19	R	T	O2	VALVES FDM-106 +108 FAILED TO CLOSE	LACK OF VAL STEM LUBRICATION
	G DR2 015748	061076	E	RM	B19	T			VALVE MD2-1402-48 FAILED TO CLOSE AGAINST PUMP HEAD	INADQUATE LUBRICATION OF VALVE STEM
	G DR2 022776	101378	L	RM	B19	T			THE 2-1402-48 FLOW TEST VALVE FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
	G DR2 022775	101878	L	RM	B19	T			LPG1 SUCTION VALVE MD-1901-5C FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
	* PR1 0174E7	031677	C	RM	B22	T			VALCUM BREAKER ISOLATION VALVE FAILED TO CLOSE	DIAPHRAGM DETERIORATED IN VALVE
	b CR3 022359	090778	C	RM	B23	U			CORE FLOOD VALVE CFV-15 FAILED TO CLOSE ON TEST	FALTY TORQUE SWITCH
	R CE3 014927	050476	L	RM	B23	U			VALVE 3CS-5 WOULD NOT CLOSE REMOTELY	TORQUE SWITCH FAILURE
	R Y12 021611	041978	C	RM	B23	D			CLNT-ISO-VLV CA-V3 FAILED TO FULLY CLOSE ON AUTO	--SIGNAL//INCORRECT TORQ-SWITCH SETTING
	G BR2 014617	031176	N	RM	B23	D			PRI-ISC-VLV 2-CAC-V22 COULD NOT BE CLOSED REMOTELY	TORQUE SWITCH INCERPERABLE/REPLACED SWITCH
	G BF2 019134	091877	N	RM	B24	S	U		VLV FCV 77-15B INOPERABLE IN OPEN POSITION	CCMND / SV FSV-77-15B FAILED
	* JF1 019845	120277	K	RM	B24	T	D		PR2-SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT
	W JF1 020287	011778	K	RM	B24	T	D		PR2-SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT
	R OE3 023396	121678	N	RM	B26	B	T		ISOL VALVE 3FDM-106 FAILED TO CLOSE (RECURRING)	REPAIRED LIMIT SWITCH
	G P83 018472	072877	C	RM	B26	T			CRYWELL VACUUM BREAKER FAILED TO FULLY CLOSE	LIMIT SW1.CH WAS OUT OF ADJUSTMENT
	W IP3 021514*	070378	N	RM	B26	C	D	U4	S/G SAMP-VLVS 1223A,24A,25A,626A WOULDNT CLOSE	--SIGNAL//FAIL-OF SNAP LOCK LIMIT SWITCHS
	B CR3 020079*	100577	N	RM	C00	U	O2		RAD.GAS FROM MKUP TR-LEAK.PAST VLVS TO COND AIR RS	CAUSE CF VLV LEAKBY NOT GIVEN
	B R51 021746A	061178	K	RM	C00	U			A BLOCK VALVE UN ELECTRO RV LEAKED THRU/TESTING	UNKNOWN/RECORDED VALVE

REMOTE OPERATED VALVE

VE N	P L A N T	C O N T . N O .	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O M P H	K E Y	F A I L U R E M O D E	F A I L U R E M E C H A N I S M
C	FC1	019621*	112777	C	RM	C00		U	02	V	POSSIBLE INTERNAL LEAK OF CONTNMT PURGE VALVES	CAUSE OF LEAKAGE NOT GIVEN
C	FC1	020818*	022278	N	RM	C00		U	02		CONTNMT ISO VALVES HCV-1388A+HCV-1388B LEAKING	CAUSE OF LEAK UNDETERMINED
G	BR2	020969	032478	M	RM	C00		U			DIR. CONT. VLV 122 LEAKING BY SEAT; CAUS. ROD 18-47 N.O	NO CAUSE GIVEN/ROD OUT MOTION STOP; VLV RP
G	EM1	014766*	032776	C	RM	C00		U	16		SIXTEEN VALVE BOUNDRIES LEAKING EXCESSIVELY	VARIOUS MODES OF FAILURE
G	FP1	023100*	120178	C	RM	C00		U	05	Z	CONT. ISOL VALVES LEAKING THRU	REPLACE OR REPAIRED
G	MI1	020722*	032078	M	RM	C00		U	02		MSIVS (1-MS-1A,1C) LEAKING IN EXCESS OF T.S. LIMIT	CAUSE OF LEAKAGE NOT GIVEN
G	MI1	020722C	032078	N	RM	C00		U	02		ATMOS. CONT. VLVS (1-AL-5,6) LEAKING IN EXCESS OF T.S.	CAUSE OF LEAKAGE NOT GIVEN
G	VY1	015230*	063076	C	RM	C00		U	04		4 PRIMARY CONTAINMENT VALVES LEAKED THRU/TESTING	UNKNOWN
G	VY1	019105*	082077	C	RM	C00		U	07		SEVEN PRIMARY CONTAIN. ISOL VALVES LEAKED THRU---	--DURING TESTING//UNKNOWN(TO BE REPORTED)
G	VY1	021957*	071178	C	RM	C00		L	05		FIVE CONTAINMENT ISOLATION VALVES LEAKED THRU/TEST	UNKNOWN/PROBABLE SEAT PROBLEMS
M	BV1	020796	020178	K	RM	C00		U			PRESSURIZER SPRAY VALVE LEAKED THRU	UNKNOWN
M	Z11	016574*	112376	N	RM	C00		U	02	V	CONTAINMENT ISOLATION SAMPLE VALVES LEAK THRU	UNKNOWN
B	T11	016830A	051076	C	RM	C04		D			VALVE LEAKED THRU DURING CONTAINMENT LEAKRATE TEST	DESIGN IMPROPER
B	T11	016830B	051076	C	RM	C05		C	D	02	2 VALVES LEAKED THRU ON CONTAINMENT LEAKRATE TEST	FAB ERROR/SEAT RINGS WELDED IMPROPERLY
B	T11	016830C	051076	C	RM	C07		T	G3	A	SOME VLVs LEAKED THRU ON CONTAINMENT LEAKRATE TEST	NORMAL WEAR
G	EN1	021085*	041178	C	RM	C07		T	G3	B	VARIOUS CONTNMT ISOLATION VALVES LEAKING	NORMAL WEAR ON VALVE COMPONENTS
M	RE2	019343	061077	C	RM	C67		R	T		CV PURGE OUTLET INNER VALVE NOT OPERABLE	EXCESSIVE INTERNAL LEAKAGE THROUGH VALVE
B	BR1	018854*	072677	C	RM	C10		L	T	02	ISOLATION VALVES LEAKED THRU DURING CONT LEAK TEST	FOREIGN MATERIAL PROBABLY CAUSED LEAKAGE
C	MY1	022144	072178	C	RM	C10		T			CONTNMT ISO VALVE PD-A-122 LEAKING INTERNALLY	PLASTIC ELECT TIE-WRAP LODGED
G	DR3	021461	042478	F	RM	C10		T			FIRE PUMP TANK LEVEL CONTROL VALVE STUCK OPEN	PIECE OF METAL STUCK IN VALVE

REMOTE OPERATED VALVE

<u>VE N</u>	<u>PL AN T</u>	<u>CONI.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C U M P</u>	<u>FAIL CCUE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C O N N U M P M</u>	<u>K E Y</u>	<u>FAILURE MOD.</u>	<u>FAILURE MECHANISM</u>
G	PG1	019470	101277	C	RM	C10	T				VALVE CV-7436 LEAKING INTERNALLY IN EXCESS OF T.S.	DIRT AND SCALE ON SEATING SURFACES
W	PT2	014491	042376	C	RM	C10	T				CONTAINMENT SUPPLY VALVE 2CV-3245 LEAKED / TEST	DIRT ON MATING SURFACES OF BUTTERFLY VALV
W	PT2	017721	041977	N	RM	C10	T				CONTAINMENT ISOLATION VALVE LEAKED THRU	SLUDGE ON SEAT OF COPE-S-VULCAN WCD F VALV
W	YR1	023146	120578	C	RM	C10	T				TRIP VALVE TV-207 (CONTAINMENT ISOLATION)LEAK THRU	SUSPECTED FOREIGN MATERIAL UNDER SEAT
G	EN1	018169F	051877	W	RM	C12	D				MSIV INBOARD "A" LEAKING INTERNALLY	STROKE NEEDED ADJUSTMENT
W	BV1	023318*	122078	C	RM	C12	C	D	02	V	CONT.AIR EJECTOR PENET. ISO. VLVs. LEAKING	RUBBER VLV.SEAT WARPED & UNABLE TO SEAL
W	DC1	017245A	022277	C	RM	C12	B	D	03	S	SEVERAL CONTAINMENT ISOLATION VALVES LEAKING THRU	LOOSE ACTUATORS WERE PRIMARY CAUSE
W	DC1	021769A	062178	C	RM	C12	B	U	02	V	CONTAINMENT PURGE VALVES LEAKING THRU ON TESTING	ADJUSTMENT OF BUTTERFLY VALVE/DESIGN PROB
W	KE1	018046A	032177	C	RM	C12	D	03			EXCESS LEAKAGE THROUGH CONTMNT ISO VALS (THREE)	VALVE STROKE ADJUSTED
W	KE1	018046C	032177	C	RM	C12	U				EXCESS INTERNAL LEAKAGE CNTMNT ISO VLV	VAL INTERNALS OUT OF ADJ
W	PR2	016354*	112276	C	RM	C12	D	03			VALVES IN 3 PM SHOWED EXCESSIVE LEAKAGE/TESTING	1REPLACE STEM/SEAT2JAMMED NUT3MALADJUSTED
W	PT1	014097*	010876	C	RM	C12	U	09			NINE VALVE FAILURES/INTERNAL/EXTERNAL LEAK/TESTING	LOOSE BODY TO BONNET/IMPROPER SEATING
W	SA1	017785	051277	N	RM	C12	R	D			SPRAY VALVE(1PS3) LEAKED THRU/PRESS DECREASED	VALVE OPERATOR ADJUSTMENT PROBLEM
W	SA1	018800*	073177	N	RM	C12	R	D	03		SPRAY VALVES (1PS1/2/3) LEAKED THRU	VALVE OPERATOR ADJUSTMENT PROBLEM
G	FP1	022465*	051478	C	RM	C13	C	U	03		VAC BREAKER VALVES 27-VB-3,4,5 LEAKED EXCESSIVELY	REPLACED "O" RING SEALS
W	NA1	022933	110178	W	RM	C13	T				PAIN STEAM TRIP VALVE I-TV-MS-111A LEAKING THRU	DETERIORATED INTERNAL GASKEY
C	FC1	016000*	100476	N	RM	C14	T	02	V		CNTMNT PURGE ISO VALVES LEAK IN EXCESS OF SPEC	VALVE PACKINGSEALS OUT OF ADJUSTMENT
W	RC2	020161	122277	B	RM	C19	T				VALVE V2-14C LEAKING INTERNALLY / NOT SHUT FULLY	INSUFFICIENT VALVE STEM LUBRICAYION
W	YR1	018872A	081777	C	RM	C22	T				EXCESSIVE LEAKAGE THRU (TV-408) CONTAINMENT VLV	DETERIORATED DIAPHRAGM
G	EN1	018169G	051877	U	RM	C23	T				1 CONDENSATE DRAIN VALVE LEAKING EXCESSIVELY	TCRCUE SWITCH OUT OF ADJUSTMENT

REMOTE OPERATED VALVE

VEN	PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CUNUM	KEY	FAILURE CODE	FAILURE MECHANISM	
C	FC1	023140*	120578	C	RM	C25		U	02	V	CONT PURGE VALVES LEAKING THRU	MODIFICATIONS DONE DURING REFUEL OUTAGE	
G	FP1	018477*	072877	W	RM	C25		T	12	Z	PRIMARY CONTNMT ISOLATION VALVES LEAKING INTERNALLY	WEAR OF VALVE SEATS AND DISKS	
G	PI1	019694*	111377	C	RM	C25		T	18		18 PRI CNTNMT ISO VALVES LEAKING IN EXCESS OF T.S	NORMAL DETERIORATION OF DISK/SEATS	
W	DC1	014736*	050276	C	RM	C25		C	I	C3	B VALVES LEAKED THRU DURING CONTAINMENT ISOL TESTING	SEAT PROBLEMS/DEPOSIT BUILDUP AND WEAR	
W	IP2	014209	012376	C	RM	C25		T			INTERNAL LEAKAGE THROUGH VLV FCV-1171	DISK DID NOT SEAT PROPERLY	
W	KE1	016986*	020377	C	RM	C25		T	04		EXCESS LEAKAGE THROUGH CONTNMT ISO VLVS (FOUR)	FAILURE OF RUBBER VALVE SEATS	
W	KE1	018046B	032177	C	RM	C25		T			EXCESS LEAKAGE (INTERNAL) CONTNMT ISO VLV	VALVE SEAT CLEANED	
W	PR1	017488A	032477	C	RM	C25		C	T	02	V	PURGE SUPPLY VALVES(BUTTERFLY)/LEAKED THRU	SEAT PROBLEM/REPLACED SEATS
W	PR2	015335	080676	C	RM	C25		T			NITROGEN SUPPLY VALVE CV-31554/EXCESSIVE LEAKAGE	NEW SEAT AND GASKETS WERE INSTALLED	
W	PR2	016947	011177	C	RM	C25		D			CONTAINMENT ISOLATION VALVE CV-31349 LEAKING THRU	GALLED CAGE AND PLUG STEM/REPLACED SAME	
W	PR2	023222*	112878	C	RM	C25		B	U	02		OUTER CONT. EXH & SUPPLYS(25A&25B) LEAKING THRU	SEATS NOT ADJUSTED PROPERLY(RECURRING)
W	RC2	022681	100378	C	RM	C25		T			42IN BUTTERFLY VAL LEAKING PAST SEAT	NORM WEAR OF NORDOL RUBBER SEAT	
W	YR1	018872	081777	C	RM	C25		D			EXCESSIVE LEAKAGE THRU (TV-211) CONTAINMENT VLV	WORN SEAT AND DISC	
G	BF1	022255A	090378	C	RM	D00		D			VLV FCV-68-77 WAS LEAKING AT THE BONNET	NO CAUSE GIVEN FOR BONNET LEAKAGE	
G	DF2	019154	091377	W	RM	D07		T			MSIV 203-28 HAS PACKING LEAK	PACKING REACHED NORMAL END OF LIFE	
G	DR2	020950	033078	H	RM	D08		T			VALVE MD-2301-3 LEAKING EXTERNALLY	STEAM CLT OF SEAL RING	
G	MU1	023798	111478	F	RM	D09		T			PINHOLE LEAK IN CV-1729,RHR D/P CONTROL VALVE	CORROSION/ERRSION OF UPPER VALVE BODY	
G	EM1	018189E	051877	C	RM	D13		T	02		2 PURGE EXHAUST VALVES LEAKING EXCESSIVELY	FAILED C-RING GASKET	
C	CC2	018929	082077	K	RM	D14		T			PRESS.SPRAY VLV 2-CV-100E LEAKING EXTERNALLY	LEAK.DUE TO FAILED PACKING	
C	FC1	021528	051478	C	RM	D14		T			VALVE PCV-742D LEAKING EXTERNALLY	VALVE PACKING TIGHTENED	

REMOTE OPERATED VALVE

<u>V</u>	<u>L</u>	<u>P</u>	<u>N</u>	<u>I</u>	<u>CONT.NO.</u>	<u>EVENT</u>	<u>DATE</u>	<u>S</u>	<u>C</u>	<u>U</u>	<u>M</u>	<u>FAIL</u>	<u>CLDE</u>	<u>T</u>	<u>C</u>	<u>U</u>	<u>N</u>	<u>M</u>	<u>U</u>	<u>K</u>	<u>E</u>	<u>Y</u>	<u>FAILURE CODE</u>	<u>FAILURE MECHANISM</u>
C	PA1	015438	082376	C	RM	D14	T																VALVE CV 1808 LEAKING IN EXCESS OF T.S.	VALVE PACKING FAILURE
G	BF1	022255B	090378	C	RM	D14	T																VLV FCV-69-1 WAS LEAKING AT THE PACKING INTO DRYWL	NCHMAL PACKING LEAK,ADJ.PACK.,LEAK STOPPD
G	DR3	016014	091876	C	RM	D14	T																ISOLATION VALVE 3-1601-23 LEAKING IN EXCESS OF T.S.	FAILURE OF VALVE PACKING
W	PR2	023221	112876	L	RM	D14	U																RHR HX OUTLET VALVE CV-31239 LEAKING EXTERNALLY	DETERIORATION OF PACKING
G	PB2	019187	092677	H	RM	D22	R	U															HPCI OIL SYST CONT VAL LEAKING OIL	DIAPHRAGM LEAKING
G	PB3	019556	102677	H	RM	D22	R	D															OIL LEAK FOUND ON HPCI OIL PRESSURE CONTROL VALVE	OIL LEAK WAS CAUSED BY A SPLIT DIAPHRAGM
W	JF1	021186	032076	W	RM	D24	S	D															MSIV VCO2 FITTING ON AIR SUPPLY LEAKING	SOLDERED CONNECTION LOOSE
B	DE3	016900	112176	C	RM	F00	U																CNTNMMT FEED WATER ISO VAL INCOPERABLE	CAUSE UNKNOWN (PROBABLE INTERNAL PROBLEM)
G	BR1	020765	022778	H	RM	F00	U																PRECCAT PRESS.CONT.VLV G31/ZC02-V54 IMP.IN.PRESS.	CAUSE OF VLV NOT MAIN. PROP.PRESS.NGT GIV
G	BR2	015434*	073076	W	RM	F00	U	O2															MSIVS INB.B32-F022D&OUTB.B32-F028D RESTRICTED FLGW	CAUSE UNDER INVESTIGATION
G	BR2	018153	050977	S	RM	F00	T																SERVICE H2O VALVE E11-F068A FAILED TO OPERATE RM	CAUSE UNKNOWN POSSIBLE DIRTY CONTACTS
G	CG1	015351	061776	C	RM	F00	U																VALVE PC-238AV WOULD NOT CLOSE IN 15 SECONDS	CAUSE UNKNOWN / POSSIBLE LLB PROBLEM
G	DR3	017977*	060677	H	RM	F00	U	O2															IRREGULAR OPERATION OF TWO SCRAM PILOT VALVES	CAUSE UNKNOWN
G	FPI	016413	111176	W	RM	F00	U																THE INNER MSIV ON STEAM LINE D FAILED TO OPERATE	CAUSE UNKNOWN
W	BV1	021298	050978	N	RM	F00	R	U															SLRP DISCH VALVE STAYED OPEN ON HI PH CONDITION	UNKNOWN (SEE LER NO. 020650,POSS CONNECT)
W	BV1	023039	082678	N	RM	F00	R	U															CHEM WASTE SUMP VALVE FAILED TO OPERATE PROPERLY	UNKNOWN(SEE LERS NO.C20690 AND 021298)
W	SA1	022161	061578	B	RM	F00	U																AUX FEED MAKE-UP VALVE (1DR6) FAILED TO OPERATE	UNKNOWN
W	YPI	019495	102477	F	RM	F00	U																REGULATOR VALVE FAILED TO OPER.(CONTROL PRESSURE)	UNKNOWN / SETPOINT DRIFT / ADJUSTED VLV
G	EN1	018194	060477	L	RM	FC2	D																LPCA VALVE E11-F017B CYCLE TIME OUTSIDE T.S.	VALVE STEM PACKED TOO TIGHTLY
W	BV1	018728	060177	U	RM	FC2	R	D															1B FEEDWATER REG. VLV.OPERATING IMPROPERLY	LOOSE LOCK PLATE DUE TO OVER TORQ.OF BELT

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REMOTE OPERATED VALVE

PLANT	CONT. NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CONTR. PM	KEY	FAILURE CODE	FAILURE MECHANISM
W IP2	021627*	040178	U	RM	FC2		D 02	V		F1.TEMP.SHUTOFF VLVS IN MN.STM.SUP.TO #22 FEEL FL-	-PP WOLDN'T OPER.AUTU.//PERSONNEL ERROR
U DB1	022647*	071678	U	RM	FC3		D 02	V		POWER REMOVED FROM FEEDWATER STOP VALVES FOR TEST	PERSONNEL ERROR, FAILED TO RESTORE POWER
C SL1	021233	053078	U	RM	FC3		D			15% FEEDWATER BYPASS CONT VLV INADVERT.OPENED FL-	-LY//ANALYTICAL SETTINGS UNREALISTIC
G PA1	017312	021977	H	RM	FC3		D			CONTACT BLOCK FOUND INSTALLED IN VALVE CIRCUIT	PERSONNEL ERROR, FAILED TO REMOVE AFTER TS
G AC1	018465*	062377	K	RM	FC5		D 02	V		SGTS TRAH "AM" ISC.VLV.CONTROLS INSTALLED IMPROPER	FABRICATION ERROR
P TI2	023543	120278	U	RM	FC6		D			MAIN FEED REG VALVE PINNED OPEN, EXCESS FLOW RESULT	DEFECTIVE PROCEDURES
C DA1	014167*	011676	C	RM	FC6		D 03			PCIS CV 4300, 4303, 4309 NOT CLOSING IN PROPER TIME	CLOSING TIME TECH SPEC IN ERROR
G PB2	015884*	052176	L	RM	FC6		D 03	Z		TRIP LEVEL FOR CORE SPRAY SET IMPROPERLY	DEFECTIVE PROCEDURES
G PB3	015661*	092176	C	RM	FC6		D 03	Z		TRIP LVL.SET.FOR ECCS VLVS SET AT WRONG PRESSURE	MISUNDERSTANDING BETWEEN MSSS & LICENSE
W PP2	016038*	100676	N	RM	FC6		D 02	V		POST-LCCA HYDRO.CONT.SYS.VLVS.LEFT INCAPABLE OF B-	-BEING CLOSED IN 1 MIN.//DEFECTIVE PROCED.
W RP2	019244	061977	N	RM	FC7	R	T			CV PUNGE OUTLET INNER VALVE INOPERABLE	NORMAL WEAR TO RUBBER SEAT
U DE2	016210	100776	C	RM	F12		C			VALVE 2LWD-1 INOPERABLE	COMPRESSION FOOTROLL PIN BROKEN
C MA2	017891	030676	S	RM	F12	R	D			SEAWATER TEMP CONTROL VLV INCOPERABLE	TENSION PIN SHEARED BETW VAL AND OPER
C MT2	017346	030277	S	RM	F12	R	D			C RBCGW HA SERV WAT OUT TEMP CV FAILED TO OPERATE	SHEAR OF PIN COUPLING OPER TO STEM
C NI2	023211	110778	S	RM	F12		D			RX BLDG COOLING WATER VALVE FAILED TO OPERATE	FAILED TENSION PIN BETWEEN VALVE/PERTOR
G DA1	014729	052076	W	RM	F12		D			MSIV LEAKAGE CONTROL SYSTEM INLET VALVE INCOPERABLE	BINDING OF MECHANICAL INTERLOCK
G DA1	014668	061476	W	RM	F12		U			MSIV 4420 CLOSING TIME OUTSIDE T.S. REQUIREMENTS	CLOSE THROTTLER OUT OF ADJUSTMENT
G EN2	022466*	092678	L	RM	F12		D 02			RESTRICTED FLOW THROUGH RHR SYSTEM CONTROL VALVES	DAMAGE/CAVITROL TRIPS IN VALVES
C PB3	014525	042776	N	RM	F12		D			MC-12-68 RWCU RETURN ISO.VLV HAD TOO SLOW CLOSING	VALVE STROKE WAS OUT OF ADJUSTMENT
C QCI	016115	051277	W	RM	F12		D			CONTROL VALVE IN MS SYS FAILED TO OPERATE	MECH FAILURE WHICH LOST FEEDBACK SIGNAL

REMOTE OPERATED VALVE

Y E N T	F L A M E	CONT.-NO.	EVENT DATE	S Y M B O L	C O D E	U R N	F A I L C O D E	I Y A P S E S P M Y	C L A M K M U E	FAILURE MECHANISM
M	BV1	018831	072277	U	RM	F12	R	D	1A	FEED REGULATING VLV WAS OPERATING IMPROPERLY
M	Z11	021231	041478	C	RM	F12	D			VALVE LOCK PLATE CAME LOOSE;BULT FAIL.
M	Z12	018392	062877	C	RM	F12	D			VALVE WAS OUT OF ADJUSTMENT
M	Z12	020718	022478	Y	RM	F12	D			BINDING BETWEEN PLUG AND SEAT
B	AP1	014837*	051276	N	RM	F14	C	T	02	VALVE NEEDED ADJUSTMENT
S	DR3	015158	050376	N	RM	F14	T			FRICTICN BETWN STEM & PACKING DUE TO AGE
G	M11	021352	042478	F	RM	F14	Y			DRY VALVE PACKING
M	HN1	018967	091677	N	RM	F14	U			VALVE PACKING TOO TIGHT
B	AK1	014637A	051276	N	RM	F16	S	C		BINDING OF VALVE PACKING GLAND
B	AP1	014837B	051276	N	RM	F16	S	D		DIRTY RELAY CONTACT
B	AK1	017521	031077	N	RM	F16	T	D		LOOSE CONNECTION AT TERMINAL PLUG
B	CR3	019978*	121477	C	RM	F16	S	D	03	CIRCUIT BREAKER OVERLOAD HEATERS FAILED
B	CK3	023005	100478	L	RM	F16	S	D		ONE RELAY FAILED/INSUL BETN CONTACTS(CC)
B	DB1	021823*	062978	C	RM	F16	S	D	02	NC SIGNAL PROP FLCW CONTROLLER
B	Y11	021924	060578	N	RM	F16	S	D		BROKEN WIRES AT CONNECTORS(CLUMSINESS)
C	LC2	018881	062977	F	RM	F16	S	D		FAILED TRIRECTOR CAUSED SHORT CIRCUIT
C	FC1	023139	112478	L	RP	F16	S	D		VLV PLACE-CUT OF SERV.DUE TO FAIL-RESIST.
C	MY1	020756	020277	H	RM	F16	S	D		VALVE CLOSING RELAY NOT REWIRED AFT MAINT
C	BF1	014665	041176	Q	RM	F16	S	D		CAUSE UNKNOWN
C	RM1	020637	031478	C	RM	F16	S	D		TRANSFER SW158M-205A877400J8AD DESIGN
										DEFECTIVE SWITCH ON CONTROL BOARD

REMOTE OPERATED VALVE

PLANT	UNIT	CONT. NO.	EVENT DATE	SUBJECT	FAILURE CODE	FAILURE MODE	FAILURE MECHANISM
G	CC1	C16253	100976	G RM F16	S 0	A SLC INJECTION WAS FOUND INOPERATIVE	8LLUM FUSE DUE TO IMPROPER SIZE WIRING
G	CA1	C14734*	C52076	M RM F16	S 0 02	MSIV 8402A & D (LEAK-CONT-SYS-IN-JINADVERT-CYCLED	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
G	UA1	Q21662*	061778	M RM F16	S 0 02	V BACK UP SCRAM VALVES OPEN WHEN REQUIRED SHUT	LCCSE ALX SW SCREWS CAUSED FALSE SIGNAL
G	EN2	C22753*	110678	F RM F16	S 0 02	V HPCI CONTROL VALVES FAILED TO OPERATE	WIRE LEFT OFF BY MAINT PERSONNEL
G	M11	Q22749	101978	G RM F16	S 0	THE ISG-COND.150.VLV 1-1C-3 SPURIOUSLY OPENED	FAILURE OF SWITCHES IN LOGIC CHANNEL
G	M01	O15755	082576	C RM F16	S 0	370 COOL.15G.VLV. EXPERIENCED LOSS OF POWER	FAILURE OF RELAY COIL IN CCNT. CIRCUIT
G	NM1	G18259	063077	F RM F16	S 0	NO.12 INLET INSIDE 1V-8140-01)FAIL TO OPERATE	FAILURE OF ELECT CONTACTOR (CLOSING)
M	B11	G20250	C20178	N RM F16	S 0	SUMP CAUSTIC VALVE OPENED DUE TO ERRONEOUS SIGNAL	DETECTOR FILLED WITH RESIN BEADS
M	UC1	O150E2*	061776	P RM F16	S 0 05	Z ALL VALVE ON CCNT CENTER 1-AZV-A WERE WITHOUT POWER	BREAKER TRIPPED(SHORT DUE TO PERSON ERROR
M	UC1	O17370*	030577	K RM F16	S 0 02	VALVES GCM-250 AND IMC-53 LOST POWER TO THEM	BREAKER OPENED DUE TO RELAY FAILURE
M	KE1	O15967*	092376	L RM F16	S 0 02	Z FEEDWATER ISOLATION VALVES FAILED TO OPERATE	COMMAND/FAILED OF RELAY/NO SIGNAL
G	NM1	O16257A	071377	M RM F22	0 26	SCRAM PILOT VALVES FAILED TO OPERATE CORRECTLY	PRESS & EXH DIAPHRAGMS TORN OR CRACKED
M	JF1	Q22988	100978	C RM F22	0	INST AIR PRESSURE CONTROL VALVE FAILED OPEN	DIAPHRAGM FAILED
B	AA1	C22339	072078	G RM F23	T	SODIUM THIOSULFATE BLOCK VLV CV-2411 FAIL. TO OPER	TORQUE SETTING OUT OF ADJ DRY PACKING
M	1P2	O187878	050777	F RM F23	0	VALVE 8228 DID NOT OPERATE PROPERLY	TORQUE SWITCH MALFUNCTION
B	AR1	C16465	112276	N RM F24	S 0	CELUGE VALVE INADVERTENTLY TRIPPED OPEN	SEALING PRESS TO IT LEAKED OFF(COMMAND)
G	BRI	G19484	051577	K RM F24	T 0	PRESS-CONT.VLV LO-PCV-1739 DRIFTED OPEN/NOT-GEN TR	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT
G	BA1	O19493	102577	K RM F24	T 0	PRESS-CONT.VLV LO-PCV-1739 DRIFT-OPEN/INTR-GEN TRIP	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT
G	P11	C21963*	071078	X RM F24	S 0 02	SCRAM VALVES FOR CRD 38-47 SLOW ACTUATING	STICKY ASCD SCLENCIO VLV IN SUPPLY SYS
M	JF1	Q22633*	090978	B RM F24	S 0 03	CONTROL WAS LOST ON FLOW CONT.VLVS 3228A,B&C	DEFECTIVE RELAY IN TOAFP CONTROL CIRCUIT.

REMOTE OPERATED VALVE

P Y N I	CLM.NO.	EVENT DATE	SO SP	C RM	FAIL CODE	Y A P E S P R Y	C L U N K E S P R Y	FAILURE CODE	FAILURE MECHANISM
M	5A1 017659*	042977	R	RM	F24	S	0	C2	TWO VALVES FAILED TO OPERATE IN REQUIRED TIME)
B	CR3 018259	071577	C	RM	F26	T			SCV BLEED-CFF UNDERSIZED/DESIGN PROBLEM DIRTY LIMIT SWITCH CONTACTS
C	BR2 018693	072877	N	RM	F26	U			DIRTY LIMIT SWITCH CONTACTS LIMIT: 5N PROBLEM
G	DA1 018312*	030976	M	RM	F27	T	06		OUT OF PCUMC PILOT VALVE DISKS
B	CA3 022361	061978	L	RM	G16	T	0		LCSS OF 12C VCLT AC VITAL BUSINVERTER)
L	CC2 020157	010378	M	RM	G16	S	0		POSITIVE GROUND ON VLV5 CONTROL CIRCUIT
G	BA2 016398	106976	G	RM	G16	S	0		FAILURE IN REIC ISOLATION CIRCUITRY
G	FA1 015564	072076	L	RM	G16	S	0		DEFECTIVE SWITCH SUPPLYING SIGNAL TO VALV
M	5A1 022873*	130678	F	RM	G16	S	0	02	IMMOVEMENT TRIP SIGNAL, DESIGN PROBLEM DT
G	CC1 018459	061177	H	RM	G24	S	0		MALFUNCTION IN LOCAL VALVE CNT STAT CIRC
M	5A1 017155A	021077	M	RM	G24	S	0		EXCESS DIFF PRESS ON PISTON OF MSIV
B	LE1 020762	022878	M	RM	I00	U			CAUSE OF RAIS-MET-ON SPR.GUID.TUBE-UMKROW
L	CC1 018703	033176	S	RM	I04	R	0		PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL
C	SL1 017669*	040877	N	RM	I04	U	02		DESIGN ERRCR IN SIZING THE VALVES
M	IP2 016467*	120276	C	RM	IC4	R	0	07	PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL
M	IP2 0192E1*	101977	C	RM	IC4	R	0	02	DESIGN ERRCR IN SIZING THE VALVES
M	NA1 021148	040778	N	RM	IO4	U			PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL
M	J-1 020446	012178	L	RM	IO6	U			PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL
G	MH1 016257B	071377	M	RM	II3	U	26		PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL
C	M12 0106G2	102877	M	RM	TO1	U			PCGR DESIGN/PIPE ERRCDED DOWNSTREAM OF VL

REMOTE OPERATED VALVE

UNIT	CONT. NO.	EVENT DATE	S U S P	FAIL CODE	T Y A S E	C M K	FAILURE POCE	FAILURE MECHANISM
G EN1	G18142	051777	N RM	T01	D		FAILED TO TEST AUTO. ISC. VLV'S, RADWASTE DISCH LINE	PERSONNEL ERROR
G EN2	G23035	110978	C RM	T01	D		VACUUM BREAKERS NOT TESTED AS REQ BY TECH SPECS	PERSONNEL ERROR
M DC1	G17794	042777	M RM	T01	D		DISCOVERED SAMPLE VALVE NOT TIMED AFTER MAINTENANC	PERSONNEL ERROR/TECH SPEC VIOLATION
M PR2	G17694	042276	S RM	T01	D		COOL. WTR. SYS. ISC. VLV'S. TEST NOT PERF. IN REQ. TIME -	--LIPIT//PERSONNEL ERROR
M DC1	G17246	030377	M RM	T02	D		CLOSING TIME NOT TESTED ON S/G BLOWDOWN VALVE	MAINTENANCE PERSONNEL ERROR
M NA1	G22938	092778	M RM	T02	D		AFTER MAINT, VLV'S TV-80100A, B, D, F NOT STROKE TIMED	MAINTENANCE PERSONNEL ERROR
G CC1	G18694	072577	L RM	T03	D		4 ISOLATION VALVES NOT LEAK TESTED	PERSONNEL ERROR
G DA3	G18551	072577	L RM	T03	D		SURVEILLANCE TEST NOT COMPLETED ON LPC1 VALVES	PERSONNEL WERE 6 DAYS LATE COMPLETING TEST
G DA3	G19059	102677	F RM	T03	D		SURVEILLANCE TEST NOT COMPLETED ON TIME	PERSONNEL ERROR(RECURRING PROBLEM)
G EN1	G14106	010276	D RM	T03	D		CCRE SPRAY TEST NOT DONE IN REQUIRED TIME	PERSONNEL ERROR
M DG2	G22793	102378	P RM	T06	D		FLUR OR MORE VALVES NOT TIMED AFTER MAINT(YS VIOL)	PROCEDURAL PROBLEMS
M TA1	G15172	042176	S RM	T06	D		DISCOVERED THAT MANY VLV'S WERE NOT TESTED AS REQ.	PROCEDURE INADEQUACY/REVISED PROCEDURES
B CP3	G17342	030777	H RM	V01	S	D	*RM LGUP OF HPI SYS. ISGL. CONT. TC T-S. FOR MAINTENC	PERSONNEL ERROR
B CP3	G17658	042177	F RM	V01	S	D	SUCT. VLV'S CAV-38640 FROM BORIC ACID STOR. TANK. SHUT	T-S. VIO./PERSONNEL ERROR/IMP. VLV LINEUP
B CR3	G23237	103078	M RM	V01	S	D	CONC. BORIC ACID TR. DISC. VLV'S. CAV38643 CLOSED; TS VI	PERSONNEL ERROR/IMPROPER VALVE LINEUP
C M12	G16721	121976	G RM	V01	S	D	VLV 2-CH-514 WAS NOT RECLOSED FOLLOWG. AN SRA5 ACTU	PERSONNEL ERROR/VALVE NOT CLOSE PROCP. TIM)
G BA2	G20372	032778	C RM	V01	S	D	RX. INSTR. PENET. VLV CAC-PV-3439 FOUND CLOSED; TS VIO	PERSONNEL ERROR/VALV SHLT BY MISTAKE
G DA1	G14733	052876	C RM	V01	S	D	HPCI AND RCIC INJECTION VALVES LINED UP W/PONG	PERSONNEL ERROR/LGN-LOW LEVEL RESET WRONG
G CC2	G21561	052178	L RM	V01	S	D	2A CORE SPRAY SUC. VLV. MC 2-1402-3A CLOSED WHEN R-	REQUIRED TO BE OPEN//PERSONNEL ERROR
M DC1	G21220	042078	C RM	V01	S	U	CUNT PURGE SUPPLY/EXHAUST VALVES NOT CLOSED AS R--	--EQUIP//PERSONNEL ERROR

REMOTE OPERATED VALVE

VEN	PLANT	CONT.NO.	EVENT DATE	SYSTEM	COMP	FAIL CODE	TYPE	CLASS	CUN	KEY	FAILURE MODE	FAILURE MECHANISM
W	DC2	021634	061578	N	RM	V01	S	D			STARTING AIR PILOT VALVES TAGGED OUT FOR WRONG D/G	PERSONNEL ERROR
W	KE1	016789	011977	C	RM	V01	S	D			CNTMNT ISO-VALS LEFT OPEN	PERSONNEL ERROR,IMP-VAL.LINEUP
W	TL4	019421	091377	L	RM	V01	S	D			TWO VALVES INADVERTANTLY OPENED/RWST LEVEL DECREASES	PERSONNEL ERROR/POSSIBLE PROCEDURE PROBLEM
C	PA1	022228	082878	C	RM	V02	S	D			CNTMNT PURGE & ISO. VALVES OPEN IN VIOL. OF T.S.	IMPROPER TAGOUT OF VALVES/PERSONNEL ERROR
G	EN1	020029	082977	N	RM	V03	S	D			OPERATION OF CONT.VAL CAUSED VIOL OF CNTMNT INTEG	TEST CONNECTION PLUG REMOV. FROM VLV/TEST
G	VY1	016997	011877	L	RM	V03	S	D			*B* RHR PMP DISCH.VLVs. SHUT WHEN REQ. TO BE OPEN	PERSONNEL ERROR
W	IF3	014604	042976	F	RM	V03	S	D			INCR.VLV LINUP FOR TEST,CNTMNT SPRY ACCID.TURN ON	PERSONNEL ERROR
G	EN1	014146	010976	S	RM	V04	S	D			TWO SERVICE WATER VALVES ISOLATED WHEN REQ OPEN	FROZEN FLOW SWITCHES(HEAT TAPE NEEDED)
G	EN2	022211	081078	C	RM	V05	S	D			VAC RELIEF VALVE F310 FOUND OPEN WHEN REQ CLOSED	PERSONNEL ERROR(INVERTED SIGNAL)
B	CP3	017176	020777	K	RM	V06	S	D			PER.CYCLED BSV-36 ALLOWING NAOH INTO THE RCS SYSTEM	PROCEDURAL INADEQUACY
C	CC1	041536	042578	N	RM	V06	S	D			#4 HALON SUBSYSTEM INADVERTENTLY DISCHARGED	INADEQUATE PROCED. RESULTED IN IMP.VLV.LU
C	M2	022134	072578	C	RM	V06	S	D			CNTMNT PURGE VALVES OPERATED IN IMPROPER MODE	INADEQUATE CNTMNT PLRGE PROCEDRES
G	PB3	018160	061677	C	RM	V06	S	D			BOTH RCIC ISO.VLVs. FOUND CLOSED WHEN REQUIRE.OPEN	DEFECTIVE TEST PROCEDURE
G	PI1	019668	120277	N	RM	V06	S	D			STANDBY LIQUID CONTROL VALVE 1101-23 CLSD T.S.VIOL	INADEQUATE PROCEDURES COVERING VALVE POS
W	DC2	021393	052078	C	RM	V06	S	D			CONT. PURGE VALVES OPENED PRIOR TO ALLOWABLE CONDS	PROCEDURES DIFFER BETWEEN UNITS 1 & 2
W	JF1	022629	091878	K	RM	V06	S	D			RHK PUMP SUCTION VLV 8701A CLOSED WHEN REQ. OPEN	INADEQUATE PROCEDURES

MANUAL OPERATED VALVE

<u>V E N T</u>	<u>P L A N T</u>	<u>C U N T . N O .</u>	<u>E V E N T</u> <u>D A T E</u>	<u>S Y S</u>	<u>C O M P</u>	<u>F A I L</u> <u>C L O S E</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C L N</u> <u>M U</u> <u>P M</u>	<u>K E Y</u>	<u>F A I L U R E</u> <u>M O D E</u>	<u>F A I L U R E</u> <u>M E C H A N I S M</u>
G	NM1	022029*	080878	G	XV	A10	T	O2			DRAIN VLVS ON A&B LIQUID POISON PMPs FROZEN SHUT	BUILD-UP OF BCROM CAUSED FAILURE
G	PI1	017419	031177	F	XV	A12	D				SSW PUMP E DISCHARGE VALVE FAILED IN CLOSED POSIT	BROKEN FINGE PIN ON BUTTERFLY VALVE
G	FB2	020074*	111377	N	XV	B&O	U	G2			2 LAVATORY FLUSH VALVES STUCK OPEN	CAUSE UNKNOWN
W	BV1	C18730	080277	G	XV	B12	D				HIGH PRI. LEAK. DUE TO 18 CHG. PMP. SUCT. VLV NOT CLOSE	JAMMED REACH ROD ON THE VALVE
C	PA1	022948	111078	W	XV	CG0	U				DRAIN VALVE FROM PHOSPHATE STORAGE TK LEAKED THRU	REASON NOT GIVEN
G	BR2	C20205	122677	Y	XV	CO0	R	U			NEEDLE VLV ON OXY. ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G	BF2	020455	012678	Y	XV	CO0	R	U			NEEDLE VLV ON OXY. ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G	DA1	C15991	092876	H	XV	CO0	U				FPCI TURB STM LINE HI FLO EQUALIZING VALVE LEAKS	CAUSE UNKNOWN
W	BV1	019934	120277	X	XV	CO0	U				LEAK. THRU FLOW EQUAL. VLV OF RX FLOW INSTRUMENTATI	CAUSE FOR LEAKAGE NOT GIVEN
W	DA1	017787	050777	K	XV	CO0	U				LEAKAGE THRU EQUAL VALVE ON DP TRANSMITTER (LEVEL)	UNKNOWN
G	MG1	018468	071177	X	XV	CC1	R	D			NITROGEN CHARGING VLV FAILED TO HOLD PRESSURE	OVERTIGHTEN. VAL. HAND. CAUSED "O" RING FAIL
G	MC1	C17034	011877	X	XV	CO2	R	D			VALVE ON ACCUM T14-19 FAILED TO HOLD PRESSURE	VALVE PACKING INSTALLED INCORRECTLY
W	HN1	C18779	081177	U	XV	CC7	T				#2 S/G NARROW RNG. LVL. SETT. POT VENT VLV. LEAK. INTER	SEAT. SURF. STM. CUT/NORMAL WEAR
G	BR1	020920	040178	X	XV	CO9	T				VALVE CAC-V64 LEAKED THRU INTERNALLY	RUST FOUND IN VALVE SEAT
G	DP2	C19319	102177	C	XV	C10	T				CONT. ISO. VLV FOR PLANT SER. WTR. LEAKING BY SEAT	VALVE SEATING SURFACES DIRTY
C	CC2	C19432	101177	C	XV	C12	D				CONT. ISO. VLV FOR PLANT SER. WTR. LEAKING BY SEAT	BENT VLV. STM. PREVENTED VLV FROM SEATING
G	MC1	018510	071977	X	XV	C14	R	T			NITROGEN CHARGING VAL FAILED TO HOLD PRESS	PACKING AT END OF LIFE
G	MC1	C18669	081077	X	XV	C14	R	T			VALVE CRD HCU 30-11 WOULD NOT HOLD PRESS	PACKING FAILURE
C	FC1	C19437	101177	Y	XV	C25	U				EXCESSIVE LEAKAGE THRU BYPASS VALVE AROUND VA-66	DEFECTIVE SEAT
G	MC1	C23396	112478	H	XV	C25	U				HFC1 DRAIN VALVE CV-2043 LEAKING THRU INTERNALLY	INTERNAL PARTS NEED REPLACEMENT

MANUAL OPERATED VALVE

VEH	FLANT	CONN. NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CON	KEY	FAILURE MODE	FAILURE MECHANISM
C	OC1	022983*	112078	C	XV	C25	U	C6			SIX VENT VALVES LEAKING THRU ON CONT LEAKRATE TEST	SEAT PROBLEMS, REPAIRED SOME, REPLACED REST
C	CC1	020063*	012278	K	XV	D00	T	O2			EXTERNAL LEAKAGE ON PRESS. INST. RT VLV&A SPRAY VLV	STEM PACKING LEAKS
W	NA1	023329	122678	W	XV	L00	U				ROOT ISOLATION VALVE 1-MS-4 LEAKING STEAM (REF LEG)	CAUSE NOT STATED
W	SU1	018930	082377	K	XV	D00	U				VALVE 1-RC-95 (RTD BYPASS) LEAKING/LEAKAGE > 1 GPM	UNKNOWN/BACKSEATED VALVE TO CORRECT LEAK
W	Z11	021107	040278	X	XV	D00	U				TRANSMITTER ISOLATION VALVE HAD STEAM LEAK	UNKNOWN
W	Z12	013943	010676	U	XV	D00	U				S/G LEVEL INSTRUMENT ROOT VALVE LEAKING EXTERNALLY	UNKNOWN/BODY-BONNET LEAK
W	Z12	013841	082176	X	XV	D00	U				PZR. LVL. CHAN. 2LT-461 UPPER ROOT VLV. LEAKING EXTERN	NO CAUSE FOR LEAKAGE GIVEN
G	FP1	022276	063078	N	XV	D02	D				BACKHOE OPERATOR BROKE FIRE LOOP ISOLATION VALVE	PERSONNEL ERROR
C	PI1	022956	111678	N	XV	D02	D				HYDRANT SHUT-OFF VALVE BLEW OFF LINE	PERSONNEL ERROR IMPROPER INSTALLATION
W	Z11	022849	090478	X	XV	D04	K	U			HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z11	022916	090878	X	XV	D04	R	D			HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z11	022844	091478	X	XV	D04	R	D			HANCOCK CO MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	HN1	018778	073077	G	XV	D05	R	U			B CHARG PUMP BYPASS ISO VAL LEAKING EXTERNALLY	DEFECTIVE CASTING
C	M12	017490	031577	B	XV	D07	T				STM TRAP ISO VAL LEAKING EXTERNALLY	NORMAL PACKING WEAR
W	HN1	021506	071178	X	XV	D07	T				NO 4 STM LIN ELBOW TAP DRAIN VAL LEAKING	NATURAL END OF LIFE
W	HN1	021387	050478	G	XV	D08	R	T			PINHOLE LEAK IN B CHG PUMP DISCH VALVE	SEVERE EROSION CAUSED BY THROTTLING VAL
W	HN1	021335	050978	G	XV	D08	R	T			BODY TO BONNET LEAK B CHG. PMP BYPASS ISO VLV	EROSION FROM HI VELOCITY WTR FLOW
C	CC2	017455	031477	W	XV	D13	T				S/G COMB. LVL & PRESS ROOT STOP VALVE LEAK. EXTERNAL.	GASKET FAILURE IN BOLTED BONNET
B	DB1	020269B	010578	Y	XV	D14	T				PACKING LEAK PRESS. LVL. TRANSMITTER SOURCE VLV PACK	VLV PACKING GLAND LOOSE; VLV WAS REPACKED
B	LE2	014811	011076	Y	XV	D14	T				INST. ROOT VAL ON PRESS LEV TRANS LEAKING EXTERNAL	VALVE PACKING FAILURE

MANUAL OPERATED VALVE

U F N	P L A N T	CCNT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C L O S E M O D E	K E Y	FAILURE MODE	FAILURE MECHANISM
B	OE2	C19900	120177	N	XV	D14	T				VALVE RC-18 LEAKING EXTERNALLY	VALVE PACKING FAILED
B	OE2	C2113CA	040778	N	XV	D14	T				EXTERNAL LEAK ON AN INSTR. LINE ROOT VALVE	VALVE PACKING FAILURE
d	OE2	023427	123078	K	XV	D14	U				SPRAY CONTROL BYPASS VALVE 2RC-2 LEAKING EXTERNAL	PACKING LEAK
B	RS1	C19794	111777	K	XV	D14	T				PRESSURIZER VENT VALVE LEAKING EXTERNALLY	BACKSEATING VELAN GLOBE VALVE STOPED LEAK
B	T11	020294	011778	N	XV	D14	T				WHILE CLOSING MU-V74A EXCESSIVE EXTERNAL LEAKAGE	PACKING IN VALVE WAS WORN
G	DP3	C19660	110877	Y	XV	D14	T				LPCI MANUAL ISOLATION VALVE MD-3-15C1-26B LEAKING	VALVE PACKING FAILURE
G	DK3	C20780C	C30478	C	XV	D14	T				MSIV 3-203-2C TEST CONNECTION VLV LEAKING EXTERNAL	PACKING FAILURE / VALVE REPACKED
G	PB2	021554*	060978	K	XV	D14	K T O2				HEAD VENT MAN VAL, VAL MD-2-2-65B LEAKING EXTERNALLY	VALVE PACKING FAILURES
W	BV1	018089	101076	X	XV	D14	T				STM. LEAK, FROM RT. STOP VLV, PZR. LVL. IND. READ HIGH	STEAM LEAKAGE DUE TO PACKING LEAK
W	BV1	019611	102777	K	XV	D14	R T				20 GPM LEAK, FROM 1A LOOP FILL VLV PACKING	PACKING DEGRADATION
W	BV1	020757	012978	K	XV	D14	T				LEAKAGE IN EXC. OF 10GPM OBS. THRU B LP. FILL VLV PK	LEAKAGE DUE TO DEGRADED PACKING IN VLV.
W	DC1	022837	102878	K	XV	D14	T				PZR SAFETY VALVE LOOP SEAL DRAIN VALVE/EXT LEAKAGE	PACKING FAILURE
W	NA1	021540*	052978	K	XV	D14	T O2				VALVES 1-RC-77, 1-RC-102 LEAKING EXTERNALLY	LEAKAGE THROUGH VALVE PACKING
W	SA1	021374*	040477	Y	XV	D14	T O2				13 & 14RC20 LEAKING EXTERNALLY (PTC BYPASS VALVES)	PACKING LEAKAGE
W	SA1	017788*	051977	Y	XV	D14	C T O2				TWO MANUAL VALVES (1P324/1PS28)/EXTERNAL LEAKAGE	LEAKS PAST PACKING/BACKSEATED TEMPORARILY
W	SA1	018248	070877	K	XV	D14	R T				EXTERNAL LEAKAGE ON VALVE 1CV75	LEAKAGE PAST STEM PACKING
W	SA1	018009	041777	K	XV	D14	T				LOOP RCP SEAL VALVE (FCV-1115D) LEAKED EXTERNALLY	EXCESSIVE LEAKAGE PAST PACKING
W	Z11	021567	071778	X	XV	D14	T				ROOT VLV TO S/G ID LVL. CHAN. 537 LEAKING EXTERNALLY	PACKING LEAK ON ROOT VALVE
G	EN1	020032	081477	K	XV	D18	T				CRACK IN WELD FOR ISOL VALVE TO LEVEL TRANSMITTER	UNKNOWN REASON, SUSPECT TOO RIGID MOUNTING
W	HN1	C21903	060578	N	XV	D18	U				FINGER LEAK IN PRESS SPRAY ISO VALVE	DEFECT IN BODY TO BONNET SEAL WELD

MANUAL OPERATED VALVE

VEH	PLANT	CONT.NO.	EVENT DATE	SHIFT	COND	FAIL CODE	TYPE	CLASS	CLN FR	KEY	FAILURE MODE	FAILURE MECHANISM
V	NA1	022766	100978	V	XV	D18	T				STEAM VALVE L-MS-120 LEAKING EXTERNALLY	DEFECTIVE PIPING JOINT B&TW VALVE + PIPE
C	CC2	018620	081977	B	XV	FC1	D				#21 AUX.FD&TK.PHP.THROT.STOP VLV HANDWHEEL BROKE	A PERSON APPL.EXCESS.FORCE WITH VLV WREN.
G	VY1	019854	110177	D	XV	FO8	D				MANIFOLD BYPASS VALVE FAILED TO OPERATE	GALLED THREADS/STEM SEIZED
E	DE1	014808	041376	H	XV	F12	D				FLOOD TANK 1A NITROGEN ADD VLV FAILED OPEN	VAL STEM SEPERATED FROM DISK
W	SL1	023135	120476	S	XV	G09	T				SEAL COOLER INTAKE GATE VALVE PLUGGED/GATE SEPARAT	--ED FRLP STEM//CORRCISION OF STEM
W	PT1	020489	020478	N	XV	G10	U				GLOBE VALVE USED TO CONTROL AIR FLOW PLUGGED	BLEW WATER OUT / READJUSTED FOR AIR FLOW
W	NA1	022267	061078	C	XV	TC1	D				INSTRUMENT AIR VALVE NOT UNDER SURVAIL AS RECD	OPERATIONS PERSONNEL ERROR
C	MY1	020475	021678	S	XV	T02	D				VALVE SW-53 CLOSED BUT NOT LOCKED	PERSONNEL ERROR
B	DE3	019883	120677	L	XV	TC6	U				VALVE LP-28 OPEN BUT NOT LOCKED AS RECD	INADAQUATE PRCCEDURES
B	AR1	010561	082677	Y	XV	VO1	S	D			INCORRECT SEQUENCE OF VALVE OPERATI&N/H2G IN FILTR	PERSONNEL ERROR
B	CA3	020478	020178	C	XV	VO1	S	D			NITROGEN VLV NGV-81 WAS OPEN CONTRAKY TO T.S.	PERSONNEL ERROR
B	DB1	022690	091578	S	XV	VO1	S	D			SERVICE WATER OUTLET VALVE NOT REOPENED	PERSONNEL ERROR AFTER FLOW BALANCE
B	DE2	015538	070676	C	XV	VO1	S	D			VALVES 21A-90 AND 91 NOT IN PROPER LINE UP	PERSONNEL ERROR
B	GE2	019970	120877	F	XV	VO1	S	D			ISO.VLV.TO CHAN.3 RB PRESS.TRANS.SHLT BY MISTAKE	PERSONNEL ERROR
B	DE2	023020	110578	K	XV	VO1	S	D			RC LOOP A1 HPI STOP CHECK VALVE FOUND CLOSED	PERSONNEL ERROR/VALVE WAS REQUIRED OPEN
B	DE3	021046	032278	S	XV	VO1	S	D			VALVE 3LPSW-78 CLESED WHEN REQ.OPEN	PERSONNEL ERROR(VLV OPENS CLOCKWISE)
B	RS1	023464	122178	X	XV	VO1	S	D			FLOW TRANSMITR INADVERTANTLY VALVED OUT(IX TRIP--	CKTS EFFECTED//PERSONNEL ERROR
C	CC1	016408	110476	S	XV	VO1	S	D			DIESEL SERVICE WTR.SYS.LINED UP IMPROPERLY	PERSONNEL ERROR;OPERATED WRONG VALVES
C	CC1	018467	071377	E	XV	VO1	S	D			ISO.VLV TO PRESS.SW&CHS.FOR #110SL.SHUT/T.S.VIO.	PERSONNEL ERROR/IMPRGER VLV LINEUP
C	M12	017837	051577	E	XV	VO1	S	D			BOTH D/G FUEL SUP.VLVs SHUT WHEN REQUIRED TO BE O-	-PEN//PERSONNEL ERROR

MANUAL OPERATED VALVE

PLANT	UNIT	CONT. NO.	EVENT DATE	SYM	FAIL CODE	Y	M	D	TIME	FAILURE MODE	FAILURE MECHANISM
C	M12	021332	041478	M	XV	V01	S	0		PK: MAKEUP VAL IN PART OPEN POSIT. SHOULD BE CLOSED	PERSONNEL ERROR
C	PA1	021322	042178	C	XV	V01	S	0		CATNMT SERV AIR VAL OPENED IN VIOL OF T.S.	PERSONNEL ERROR
C	PA1	023021	112878	Y	XV	V01	S	0		VCT SITEGLASS DRAIN VALVE OPEN WHEN REG CLOSED	PERSONNEL ERROR
G	BR1	019642	111077	Q	XV	V--	S	0		IMPROPER VLV LINEUP/ST-SUP-LN.CD.DR.PCT-ISC.CLOSE.	PERSONNEL ERROR
G	BR2	018376	060977	M	XV	V01	S	0		DRAIN VALVE LEFT OPEN (RX WATER CLEANUP)	PERSONNEL ERROR (RECT CAUSE)
G	CC1	016604	091076	L	XV	V01	S	0		EQUALIZING VALVE CN DP PRESS INDICATING SW OPEN	PERSONNEL ERROR
G	DA1	016281	052777	U	XV	V01	S	0		MANUAL FEEDH2O BACK VALVES NOT OPERATED PROPERLY	PERSONNEL ERROR/ST-GRAM DUE TO COLD H2O
G	CR2	014023	010276	X	XV	V01	S	0		WACK ISO VAL FOR PRESS SW263-510 IMPROPER LINEUP	PERSONNEL ERROR
G	CR2	023335	100376	Y	XV	V01	S	0		STACK GAS PUMP FLOW LOW, VALVE LINEUP WRONG	PERSONNEL ERROR
G	DR2	021158	042878	L	V	V01	S	0		VALVES ONA LPC1 & CORE SPRAY IMPROPER LINEUP	OPERATING PERSONNEL ERROR
G	UR3	019587	121677	G	XV	V01	T	0		PRESS SWITCH FOUND VALVED OUT	PERSONNEL ERROR
G	EN1	014798	022476	N	XV	V01	T	0		CEMIN DRAIN VALVE LEFT OPEN (WATER DUMPED TO RIVER)	PERSONNEL ERROR
G	EN1	020191	120877	E	XV	V01	S	0		IMPROPER LINEUP/FUEL OIL TRANS PLUMPS DISCH VALVES	PERSONNEL ERROR
G	EN1	021063	040878	M	XV	V01	S	0		DRAIN VALVE LEFT OPEN/FOUND ON LLMT	PERSONNEL ERROR
G	PE2	020610	021678	C	XV	V01	S	0		INLET VLV FOR THE MANDRETER WAS OPEN INSTEAD OF CL	PERSONNEL ERROR/FAILED TO FOLLOW PROCEDURE
G	PR2	020667	022378	M	XV	V01	S	0		CISCHEG VLV ON DIESEL F.C.PMP LEFT OPEN VICF SHUT	PERSONNEL ERROR
G	QCP	019450	052977	C	XV	V01	S	0		STOP VALVE TO TORUS LEVEL TRANSMITTER FOUND CLOSED	PERSONNEL ERROR
G	VY1	022252	081478	M	XV	V01	S	0		VLVS-LINED UP IMPROPERLY TO HI-MN-SIM-LN-FLOW SWT.	PERSONNEL ERROR
M	DC1	017279	030977	Y	XV	V01	S	0		DRAIN TRAPS MD-205MD-21 LEFT OPEN	PERSONNEL ERROR
M	DC2	021079	041678	L	XV	V01	S	0		PANDHEEL CAME OFF RHR VALVE POSITIONING IT WRONG	PERSONNEL FAILED TO REPOSITION THE VALVE

MANUAL OPERATED VALVE

Y E A R	PL A N T	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CCDE	T Y P E	C L A S S	C U M P H	K E Y	FAILURE MODE	FAILURE MECHANISM
W	DC2	022638	101076	B	XV	VG1	S	D			ALX FEED VALVE FOUND UNLOCKED & OPEN/WRONG LINE-UP	PERSONNEL ERROR
W	KE1	015262	071576	Y	XV	VO1	T	D			MANUAL ISO. VALVS TO MONITORS R-11612 SHUT WHEN REQ-	-UIRED TO BE OPEN//PERSONNEL ERROR
W	KE1	018652	072977	Y	XV	VO1	T	D			MANUAL ISO. VALVS TO MONITORS R-11612 SHUT WHEN REQ-	-UIRED TO BE OPEN//PERSONNEL ERROR
W	PR1	020735	020478	G	XV	VO1	S	D			PLMP SUCTION VALVE FOUND NEARLY CLOSED	PERSONNEL/VALVE LINEUP IMPORTANCE STRESSD
W	PR1	021764	062278	E	XV	VO1	S	D			ROOT VALVE ON D/G DIESEL OIL TANK LEVEL INST CLOSE	PERSONNEL/ LOCKWIRED OPEN FROM NOW ON
W	PR2	014463	033176	S	XV	VO1	S	D			MANUAL VALVE SECURED WHICH VIOLATED LOOP AVAILABLT	PERSONNEL ERROR/TECH SPECS INCONSISTENT
W	PT2	019446	101777	X	XV	VG1	S	D			ISOLATION VALVE FOR PRESS TRANSMITTER FOUND SHUT	PERSONNEL/ALSO NOT ON ANY CHECK-LIST/
W	SU1	023136	112978	G	XV	VO1	S	D			VALVE MISALIGNMENT ON BOPIC ACID TRANSFER	PERSONNEL ERROR
W	SU2	019478A	101177	S	XV	VO1	S	D			TWO DRAIN VALVES LEFT OPEN AT END OF MAINTENANCE	PERSONNEL ERROR/CAUSED FLOODED PIT ABOVE
W	Tk1	019380	101677	L	XV	VG1	S	D			RHR DISCHARGE VLV (87288) FOUND LOCKED CLOSED	PERSONNEL ERROR/IMPROPER VALVE LINEUP
W	Z11	022897	101878	Y	XV	VO1	S	D			IMPROPER VALVE LINE-UP CAUSED TRIP OF BLOWER	PERSONNEL ERROR
W	Z11	022997	110678	N	XV	VO1	S	D			RAD MONITOR NOT VALVED IN WHEN REQUIRED	PERSONNEL ERROR
W	Z12	014523	041176	C	XV	VO1	T	D			PRESS REGULATOR VALVE SET FOR TOO HI PRESSURE	PERSONNEL ERROR
B	DB1	021213	042378	Y	XV	VO2	S	D			DISCHARGE VALVE OF DILUTION BLOWER MISTAKENLY SHUT	PERSONNEL ERROR(WROTE 1-2 INSTEAD OF 1-1)
B	DB2	015537	070676	X	XV	VO2	S	D			HIGH PRESS TRANS ROOT VAL CLOSED ON STARTUP	MAINT. PERS. LEFT VAL WITH IMPROPER LINE UP
B	DE3	019664	112877	X	XV	VO2	S	D			IMPROPER VLV LINEUP TO CHAN. A NARROW RANGE PRESS.-	-TRANSMITTER//PERSONNEL ERROR
C	MY1	015731	091676	C	XV	VO2	S	D			INCORRECT VLV LINEUP CMNTMNT ISO SYSTEM PV-15	PERSONNEL ERROR/FAILED TO CLOSE
G	BF1	016053	092376	D	XV	VO2	S	D			VALVE FOUND CLOSED TO PRESSURE SWITCH	PERSONNEL ERROR
C	BF2	015342	061976	M	XV	VO2	S	D			VALVES 2-85-612 AND 2-85-615 FOUND IN CLOSED PGST	PERSONNEL ERROR
G	DR2	022590	092678	W	XV	VO2	S	D			VALVE TO ISOLATE FLOW SWITCH FOUND VALVED OUT	PERSONNEL ERROR

MANUAL OPERATED VALVE

P V N T	CONT.NO.	EVENT DATE	S P	C S	FAIL CODE	Y L C M K E	C L A C M K E	FAILURE MODE	FAILURE MECHANISM
G	EN1 01479C	051076	N	XV	V02	T	0	DISCHARGE VALVE DEMIN H2O TO RIVER LEFT OPEN	PERSONNEL ERROR
G	EN1 040687	022678	M	XV	V02	S	0	ISG VALVS TO SWITCHS.C11-NO3366F IN CLOSED POSITION	PERSONNEL ERROR,UNCLEAR PRCCEDURES
M	DC2 022064	072678	N	XV	V02	S	0	TWC MANUAL VALVES WERE OPEDED IN VIOLATION OF T.S.	PERSONNEL ERRCR
M	PR1 015919	091076	F	XV	V02	S	0	CONTAIN.-TO-ANNULLS DIFFER.PRESS.SWICH, VLVED OUT-	-BY MISTAKE//PERSONNEL ERROR
M	PT2 023123	120978	X	XV	V02	S	0	LCGP A TEMP DETECTLR MANIFOLD VALVED OUT	PERSONNEL ERRCR(TOOK OUT SAFETY CHANNELS)
M	SU1 022554	111778	N	XV	V02	S	0	3 VALVES CLOSED WHEN REQ OPEN(CLOSED TO STOP LEAK-	--RAG MONITORING LOST)//PERSONNEL ERROR
M	CR2 023055A	100478	L	XV	V03	S	0	ISOL VALVE TO FLOW CONTROLLER SHUT(SEE 023095)	PERSONNEL ERRCR/VALVE REQUIRED TO BE OPEN
H	DB1 019549	032278	H	XV	V03	S	0	H-I POINT VENT(HP-72)NOT VENTED AS REQUIRED	PERSONNEL ERRCR(REMOVED FROM TEST LIST)
G	BF2 016159	100776	H	XV	V03	S	0	EQUALIZER VALVE ON FLOW INSTRUMENT FOUND OPEN	PERSONNEL ERRCR
G	BR2 016647	020576	L	XV	V03	S	0	PRESS SW FOUND ISOLATED AFTER TESTING	PERSONNEL ERRCR
G	CC1 016713	111678	K	XV	V03	S	0	ISOLATION VALVES TO PRESS. SWITCH LEFT CLOSED	PERSONNEL ERRCR AFTER SURVEILLANCE
G	CC1 019119	081677	X	XV	V03	T	0	VALVE TO LEVEL SWITCH LEFT CLOSED AFTER TEST	PERSONNEL ERRCR
G	CC1 026806A	020778	H	XV	V03	T	0	ISOLATION VALVE TO DP15-76 FOUND CLOSED(SEE020806)	PERSONNEL ERRCR
G	DA1 020147	011178	X	XV	V03	S	0	ISO VALVS FOR PS4312C & PS4315C IN CLOSED POSITION	ERRCR OF PERSONNEL PERFORM. TESTING
C	DF2 022777	101278	N	XV	V03	S	0	DIFF PRESS SW ISOLATION VALVE FOUND VALVED OUT	PERSONNEL ERRCR
G	DR3 022772	101278	N	XV	V03	S	0	DIFF PRESS SW FOUND VALVED OUT	PERSONNEL ERRCR
G	EN1 01479C	030476	M	XV	V03	S	0	PA STEAM INST FLOW RACK NOT VALVED IN AFTER TEST	PERSONNEL ERRCR
G	EN1 017096	011777	L	XV	V03	S	0	PRESS SW FOUND VALVED OUT WHEN REQUIRED OPEN	PERSONNEL ERRCR
G	EN4 022133	092878	N	XV	V03	S	0	VALVES ON D/P CELL WERE VALVED IN WRONG	PERSONNEL ERRCR(RUINED D/P CELL)
G	PB3 021657	060778	A	XV	V03	S	0	SHUT-OFF VALVE ON PS-10-1000 CLOSED,VIOL OF T.S.	VALVE CLOSED DURING INST TEST,NOT REOPEN

MANUAL OPERATED VALVE

UNIT	CONT. NO.	EVENT DATE	SYM	U	FAIL CODE	TYPE	STATUS	FAILURE MODE	FAILURE MECHANISM
G	PR3 021116	062678	X	XV	V03	T	D	SHUTOFF VAL ON PRESS SW PS-3-5-120 CLOSED, T.S. VIOL	TEST PERS CLOSED VLV DUR TEST, NOT RESPOND
d	ARI 015207	061276	G	XV	V06	S	D	VALVE SF-22 WAS NOT CLOSED, DIA SPILL RESULTED	PROCEDURES WERE INADEQUATE
B	012 021127	042878	N	XV	V06	S	D	VLV 2LPSW-241 FOUND THROTTLED WHEN REQ. OPEN	DEFECTIVE PROCEDURES
G	DA1 015750	062776	N	XV	V06	S	D	ROOT VALVE TO LOW PRESS SW PS-1017 IN CLOSED POSIT	VALVE NOT ON PRESTARTUP CHECKLIST
G	FPI 015272	073076	Y	XV	V06	S	D	CFF-GAS SAMPLE VALVE FOUND CLOSED, REQUIRED OPEN	PROCEDURAL ERROR
M	PR2 017669	051977	B	XV	V06	S	D	PUMP INLET VALVE FOUND NEARLY SHUT/AUX FEED INLET	POSITION REQUIREMENT WILL GO ON CHECKLIST
M	RC4 023053	110978	N	XV	V06	S	D	AIR SUPPLY VALVE FOUND OPEN WHEN REQUIRED SHUT	DEFICIENT OPERATING PROCEDURE

CHECK VALVE

PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CUNLPM	KEY	FAILURE MODE	FAILURE MECHANISM
G BF3	C16055	082476	H	CV	A00		U			CHECK VALVE IN HPCI TURB.EXH.LINE WAS BINDING	CAUSE OF CHECK VLV BINDING NOT STATED
G BR1	C21468	052378	C	CV	A00		U			CAC VACUUM BREAKER CAC-XI8-A WOULD NOT OPEN	CAUSE OF FAILRE NOT GIVEN
G BR2	021403	050278	Y	CV	A00		T			SAMP.PMP.DISCH.CV FOUND STUCK IN CLOSED POSITION	CAUSE OF CHECK VLV STICKING NOT GIVEN
G DR3	C17652	041277	C	CV	A00		U			VACUUM BREAKER A03-1601-20A DID NOT OPEN	CAUSE UNKNOWN
W DC2	C23030*	112178	F	CV	A05	C	D	02		CHK.VLVs.CTS-127E6W TO THE LOWER CONT.SPRAY NOZZL- CV FOR SERV WATER PUMP P-78 FAILED CLOSED	-ES INSTALLED BACKWARDS//FABRICATION ERR. CORRODED HINGE PIN
C PA1	C19461	052077	S	CV	A09	R	T			P-78 SER. WTR. PMP. DISC. CK. VLV. STUCK SHUT	CV HINGE PIN CORRODED
G BR2	016399	111176	E	CV	A09		T			EISEL GEN.#2 AIR REC.CV 2-05A-V70 FAILED TO OPEN	CHECK VALVE WAS RUSTED SHUT
E DB1	021178A	040878	Y	CV	A10		T			SUCT.CH.VLV ON HYD.DILUTION BLWR. WOULD NOT OPEN	VLV INTERNALS DIRTY,CAUSING STICKING
B LB1	021178B	041878	Y	CV	A10		T			DISC.CK.VLV ON HYD.DILUTION BLWR. WOULD NOT OPEN	VLV INTERNALS DIRTY,CAUSING STICKING
G FP1	C20107	011378	Y	CV	A10		T			BALL FLOAT CHECK VALVE IN COND POT STUCK SHUT	DIRT ON VALVE AND SEAT
C CC1	017743	042577	J	CV	A12		D			#12 SALT WTR.PMP.DISCH.CK.VLV WOULD NOT OPEN	DISC SLAMMED SHUT AND WEDGED IN THE SEAT
G BR2	014646	020476	C	CV	A12	R	D			RCIC TURB.DISCH.CK.VLV E51-FC4D WOULD NOT OPEN	DISC STILE BROKEN/DISC BLOCKING EXH. FLOW
G DA1	C14408A	021476	K	CV	B00		U			INSTRUMENT LINE CV XFY-4528 FAILED TO CLCSE	FAILURE REASON UNKNOWN
G FP1	C20570	030278	L	CV	B00		U			A RHR PUMP CHECK VALVE STUCK OPEN	CAUSE UNKNOWN
W FP1	C23358	122478	L	CV	B00		U			RHR LOOP CHECK VALVE FAILED TO CLOSE	NO REASON FOUND FOR STICKING,REASSEMBLED
W TR1	C22005B	070778	U	CV	B00		U			CHECK VALVE ON CONDENSATE STCRE TANK STUCK OPEN	NO CAUSE FOR FAILURE GIVEN
G BF2	021094	032578	F	LV	BC4		D			CHECK VLV.2-73-603,IN HIGH-PRESS.CI.SYS,FOUND OPEN	DIMEN.ERR. IN VLV. INTERFERENCE CLEARANCE
G BR2	C23033	111178	L	CV	BC4		D			RHR CHECK VALVE E11-F031 WILL NOT FULLY SEAT	DESIGN ERROR/VLV.DGESN'T WORK UN LOW DP.
G DA1	C14408B	021476	K	CV	BC4		D	02		INSTRUMENT LINE CV XFY-4611,4612 FAILED TO CLCSE	POOR TEST LOCATION FOR VALVE

CHECK VALVE

V E N T	P L A N T	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N N U M P H	K E Y		<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	CC1	018952	082977	C	CV	B04	R	D				TORUS TO DRYWELL VAC.BRK(V-26-5) FAIL. TO RECLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G	DC1	019198	092777	C	CV	B04	R	D				VAC BKR VAL V-26-9 FAILED TO CLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G	VY1	015623	082576	F	CV	B08		D				CHECK VALVE(SERVICE H2O PUMP OUTLET)FAIL TO CLOSE	WEAR BETWEEN DISC & DISC ARM/SHIM INSTALL
G	DR2	020471*	021078	C	CV	B10	R	T	02			TWO VACUUM BREAKER VALVES NOT CLCSING FREELY	EXCESS GREASE IN THE SHAFT SEALS
G	M11	018690*	080577	C	CV	B14		T	03			3 VAC BKR VALS FAILED TO FULLY CLOSE	FAILURE OF PACKING AND BUSHINGS
C	M11	014179	012676	C	CV	B17		T				VACUUM BREAKER FAILED TO CLOSE FREELY	TEFLON BUSHING OUT OF ROUND
G	MO1	020395	020278	C	CV	B17	R	T				TORUS TO DRYWELL VAC.BRKR AD-23828 FAILED TO CLOSE	EXCESS FRICTION BETW VAL BUSHING + STEM
G	DC1	015974	092876	C	CV	B17		T				VAC BKR VAL V-26-11 FAILED TO CLOSE	TEFLON BUSHING FAILURE
G	DB1	021579	050978	C	CV	L05		D				CONT.VAC.RELIEF CV-5070 HAD EXCESSIVE LEAKAGE	DEF.INITIAL INSTAL. OF TEST CONN. PIPING
B	DB1	021578	051178	C	CV	D05		D				CONT.VAC.RELIEF CV-5076 HAD EXCESSIVE LEAKAGE	VLV NOT PROPERLY SEATING AGAINST VLV LINE
G	CC1	020054	120577	X	CV	D12		U				EXCESS FLOW CHECK VALVE LEAKING EXTERNALLY	LOOSE NUT ON VALVE BODY
G	EN2	022212	081078	C	CV	D12		D				VACUUM BREAKER 2T48-F328A LEAKING EXTERNALLY	LOOSE MECHANICAL PARTS ON VALVE BODY
B	DB1	021177	041078	B	CV	D13		U				SHUT DOWN AUX.FDPMP.1-2 DUE TO STM.LEAK ON MS-735	STM.LEAK CAUSED BY BAD COVER GASKET&SURF.
B	DB1	021851	060578	L	CV	D13		T				CORE FLOOD LINE DISC.CK.VLV CF30 LEAKING AT BONNET	FAILURE OF BONNET GASKET
C	CC2	019215	100777	K	CV	D13		U				EXTERNAL LEAKAGE FROM 22B SI LOOP CHECK VALVE	FAILED BONNET GASKET
G	BR1	019276	100477	Y	CV	D14		T				LEAKAGE FROM RHR CHECK VLV E11-F050B INTO DRYWELL	PACKING LEAKAGE;VLV REPACKED&RETURN.TD SR
G	M11	015679	092576	L	CV	D14		T				ISOLATION VALVE 1-IC-1 LEAKING	PACKING FAILURE
G	CR3	020843B	020178	N	CV	E00	R	U				NOBLE GAS FROM MAKEUP TK.LEAK.BY CHECK VLV MLV-140	CAUSE OF VLV LEAKAGE NOT GIVEN
B	DB1	020969*	031678	B	CV	E00		U	02			CHECK VLVS AF39672 LEAKED INTERNALLY	CAUSE OF REVERSE LEAKAGE NOT GIVEN
C	CC2	022246*	090776	F	CV	E00		U	02	V		#218622B SI.TANK OUTLET CHECK VLVS LEAKING	CAUSE OF REVERSE LEAKAGE NOT GIVEN

CHECK VALVE

V E N T	P L A N T	C O N T. N O.	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C L A S S N U M B E R	K E Y	FAILURE MODE		FAILURE MECHANISM
L	FC1	C17745A	042977	G	CV	ECO	R	U	C2		VALVES CH-284+HG-100 LEAKING INTERNALLY	UNDER INVESTIGATION	
C	FC1	022468A	090878	G	CV	ECO	R	U	02		CVS CH-284 + HG-100 LEAKING INTERNALLY	CAUSE UNKNOWN	
C	MI2	017620	040777	H	CV	ECO	R	U			INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN	
C	MI2	C18740	072177	H	CV	ECO	K	U			S.I.HEADER CHECK VLV. 2-SI-648 LEAKING INTERNALLY	NO CAUSE GIVEN	
C	MI2	016571	081677	H	CV	ECO	R	U			INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN	
G	BR1	C20964	032378	Y	CV	ECO	R	T			FAULTY CK.VLV IN SAM.DR.LN. ALLOWED H2O INTO MONIT	MGN.CAC-401-1262-1 CK VLV FAIL.CAUSE UNKN	
G	BR1	020921	033178	Y	CV	ECO	R	T			RAD.MON. SAMP.DR.LN. CK.VLV FOUND STUCK OPEN	CAUSE OF CK.VLV. FAILURE NOT STATED	
G	EN1	C21727	061678	K	CV	ECO		U			EXCESS FLOW CHECK VALVE B31-F040A LEAKING INTERNAL	CAUSE UNKNOWN,SUSPECT DIRT IN LINE	
G	MI1	C20722B	032078	L	CV	ECO		U	04		FEED WTR.CK.(1-FW-9A,9B,10A,10B)LEAK.EXCESS OF T.S	CAUSE OF LEAKAGE NOT GIVEN	
G	DC1	C13956*	010676	C	CV	ECO		U	C2		VAC BKRS V-26-16,V-26-18 LEAK INT.IN EXCESS OF T.S	CAUSE UNKNOWN/REPAIRS TO BE PERFORMED	
G	V11	C22196*	081078	C	CV	ECO		U	02		ISOLATION CHECK VALVS (V72-89B/C) LEAKED THRU/TEST	UNKNOWN/CRESSER 2IN TYPE 5580W CHECK VAL	
W	DC2	020978	031878	B	CV	ECO		D			ALX FEED SYS CHECK VALVE FROM S/G 1 STUCK OPEN	UNKNOWN (VALVE 2-FW138-13ATWOOD & MORRILL	
W	HN1	015218	070576	B	CV	ECO		U			CHECK VALVE IN FEED LINE HAD REVERSE LEAKAGE	NO CAUSE GIVEN FOR REVERSE LEAKAGE	
W	HN1	C18777	080177	B	CV	ECO		U			CHECK VALVE ON AUX FEED PUMP LEAKING INTERNALLY	UNKNOWN	
W	JF1	C23152	091478	E	CV	ECO		U			18 AIR COMPRESSOR RELIEF/CHECK VALVE LEAKED	CAUSE UNKNOWN	
W	PR2	C19604	111377	C	CV	ECO		U			CONTAINMENT ISOL CHECK VALVE 2VC-8-5 LEAKING THRU	UNKNOWN/VALVE WAS REPLACED	
W	RG1	018076B	020776	C	CV	ECO		U			CHECK VALVE (1713) REVERSE LEAKAG / TESTING	UNKNOWN	
W	RG1	C18247	071377	H	CV	ECO		U			SI PUMP 1A CHECK VALVE REVERSE FLOW TO RWST	UNKNOWN/ VELAN 3 INCH 1500 PSIG CHECK VAL	
W	RC2	C14622	012876	F	CV	ECO		U			B ACCUMULATOR CHECK VALVE 875E LEAKED THRU	REASON NOT STATED	
W	SU1	C15522*	070276	H	CV	ECO		U	02		TWO CHECK VLV (1-SI-120/130) LEAKED THRU	UNKNOWN	

CHECK VALVE

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>C</u> <u>N</u> <u>N</u> <u>O</u> <u>.</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>T</u> <u>E</u> <u>M</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>Y</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>L</u> <u>N</u> <u>M</u> <u>P</u> <u>N</u> <u>O</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>	
W	502	G15529*	081376	G	CV	E00	U	G2		TWC CHECK VLVS (2-SI-145/147) LEAKING THRU	UNKNOWN	
W	502	G19744	110877	H	CV	E00	U			CHECK VALVE 2-SI-127 LEAKING THRU	UNKNOWN	
W	Z14	O15162*	062376	H	CV	E00	U	G2	V	LEAKAGE THRU CHECK VALVES/ACCUMULATOR OVERFILL	UNKNOWN/CARLING 10 INCH TYPE 10-C40Z	
W	Z11	O19138A	102076	N	CV	E00	U			LEAKING THRU A CHECK VALVE/RAD H2O TO FIRE SUPP	UNKNOWN	
G	DA1	O14339	032376	L	CV	E02	D			FEEDWATER CHECK VALVE V-14-1 LEAKING INTERNALLY	TWC CLOTH RAGS FOUND IN VALVE/PERS. ERROR	
W	KE1	O19456*	102177	E	CV	E04	C	D	O2	V	REVERSE LEAK PAST D.G. AIR COMP. CHECK VALVES	DESIGN PROB., REPLACED CHCK. VLVS. NEW STYLE
C	FC1	O22072	110178	B	CV	E05	D			ALX FEED CHECK VALVE FOUND INSTALLED WRONG	CONSTRUCTION ERROR	
W	RC2	O19351	081777	B	CV	E05	D			LISCH CK VAL FOR ALX FEED PUMP, C STM GEN FAILED	CK VAL HAS BURR ON HINGE JOINT, OPEN POSIT	
G	FP1	O16176	101476	L	CV	E07	T			CHECK VALVE 42B LEAKING INTERNALLY	NORMAL WEAR ON VALVE SEAT	
W	DB1	O21849*	060778	C	CV	E08	T	O6		E CONT. ISO. CK. VLVS SHOWED EXCESSIVE LEAKAGE	PART. OF DIRT CR WEAR & PITTING PREV. SEATING	
G	DR3	O16016B	092176	U	CV	E08	R	T		FEEDWATER CHECK VALVE 3-220-62A LEAKING INTERNALLY	WORN DISK ASSEMBLY PINS	
B	DB1	O21583	050478	S	CV	E09	T			VLV SW-82 HAD REVERSE L. AKAGE; OUTLET CHECK VALVE	TCP OF INTERNALS WERE RUSTED; PREV. OPERATN	
G	CC1	O17071	012177	H	CV	E10	U			HPCI TESTABLE CHECK VALVE LEAKING INTERNALLY	A 14 IN PROBE JAMED BETW. DISK+SEAT	
G	DR2	O14443	032476	N	CV	E10	T			SOLC ISO CHECK VALVE 2-1101-16 LEAKING INTERNALLY	CRUD ON VALVE SEAT	
G	DR3	O16016A	092176	U	CV	E10	R	T		FEEDWATER CHECK VALVE 3-220-58A LEAKING INTERNALLY	DIRT IN SEATING AREA	
G	DR3	O16163	100776	L	CV	E10	T			ISOLATION CHECK VALVE 3-1501-25B LEAKING INTERNALLY	DIRT AND SMALL SCRATCHES ON VALVE SEAT	
G	DR3	O16164*	100776	U	CV	E10	T	O2		FEEDWATER CHECK VALVES 3-220-58B, -62B LEAKING	DIRT IN THE SEATING AREA	
G	DR3	O16471	102876	M	CV	E10	T			ISOLATION CHECK VALVE 3-C301-98 LEAKING INTERNALLY	NORMAL WEAR; LIGHT RUST ON SEAT	
G	DR3	O16454	110176	L	CV	E10	T			ISOLATION CHECK VALVE 3-205-2-7 LEAKING INTERNALLY	DIRT IN SEATING AREA & ON DISK PIVOT PIN	
G	DR3	O21157	040376	M	CV	E10	T			CHECK VALVE 3-1101-15 LEAKING INTERNALLY	CHEMICAL DEPOSITS ON VALVE SEAT SURFACES	

CHECK VALVE

UNIT	CONT. NO.	EVENT DATE	SYM	U	FAIL CODE	SYM	UNIT	FAILURE MODE	FAILURE MECHANISM	
G MCI	0194674	091377	C	CV	E10	K	I	G2	VALVES AD-14-13A + AC-14-13B LEAKING INTERNALLY	SCALE ACCUM ON SEATING SURFACES
G MCI	019468	091677	C	CV	E10	R	T		VALVE LEAKING IN EXCESS OF T.S.	DIRT ON SEATING SURFACES
G MCI	02266E	102078	C	CV	E10	R	T		HPCI-9 TURB EXT LINE CHECK VALVE LEAKING INTERNALLY	ACCUMULATED DIRT ON SEATING SURFACES
G P82	C14404*	C32976	C	CV	E10	R	T	04	FEED WAT CV 28A, 28B, 96A, 96B LEAKING EXCESSIVELY	RUST SCALE ON VAL SEATING SURFACES
G P83	C14036	010976	C	CV	E10			T	FEEDWATER CHECK VLV 28A-UNACCEPTABLE LEAKAGE	RUST SCALE ON VLV SEAT AND FLAPPER
G P83	C14116	C10976	C	CV	E10			T	FEEDWTR OUTBOARD CHECK VLV 96B-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G P83	C14117	C10976	C	CV	E10			T	FEEDWTR OUTBOARD CHECK VLV 96A-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G P83	014118	010976	C	CV	E10			T	FEEDWATER CHECK VALVE 28B-UNACCEPTABLE LEAKAGE	RUST SCALE ON VALVE SEAT & FLAPPER
G CC2	C20943	030578	L	CV	E10			T	REVERSE FLOW THRU CHECK VALVE 2-220-67A / TESTING	DIRT ACCUMULATED IN VALVE INTERNALS
M DC1	017245*	022277	C	CV	E10	B	T	G2	V CHECK VALVES FAILED LEAKRATE TEST	LAKE WATER DEPOSITS ON SEATING SURFACES
M DC1	021769*	022178	C	CV	E10	B	T	G2	V CHECK VALVES FAIL LEAKRATE TESTING	LEAKAGE PAST SEAT/PROBABLE FOREIGN WATER
M PR1	017488*	032477	C	CV	E10	G	T	C6	Z LEAKRATE TEST SHOWS 3 PENETRATIONS LEAKING THRU	FOREIGN MAT ON SEATING SURFACES
L FC1	019552	102077	W	CV	E12			D	VALVE HCV-1041B DISK FOUND UNFASTENED	LOCK PIN BROKE ALLOWING NUT TO LOOSEN
G DP2	C14442*	032976	U	CV	E12			T	02 CHECK VALVES 2-220-58B, -62B LEAKING INTERNALLY	WORN SEAT RING & C-RING ASSEMBLIES
G DP2	C19248*	106477	U	CV	E12	R	T	G2	REACTOR FEED CV 2-220-58B, 62B, LEAKING INTERNALLY	WORN SEAT/DISK ASSY PINS, WORN SEAT RING
G DK3	020760A	030478	C	CV	E12			T	02 FEEDWATER CHECK VALVES 3-220-58B, 62B LEAKING	WORN SEAT/DISK ASSEMBLY PINS
G DR3	C20760B	030478	C	CV	E12			U	CHECK VALVE 3-1601-21 LEAKING INTLWALY	OFF-CENTER DISK IN VALVE
G EN2	C22736*	101778	C	CV	E12	D	03	V URYWELL VACUUM BREAKERS LEAKING INTERNALLY	RETAINING MAGNETS EXTENDED TOO FAR	
G MCI	019449	100477	C	CV	E12			D	RCIC-9 TURB EXT VAL LEAK IN EXCESS OF T.S.	DISK WASHER BENT
G P82	022516	102178	H	CV	E12			T	CHECK VALVE 2-23-131 LEAKING INTERNALLY, GLAND SEAL	INTERNALS OF CHECK VALVE WORN CUT

CHECK VALVE

Y	U	V	CCNT.-NO.	EVENT DATE	S	U	FALL CODE	T	J	CN	X	FAILURE MODE	FAILURE MECHANISM
M	IP2	021053		052378	F	CV	E12	D		4	IN SWING CV G.S.OF PUMP 22 LEAKING INTERNALLY	TWO HANGER BRACKET BOLTS MISSING	
G	MPI	017649*		042777	C	CV	E13	T	02	TWO OXY SYST CHECK VALVS LEAKING INTERNALLY	O-RING FAILURE		
G	QCI	014059		010576	H	CV	E13	U		HPCI EXHAUST CHECK VALV. LEAKING INTERNALLY	DEFECT G-SKNET BETWEEN VLV. SEAT AND BODY		
C	SLI	041524*		042078	C	CV	E25	D	02	TWO VENT VALVES (V-25-20/FCV-25-3) LEAKED THRU	SEAT PROBLEMS/1-CUT, 2-SMALL DEPRESSION		
G	DR2	014420		032976	H	CV	E25	T		HPCI VALVE 2-2301-45 LEAKING INTERNALLY	CORROSION, PITTING OF LOWER SEATING AREA		
G	P03	014033		010776	H	CV	E25	T		HPCI EXHAUST LINE CHECK VALV 23-65-EXCESSIVE LEAK.	POOR MATING BETWEEN FLAPPER & SEATING SUR		
G	P03	014034		010976	H	CV	E25	R	T	INST. NITRO. OUTBOARD CK. VALV 8-EXCESSIVE LEAKAGE	POOR MATING BETWEEN THE VLV FLAPPER & SEAT		
G	P03	014143		012676	H	CV	E25	T		INSTRUMENT NITRO. TO TORUS CHECK VALV-UNACCEPT. LEAK.	POOR MATING BETWEEN VLV FLAPPER & SEAT		
G	QCI	014058*		011076	U	CV	E25	R	03	3 FEED WATER CV THAT FAILED EARLIER FAILED AGAIN	WITCH O-RINGS(SEAT SURFACES) DETERIORATED		
G	QCI	020331A		032077	C	CV	E25	T		EXCESSIVE LEAKAGE THRU CV DURING TESTS	DETERIORATED O-RINGS		
M	HN1	019899		110377	C	CV	E25	T		VALVE CC-CV-721 DID NOT SEAT PROPERLY	FAILURE OF SEATING SURFACE		
M	PT2	014389		030876	C	CV	E25	R	T	CV 2-795A IN CCM SYSTEM FAILED LEAKRATE TEST	DIRT ON SEATING SURFACES/LAPPED SURFACES		
M	PT2	017404		030977	C	CV	E25	R	T	4 IN CV IN CCM SYSTEM FAILED LEAKRATE TEST	SEAT/DISC PROBLEM/PROB DUE TO NORMAL WEAR		
G	RA1	018128		052077	G	CV	F04	D		HPCI STM. LINE EXH-CHECK VALV E41-FG49 DETER. FAILED	VLV OSCIL. CAUSED DSC HINGE FAIL; IMP. DESGN		
M	BV1	043234		101278	C	CV	F04	D		1A RCP SEAL INJEC. SPR. LOAD. CKVL UPEN. PRESS. TO HIGH	CHECK VALV. HAD IMPROPERLY DESIGN. SPRING		
G	CO1	021620		042378	C	CV	F10	T		FLV-160 EXCESS FLOW CHECK VALVE MALFUNCTIONING	CRUD BUILDUP ON POPPET ASSEMBLY		
C	PA1	017905		021977	S	CV	F12	R	T	DISCH CV. SERV WATER PUMP P07 STUCK	CV FLAPPER STUCK, VAL LUBED AND RET TO SERV		
G	UR4	019008		121277	C	LV	F12	R	D	VACUUM BREAKER 2-1601-32B INOPERABLE	MECHANICAL BINDING OF VALVE PARTS		
G	UR2	021512*		051378	C	CV	F17	R	T	VACUUM BREAKERS 2-1601-33E/F FOUND INOPERABLE	SWELLING OF TEFLOM SHAFT BUSHINGS		
P	DB1	022051		072478	C	CV	I02	U		FLOOR DRAIN FLAPPER VALV REMOVED. MODE4 OPER. FTS VIC.	PERSONNEL ERROR MAINTENANCE		
G	EN1	021725		066778	K	LV	I02	D		4-EXCESS FLOW CVS NOT FUNCTIONALY TESTED AS REQ.	MAINTENANCE PERSONNEL ERROR		
P	CE3	016209		110176	H	CV	V01	S	D	IMP. LINEUP VALS 3HP-152 + 3HP-153 CLOSED S.B. UPEN	PERSONNEL ERROR		
G	BR2	016200		110276	Q	CV	V01	S	D	RCIC TURB. EXH. STP-CBK E51-F001 CLOSED WHEN REC. UPN	PERSONNEL ERROR/VLV NOT OPEN. AFTER TEST		
C	NM1	020764		030778	E	CV	V01	S	D	FCUT VALVE OPENED AT IMPROPER TIME	PERSONNEL ERROR		

RELIEF VALVE

PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CLN	MHP	KEY	FAILURE MODE		FAILURE MECHANISM	
C FC1	016025*	100176	W	RV	AG0	R	U	05			5 RELIEF VALVE SETPOINTS DRIFTED FROM TECH SPEC	UNDER INVESTIGATION		
C FC1	019401*	093077	W	RV	AG0	R	U	03			3 RELIEF VALVE PRESS. SETTINGS DRIFTED OUT OF SPEC	CHANGE IN ENVIRONMENTAL CONDITIONS		
C FC1	019551	102677	K	RV	AG0	R	U				VALVE KC-142 RELIEF PRESSURE OUT SPEC HIGH	COULD NOT BE DETERMINED		
C MY1	022141	081578	K	RV	AG0		U				PRESSURIZER RV PR-S-13 SETPOINT OUT OF SPEC	CAUSE UNKNOWN, SETPOINT ADJUSTED		
C PA1	020164*	010678	W	RV	AG0		U	05			SETPOINTS ON 5 RV'S OUTSIDE OF T.S. BANDS, STM. SYST	CAUSE OF S.P. DRIFT UNKNOWN		
G DA1	017632	040577	P	RV	AG0		U				SAFETY VALVE PSV 4404 LIFTING PRESSURE OUT OF SPEC	CAUSE UNKNOWN		
G DA1	021169*	040378	H	RV	AG0		U	04			SETPOINTS OUT OF SPEC ON 1 SAFETY+3 RELIEF VALVES	CAUSE UNKNOWN		
G DR2	019985	120977	W	RV	AG0	R	U				ELECTROMATIC RELIEF VALVE 3B FAILED TO OPEN	CAUSE UNKNOWN		
G EN1	018649	080577	W	RV	AG0		U				SAFETY RV 1C FAILED TO OPEN AT HIGH REACTOR PRESS.	CAUSE UNKNOWN		
G EN1	020019*	100677	A	RV	AG0	R	U	04			FOUR RELIEF VALVES FAILED TO OPEN FOLLOWING SCRAM	CAUSE UNKNOWN, VALVES BEING EXAMINED		
G QC2	020562	020178	E	RV	AG0		U				SBLC RELIEF 2-1105B FAILED TO OPEN/AT SET PRESSURE	UNKNOWN/SETPOINT DRIFTED HIGH/1540 VS1490		
G VY1	020910	041278	K	RV	AG0		U				RV (67HH13) SET TOO HIGH	SETPOINT DRIFT/RESET TO LOWER LIFT PRESS		
W IP2	018788A	051377	K	RV	AG0	R	U				RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT		
W IP3	021703	060878	W	RV	AG0		U				NO.5 RV ON NO.34 SE. OUTSIDE OF REQD. TOLERENCE	CAUSE UNKNOWN		
W SL1	016882	111376	K	RV	AG0	R	U				PRESS SAFETY VLV (SV1551B) OPENED AT HI PRESS	UNKNOWN/*SETPOINT DRIFT* LP		
W SU1	017056*	012077	W	RV	AG0	R	U	02			SV-MS-101B AND 102B FAILED TO OPEN AT SETPOINT	UNKNOWN/*SETPOINT DRIFT*		
W SL1	021900*	070578	W	RV	AG0	R	U	02			RV'S (SV-MS-101A/105B) FAILED TO OPERATE +/- 3X	UNKNOWN/*SETPOINT DRIFT*		
W SU2	019109*	091077	W	RV	AG0	R	U	05			SV-MS-201A, 201B, 201C, 202B, 202C FAILED TO OPERATE	UNKNOWN/DRIFTED +/- OR- 3X FROM SETPOINTS		
W TR1	018587*	070677	W	RV	AG0		U	05			5 STEAM SAFETY VALVE FOUND TO OPERATE OUTSIDE SET-	-POINT/UNKNOWN (*SETPOINT DRIFT*)		
W YR1	018419*	062777	K	RV	AG0		U	02			PRESSURIZER SAFETY VALVES (181/182) FAILED TO OPEN	UNKNOWN/SETPOINT DRIFTED HIGH/DRESSER INC		

RELIEF VALVE

Y F N	FL A N T	CONT. NO.	EVENT DATE	S Y S	C L M S	FAIL CCODE	T Y P E	C L A S S	C C N U M P M	K E Y	FAILURE MODE	FAILURE MECHANISM
D	DB1	023588*	121678	W	RV	A06	C	D	13		13 MN.STM.SAFE.RV NOT WITHIN LIMITS OF SETPOINT	PROCEDURAL DISCR.(PROC.DOESN'T ACC FOR T)
B	RS1	021198	050978	W	RV	A06		D			4 MS SAFETY VALVES FOUND SET WRONG/HIGH-CONSERVATIV	MAIN PROCEDURE INADEQUATE/REVISED
L	LC1	021056*	033078	W	RV	A06	R	D	09		9 MN.STM.SAFE-REL.VLV SETTINGS OUT OF TOLERANCE	PROCEDUR.CHG.CAUSED RV SETPOINTS TO BE WR
C	LC2	022837*	102378	W	RV	A06	R	D	12		12 MN.STM.SAFE-REL.VLV SETTINGS OUT OF TOLERANCE	PROCEDUR.CHG.CAUSED RV SETPOINTS TO BE WR
G	CO1	015873	081376	W	RV	A06		D			SETPOINT OF MS-RV-71E ADJUSTED INCORRECTLY	INCORRECT MAINTENANCE PROCEDURE
G	VY1	022130*	073178	G	RV	A06		D	02		TWO RV'S(SR-39A/B) FAILED TO OPEN AT DESIGN SETPNT	PROCEDURAL DISCREPANCY/SET W NITROGEN
G	DR3	018376	081377	W	RV	A10	R	F			SCLENDID OPERATING LEVER FOR 203-3C STICKING	RUST BUILDUP ON GUIDE PINS
G	GC1	018111*	042677	G	RV	A10	C	T	02	V	RELIEF VALVES LIFTED AT MUCH HIGHER THAN SETPOINT	BGRDN PRECIPITATED IN VALVE
C	FN1	021723*	060978	A	RV	A12		D	02		TWO RELIEF VALVES FAILED BENCH CHECK	PROBLEMS WITH PLUNGERS AND SPRINGS
G	DC1	018871	080777	A	RV	A12		D			ELECTROMATIC RV C FAILED TO OPEN	ACTUATOR PLATE BOUND AGAINST A RIVET
G	QC1	020532	032077	A	RV	A12		D			HAIN STEAM ELECTROMATIC RELIEF FAILED TO OPEN/TEST	INTERNAL PARTS FOUND LOOSE AND MISSING
G	WC1	020836	020678	A	RV	A12	R	D			ELECTROMATIC RELIEF 1-203-3E FAILED TO OPEN / TEST	WORN INTERNAL PARTS/VALVE WAS REPLACED
G	QC2	016473*	110176	A	RV	A12	B	D	02		TWO ELECTROMATIC RELIEFS FAILED TO OPEN ON TESTING	INTERNAL BINDING DUE TO CORROSION PROBLEM
G	QC2	020333	032377	A	RV	A12	R	D			ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	LOOSE INTERNAL PARTS BOUND/EXCESS VIBRAT
G	GC2	019423	052377	A	RV	A12	R	D			ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	RINGS CUT GROOVES IN DISC GUIDE/STEAM CUT
G	QC1	016472*	110176	A	RV	A13		D	02		ELECTROMATIC RELIEF VALVES FAILED TO OPEN/TESTING	EXCESSIVE INTERNAL STEAM LEAKAGE
G	NM1	017401*	030977	A	RV	A16	J	D	03		3 OUT OF 6 ADS RELIEF VLVS WOULD NOT HAVE OPERATE-	-G IF NEEDED//RESET SWITCH FAILURE
G	GC1	021408	042478	A	RV	A18		D			ELECTROMATIC RV 1-203-3C FAILED TO OPERATE / TEST	WELD FAILURE BETWEEN BODY AND CAGE/VIBRAT
G	VY1	015184*	070676	A	RV	A22	C	T	03		3 TARGET ROCK RVS FAILED TO OPERATE(SIGNAL/MANUAL)	DIAPHRAGM IN AIR OPERATORS FAILED/HEAT
G	MC1	015100	061476	K	RV	A24	S	D			SAFETY RELIEF VLV 2-71A FAILED TO ACTLATE	AIR LEAK IN AIR SUPPLY SYSTEM

RELIEF VALVE

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>T</u> <u>E</u> <u>M</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>Y</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u> <u>M</u> <u>P</u> <u>M</u>	<u>C</u> <u>O</u> <u>D</u> <u>E</u> <u>S</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
G	PI1	017674	051077	W	RV	A24	S	D	RV 203-3C DID NOT OPEN FROM REMOTE CONTROL SWITCH	DETERI CF THE REMOTE AIR ACTUATOR DIAPH
G	PI1	019736	111477	W	RV	A24	S	D	RELIEF/SAFETY VALVE 203-3B COULD NOT BE MAN OPENED	FAIL CF 3-WAY SOLENOID VAL TO PORT PROPER
G	QC1	020425	111677	A	RY	A24	S	D	RELIEF VALVE 1-203-3B FAILED TO OPEN ON DEMAND	COMMAND/WIRE TIE IN ELECT CONTACTOR
G	CC2	022615	092978	W	RV	A24	S	D	RV 2-203-3A FAILED TO OPEN(MANUAL) / COMMAND	AIRLINE TO MANUAL AIR OPERATOR BROKE
W	ZI2	014215	012176	W	RV	A24	S	D	MAIN STEAM RV(2 MOV-MS0017) WOULD NOT OPERATE /AIR	COMMAND/RELAYS FAILED IN CONTROLLER AMP
G	CC1	014936	051476	W	RV	A27		D	MAIN STEAM SAFETY RELIEF VALVE MALFUNCTIONING	CRACK IN BELLOWS TO BASE WELD
C	DA1	017624*	032877	W	RV	A27	U	06	E MAIN STEAM RV DID NOT LIFT AT PROPER PRESSURE	FAILURE CF PILOT VALVE TO OPERATE
B	DB1	019280	092477	K	RV	B00		U	PRESSURIZER POWER RELIEF VALVE FAILED TO RESEAT	CAUSE NOT STATED
B	TI2	021272*	042378	W	RV	B00	U	02	V MAIN STEAM RELIEF VALVES FAILED TO RESEAT	UNKNOWN
C	AR2	023468	122778	W	RV	B00		U	MAIN STM-RELIEF VLV 2PSV1053 FAILED TO RESEAT	NO CAUSE FOR FAILURE GIVEN
C	BF2	020360	020578	W	RV	B00	R	U	RELIEF VALVE 2-1-41 OPENED AND FAILED TO RESEAT	CAUSE CF MALFNCTION UNKNOWN
G	BF2	020469	021378	W	RV	B00	R	U	RELIEF VALVE 2-1-5 OPENED AND FAILED TO RESEAT	CAUSE CF MALFNCTION UNKNOWN
G	BF3	020923	041578	W	RV	B00	R	D	RELIEF 3-1-31 FAILED TO RESEAT AT PROPER PRESSURE	CAUSE CF MALFNCTION IS NOT KNOWN
C	BF3	022126A	061778	W	RV	B00	R	D	A MAIN STM RELIEF VLV DID NOT CLOSE AFTER LIFTING	CAUSE CF FAILURE NOT GIVEN
G	EN1	016841	120976	A	RV	B00	R	U	RELIEF VALVE WOULD NOT RESEAT	CAUSE UNKNOWN
G	EN1	017189	020177	A	RV	B00	R	U	RELIEF VALVE B21-F013G OPENED AND STUCK OPEN	CAUSE UNKNOWN, VALVE TO BE TESTED
G	QC1	016519	060576	N	RV	B00		U	RV ON REGEN HOT WTR HEATER NOT SEATED	CAUSE NOT GIVEN
G	QC1	015575	101276	N	RV	B00		U	RV ON REGEN HOT WATER HEATER NOT SEATED	CAUSE NOT GIVEN
G	EN2	022465	092378	C	RV	B10		T	RELIEF VALVE 2E11-RV-F212A STUCK PARTIALLY OPEN	DIRT ON VALVE SEAT
G	PB2	016333	111476	W	RV	B10	R	T	MAIN STM RV 71F FAILED IN OPEN POSITION	DIRT UNDER PILOT DISK AND SEAT

RELIEF VALVE

<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>CONV</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CM</u>	<u>PH</u>	<u>KEY</u>	<u>FAILURE PCODE</u>	<u>FAILURE MECHANISM</u>
G PB2	015759	082976	Y	RV	B12		L				LIQ NITD TK RV FAILED TO RESEAT	DEFECTIVE BLOWBACK RING
W JF1	021872	052778	N	RV	B12		U				B STEAM GEN SAFETY RV FAILED TO RESEAT	BROKEN LOWER ADJ RING LOCKING PIN
G BR2	018697	071577	W	RV	B16	S	D				SAFETY REL.VLV B21-F013B STUCK OPEN(AFTER MAN.OPEN	GRND. ON SOLENOID ASS. FOR REMOTE AL QATR
G BF1	017525	042177	W	RV	B27	R	D				MN.STM.SAFE-RELIEF VLV. FAILED TO RESEAT	SEVERE STM.CUTS ON PILOT DISC
G BR1	020771	031378	W	RV	B27		D				RELIEF VLV B21-F013F FAILED TO RESEAT AT REQ.PRESS	DEFECTIVE PILOT VLV/PILOT REPLACED
G DR2	014747	052576	A	RV	B27		T				DURING BLOWDOWN TEST VALVE 203-3A REMAINED OPEN	EXCESS LEAKAGE ON PILOT STAGE OF VALVE
G EN1	017110	010977	A	RV	B27	R	T				RELIEF VALVE B21-F013G OPENED AND STUCK OPEN	GROSS LEAKAGE OF PILOT+2ND STAGE ASSEMBLY
G PB2	015085	062576	W	RV	B27	R	T				MAIN STEAM RV FAILED IN OPEN POSITION	PILOT VALVE SEAT LEAKAGE
G PB2	016676A	010677	W	RV	B27	R	T				MAIN STM RV 710 FAILED OPEN	EXCESSIVE PILOT SEAT LEAKAGE
G PB3	015153	071276	W	RV	B27	R	T				718 MAIN STEAM RELIEF VALVE FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G PB3	015228	072076	W	RV	B27	R	T				MAIN STEAM RELIEF VLV 716 FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G PI1	022757	100978	W	RV	B27	R	I				RV-203-3C FAILED TO RESEAT AT PROPER PRESSURE	EXCESSIVE PILOT SEAT LEAKAGE
G CC2	019745	110677	W	RV	B27		T				RELIEF VALVE 2-203-3B FAILED TO RESEAT	PILOT VALVE WAS STEAM CUT AND ERCDOD
B RS1	021746*	061178	K	RV	CC0		U	03			2 SAFETY#1 ELECTRO RV LEAKING THRU DURING TESTING	UNKNOWN#2 REPLACED,#1 REBUILT
C FC1	017745B	042577	G	RV	CC0	R	U				LEAKAGE THROUGH RELIEF VALVE HG-105	UNDER INVESTIGATION
C FC1	022468B	050878	G	RV	CC0	R	U				RV HG-105 LEAKING INTERNALLY	CAUSE UNKNOWN
C SL1	022649	100278	G	RV	CC0		U				1B CHARGING PMP HAD A LEAKING RELIEF VALVE	CAUSE OF LEAKAGE NOT GIVEN
G FP1	014658	033176	J	RV	CC0		U				RELIEF VALVE 15RV-112A LEAKING	CAUSE UNKNOWN
G FP1	022537	092078	C	RV	CC0		U				SAFETY RELIEF VALVE WAS LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN
W DC2	021467A	051978	Z	RV	CC0		U				SAFETY VALVE ON FFED SYS LEAKING THRU	UNKNOWN/REPLACED VALVE

RELIEF VALVE

P L A N T	C U M U L A T I V E	C O N T - N O.	E V E N T D A T E	S Y S T E M	S P A C E	C O D E	F A I L U R E C O D E	T Y P E	C O M P O N E N T	F A I L U R E M E C H A N I S M
M	PT2	0178C6	042077	G	RV	C00	R	U	LEAKAGE THRU 3/4 INCH DISCHARGE RELIEF VALVE(PUMP)	UNKNOWN/DIMINISHED WITH OPERATION
M	PT2	0178E9	050377	G	RV	C00	R	U	LEAKAGE THRU 3/4 INCH RELIEF VALVE/PUMP DISCHARGE	UNKNOWN/VALVE WAS REPLACED
M	PT2	022641*	091378	G	RV	C00	C	U	2-CROSSBY 3/4 INCH RELIEF VALVES LEAKED THRU	UNKNOWN/ VALVES WERE REPLACED WITH SPARES
M	Z11	016307	100676	L	RV	C00	U	U	RELIEF VALVE IN RHRS LEAKED THRU/GASEOUS RELEASE	UNKNOWN
G	DR3	018378A	061177	M	RV	C02	R	D	ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALLY	PILOT PIN ADJUSTED INCORRECTLY
G	UM3	018378B	061177	M	RV	C10	R	T	ELECTROMATIC RELIEF VALVE 203-3E LEAKING INTERNALLY	DIRT UNDER VALVE SEAT
C	M11	018944	081077	E	RV	C10	T	T	CCRE SPRAY PUMP DISCH RV LEAKING	PARTICLES BETW VAL DISK AND GUIDE
G	OC2	C20944	030478	G	RV	C25	T	Y	SBLC RELIEF 2-1105A LEAKED THRU / LOW PUMP OUTPLT	MACHINED SEAT AND RESET TO 1450 PSIG
M	IP2	018788B	051377	M	RV	C25	T	Y	INTERNAL LEAKAGE PAST VALVE PCV-460	EXCESSIVE VALVE SEAT WEAR
G	DA1	014443*	033176	M	RV	C27	T	U	SIX RELIEF VALVES LEAKING INTERNALLY	EXCESS STEAM CUTTING ON PILOT VALVE SEAT
G	DA3	018377	061277	M	RV	C27	R	D	ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALLY	DEFECTIVE PILOT VALVE STEM
G	M11	018126	061077	M	RV	C27	T	Y	KV DISCH TEMP HIGH/VLV LEAKING STM INTERNALLY	COLLAPSED FILTER,STM CUTTING OF PLY SEATS
G	M11	020698	031078	M	RV	C27	T	Y	RV FAILED TO RESEAT	LEAKAGE IN PILOT VALVE / STEAM CUT
G	P11	019859	111577	M	RV	C27	R	Y	RELIEF VALVE 203-3B DETERMINED TO BE LEAKING	FIRST-SECOND STAGE OF PILOT VALVE LEAKING
G	P11	019726	111777	M	RV	C27	R	Y	RELIEF VALVE 203-3D DETERMINED TO BE LEAKING	FIRST STAGE OF PILOT VLV SEAT LEAKING
C	P41	017961	042677	G	RV	D02	D	D	RV-2255 LEAKING EXTERNAL/PART. UNSCREW.FROM COLLET	PERSONNEL ERROR/MAINTENANCE IMPPOP. PERF.
C	CL1	015271A	042776	G	KV	D04	C	D	FIN-HOLE LEAK DISCUV.IN BONN.#11 BCR.ACO.PMP.RELIE	SUC.REL.MADE CF CARBON STEEL/DESIGN ERROR
C	FCL	020365	011778	G	RV	D11	B	Y	WELD ON 1-B CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION CF PIPING IN SERVICE
C	FCL	020565	021578	G	RV	D11	B	Y	WELD ON CH-1A CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION CF PIPING IN SERVICE
C	FCL	021118	040878	G	MV	D11	B	Y	WELD ON VALVE CH-219 CRACKED	VIBRATION CF PIPING IN SERVICE

RELIEF VALVE

UNIT	CONTR. NO.	EVENT DATE	SYMBOL	COMP. CODE	TYPE	DESCRIPTION	FAILURE MODE	FAILURE MECHANISM
C	SL1 C155C3	062676	G	RV L33	T	RELIEF VALVE ON BORON ACID SYSTEM/EXTERNAL LEAKAGE GASKET FAILED ON INLET TO VALVE		
B	CP3 C172C	022577	M	RV H00	R U	MN-STM-RELIEF VLV MSV-36 OPEN BEFORE SETPOINT	CAUSE OF PREMATURE OPENING NOT KNOWN	
J	CP3 C17319	030877	M	RV H00	R U	MN-STM-RELIEF VLV MSV-3 OPENED PREMATURELY	CAUSE OF FAILURE UNKNOWN	
J	CP3 C193C5	091677	M	RV H00	R D	MN-STM-SAFETY VLV, MSV-42 RELIEVED AT PRESS-BELW SP SETPOINT DRIFT (CAUSE OF DRIFT NOT STATE)		
B	DP1 C20219*	122177	M	RV H00	U 04	4 FM-STM-SAFETY VLVs LIFTED BELOW DESIGN SETPOINTS CAUSE OF PREMATURE OPENINGS IS UNKNOWN		
C	FC1 C152C9A	052876	M	RV H00	R U 02	RELIEF VALVES OPENED BELW SET PRESSURE	PRESSURE SETPOINT HAD DRIFTED	
L	FC1 C152C9B	052876	M	RV H00	R U 06	C RELIEF VALVE SETPOINTS BELW DESIRED PRESSURE	SETPOINTS HAD DRIFTED	
C	SL1 015511*	071876	L	RV H00	U 02	TWO SUCTION RELIEF VALVES OPENED PREMATURELY	UNKNOWN/FAILED TO RESEAT ALSO	
G	BF3 C23591	121678	G	RV H00	T	RV ON DISCHG. OF STDBY-LIC. CONT. PMP. OPENED PREMATURELY	NO CAUSE GIVEN (PROB. SETPOINT DRIFT)	
G	BR2 C15421	070776	A	RV H00	U	ADS SAFE-RELIEF VLV R-821-F0136 OPENED PREMATURELY	CAUSE NOT GIVEN	
G	FP1 C15241	072176	A	RV H00	U	SAFTEY RELIEF VALVE OPENED PREMATURELY	CAUSE UNDER INVESTIGATION	
G	FP1 C16373	111976	A	RV H00	U	RELIEF VALVE 02-RV-71F INADVERTENTLY OPENED	CAUSE UNKNOWN	
G	FP1 C16415	112276	M	RV H00	U	SAFTEY/RELIEF VALVE 02-RV-71B OPENED PREMATURELY	CAUSE UNDER INVESTIGATION	
C	FP1 C165CC	121576	F	RV H00	U	RELIEF VALVE ON SCRAK BACK PUMP LIFTING EARLY	CAUSE UNKNOWN	
G	P11 014942	052676	M	RV H00	U	CROSBY RELIEF VALVE OPENING AT TCO LOW PRESSURE	CAUSE UNKNOWN	
G	VY1 014544	041576	L	RV H00	U	RELIEF VALVE (RHR-25A) LIFTED PREMATURELY / TEST	UNKNOWN/ RESET TO LIFT 100 PSI HIGHER	
M	RV1 C20131*	121877	L	RV H00	C U 02 V	RELIEF VLVs LIFTED AT SETTING LOW THAN NORMAL	NO CAUSE GIVEN FOR RV LIFTING LOW	
M	HN1 C14598	051876	B	RV H00	U	RV ON STEAM SUPPLY TO AUX FEED PUMP LIFTED EARLY	VALVE TO BE REPAIRED/FAIL. CAUS. UNKNOWN	
M	IP2 C21250	020978	G	RV H00	U	RV MC.264 RELIEVE BELOW DESIGN SETPOINT	CAUSE UNKNOWN	
M	IP2 C21C28	021478	M	RV FCO	R U	RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT	

RELIEF VALVE

<u>EVENT</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYM</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CUN</u>	<u>MPM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	IP3	016635	100276	L	RV	H00		U				RV-1836 LIFTED BELOW TS PRESSURE	UNKNOWN
W	SL1	016882A	111376	K	RV	H00	R	U				PRESSURIZER SAFETY VLV (SV1551A) PREMATURE OPEN	UNKNOWN/ "SETPOINT DRIFT" CGWN
W	SU1	017217	021577	W	RV	H00	R	U				MS SAFETY VALVE (SV-MS-101A) PREMATURELY OPENED	UNKNOWN/SETPOINT DRIFT OF TORQUE LIMITOR
W	FL1	023131	C72678	H	RV	H00		U				HYDRG TEST PUMP DISCHARGE RV PREMATURELY OPENED	UNKNOWN/VALVE WAS REPLACED AND CHECKED OK
W	SL2	019212*	092077	K	RV	H00	R	U	03			3 PRESSURIZER SAFETY VALVES OPENED PREMATURELY	UNKNOWN/PROB WIDE VARYING TEMPEENVIRONMNT
W	YR1	022739*	102178	W	RV	H00		U	02			TWO SG SAFETY VALVES LIFTED PREMATURELY	UNKNOWN/READJUSTED VALVES
G	EN1	013045*	072976	A	RV	H03		D	07			ALL SEVEN ADS VALVES OPENED INADVERTANTLY ON TEST	PERSONNEL ERROR(USED WRONG PROCEDURE)
C	CC2	019982	121377	H	RV	H04		D				HI.PRESS.SI.HDR.RELIEF LIFTED AT PRESS.BELOW T.S.	DESIGN ERROR;VLV WAS SET AT TOO LOW PRESS
L	FC1	016334*	111076	K	RV	H06	R	D	02			VALVES RC-141+RC-142 LIFTING PRESS OUT OF SPEC	LIFTING PRESS SET WITH NITROGEN
G	BF3	019562	012277	G	RV	H08	R	D				RELIEF ON 3A STBY.LIQ.CONT.PUMP OPEN.BELOW SETPOINT	DISC BOUNC IN GUIDE;VLV SEATS DAMAGED
G	BF3	018635	062177	G	RV	H08	R	D				RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	SCORED AREA ON PLUG GUIDE AND PLUG
G	BF3	018542	072577	G	RV	H08	R	D				RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	DISC GUIDE WAS GALLED WITH THE VLV DISC
G	QC1	017359	012577	G	RV	H10		T				RV IN STANDBY LIQ CONT SYS OPENED PREMATURELY	POSS BORON CRYSTALS IN SEATING AREA
C	CC2	017966	051477	W	RV	H12	R	T				S/G SAFETY VLV LIFTED BELOW SETPOINT (2-RV-3993)	DRIFT IN VLV'S SPRING TENSION/ADJ.TENS.
L	CC2	018040*	061477	W	RV	H12	R	T	04			3 SAFE.VLVs #22S/G61 SAFE.VLV #21S/G LIFTED PREMAT	DRIFT IN THE VLV'S SPRING TENSION
G	BF2	021401	050478	G	RV	H12	R	D				RELIEF VLV.ON "B" STBY.LIQ.CCCT.PUMP OPEN.BELOW SP	CAUSE OF IMP.SET POINT SETTING NOT GIVEN
G	BF3	022125	082278	W	RV	H12	R	D				DURING STARTUP MSR V 1-4 OPENED BELOW SETPOINT	PREMATURE OPEN.DUE TO EXCESS.2ND.STG.LEAK
G	BR2	018178A	060877	G	RV	H12		T				STDBY.LIQ.CONT.PMP 2B REL.VLV LIFTED BELOW SETPOINT	MECHANICAL DRIFT
G	BK2	018178B	060877	G	RV	H12		T				STDBY.LIQ.CONT.PMP 2A REL.VLV LIFTED BELOW SETPOINT	MECHANICAL DRIFT
G	M11	019962	112977	A	RV	H16	S	U				A TARGET ROCK SAFETY/RELIEF VLV ACTUATED PREMATURE	CABLE FAULT CAUSED ACTUATION SOL.TO ENERG

RELIEF VALVE

<u>V E N T</u>	<u>P L A N T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C U M P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C U M P N</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	Z11	014399	010876	W	RV	H24	S	D			RELIEF VLV ON 1A S/G OPENED PREMATURELY	STM.PRESS.XMITTER, JPT-516 DRIFT, TO MAX OP VALVE SEAT NEEDS LAPPING
G	DR2	014542	041276	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-A LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	DR2	014530	041376	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-B LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	VV1	018978*	082877	G	RV	H25	T	O2			TWO SBLC RELIEF VALVES LIFTED PREMATURELY	1-SEATING SURFACES LAPPED 2-RESET SETPOINT
G	BF3	022726*	081778	W	RV	H27	R	D	03		PN,STM RVS MSR1-41,30,634 OPENED BELCW SETPOINTS	VLV FAILURES WERE CAUSED BY PILOT VLV,PRB
G	BR2	015419	071576	W	RV	H27	D				SAFE,RELIEF 2-B21-F013K(S/N 109)LIFTED PRIOR TO SP	PILOT VLV HAD POPPET,6 SEAT STEAM CUT
G	EN1	017190	020477	A	RV	H27	R	T			RELIEF VALVE B21-FG133 OPENED PREMATURELY	LEAKAGE BY VALVES PILOT SEAT
G	MI1	018157	061777	W	RV	H27	R	T			VALVE 1-MS-30 LIFTED BELOW SET PRESSURE	EXCESSIVE LEAKAGE PAST PILOT SEAT
G	MI1	019631	111877	K	RV	H27	T				RV LIFTED BELOW SET PRESSURE	EXCESSIVE PILOT SEAT LEAKAGE
G	MI1	020698A	031078	K	RV	H27	T				RV LIFTED PREMATURELY DURING A SHUT DOWN	LEAKAGE IN PILOT VALVE/STEAM CUT
G	CC1	017925A	051976	N	RV	100	U				WORK REQUIRED ON STORAGE TANK OUTLET RELIEF VALVE	FAILURE CAUSE NOT STATED
G	BR2	015419*	071576	W	RV	100	U	03			3 RVLVS (A(S/N 98),B(S/N 102))&G(S/N 99) UNSATISF.	CAUSE OF VLV'S BEING UNSATTSFACT,NOT GIVN
G	CC1	015271B	062776	G	RV	104	C	D			#12 BORIC ACID PUMP SUC.RELIEF MADE OF WRONG MATER	DESIGN ERROR
W	IP2	022163	081778	K	RV	104	U				DISCREP BETW SPEC + AS SUPPLY PARAMETERS FOR RV	DESIGN ERROR,3 IN,1500 PSI PRESS RV
G	BF1	020493A	021478	W	RV	105	C	D	02		LINEAR INDIC. FOUND IN 2 MN,STM,RVS,BODY CASTINGS	CAUSED BY CASTING SHRINKS OR NONMETAL,INC
G	BF2	020453B	021478	W	RV	105	C	D	02		LINEAR INDIC. FOUND IN 2 MN,STM,RVS,BODY CASTINGS	CAUSED BY CASTING SHRINKS OR NONMETAL,INC
G	PB2	020684*	030178	W	RV	105	C	D	04		DLRING INSPECT,3CRACKS FOUND NEAR SEATS OF 4 S,RVS	CRACKS WERE CAUSED BY PRE-EXIST,CAST,DEF.
G	CC1	020026	121977	J	RV	109	T				#11COMP,COOL,HEAT XCHGR,SALT WTR,RV NEEDED REPAIRS	VLV'S SPRING WAS SEVERELY CORRODED
G	PB2	016677*	010377	W	RV	122	T	09			INSPECTION OF RELIEF VLV'S SHCWED DIAPHRAGM PROBLEM	DELAMINATION AND OVERHEATING OF DIAPHRAGM
G	PB2	016676B	010677	W	RV	127	R	T	03		MAIN STM RVS 710,E6K FOUND TO NEED MAINT. ON INSP	EXCESSIVE PILOT VLV SEAT LEAKAGE
G	NM1	015849	090876	P	RV	106	D				REGD SURVEILLANCE ON RV NOT PERFORMED	PROCEDURE ERROR
W	DC2	0225E1	092278	K	RV	V01	S	D			PRESSURIZER RV OPENED WHEN REQUIRED TO BE CLOSED	PERSONNEL ERROR
C	FC1	023171	122078	K	RV	V06	S	D			TWO PRESS CP RELIEF VALVES OPENED WHEN REQ CLOSED	TECH PULLED FLSES,DEFECTIVE PROCEDURES

DAMPER VALVE

<u>VEN</u>	<u>PLANT</u>	<u>CLNT.NO.</u>	<u>EVENT DATE</u>	<u>SY S</u>	<u>CUM P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C L N H U P M</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	PR1	C13955	010976	E	DV	A10		T			OUTSIDE AIR TO DIESEL ROOM DAMP FAILED TO OPEN	ICE BUILDUP ON PARTS OF DAMPER
C	DB1	C23067	103178	E	DV	A12		D			DIESEL GEN.1-2 OUTSIDE AIR DAMPER WOULD NOT OPEN	DAMP.LINK.OUT OF ADJ.& BOUND IN A GUIDE
C	P11	C21639	061378	T	DV	A12		D			B DAMPER TO STDBY.DIL.FAN AT MAIN STACK FAILD SHUT	LOOSE SET SCREW IN ACTUATOR LINKAGE
B	AR1	C26883*	030878	N	DV	A24	S	D	05		DAMPERS CV2102,2111-2113,62116 FAILED TO ACTUATE	PROBABLE CAUSE, STICKY AIR SUPPLY
B	AR1	C22099	081778	N	DV	A24	S	D			DISCHARGE DAMPER CV7903 FAILED TO OPEN;SEC. FAULT	DEFEC. SCL.VLV IN AIR SUPPLY LINE(SV7807)
L	CC1	C19479B	101977	N	DV	B02		D			SPENT FUEL PL.CHAR.ABS.BANK BYP.DMP.FAILED TO SHUT	6C FB DAMPER GASKETS WERE MISSING
B	DB1	C19615	112777	N	DV	B10		T			ISO.DAMPER HV-5311A WOULD NOT CLOSE COMPLETELY	DAMPER SEAL DIRTY & NEEDED LUBRICATION
E	DB1	C23006	102178	N	DV	B10		T			EMER.VENT.SYS.ISO.DAMP.HV-5301A WOULD NOT CLOSE	DIRT ON SEALING SURF/NEEDED LUBRICATION
B	CR3	C22358	090778	N	DV	B12		D			CENT.COMPLEX AIR SUP.DAMPER D-1 WOULD NOT CLOSE	MECHANICAL BINDING OF AIR SUP.DMPER D-1
B	T12	C21274	041978	N	DV	B12		D			VENTILATION DAMPER VALVE (D-4098) FAILED TO CLOSE	DAMPER LINKAGE IMPROPERLY ADJUSTED
W	SL1	C16254*	102676	N	DV	B16	S	D	02		TWO CONTROL RM DAMPERS FAILED TO CLOSE DURING TEST	COMMAND/RELAY STUCK IN ENERGIZED POSIT
C	CC1	C19479A	101977	N	DV	B19		T			SPENT FUEL PL.CHAR.ABS.BANK BYP.DMP.FAILED TO SHUT	OPER.BIND. DUE TO IMPROPER LUBRICATION
C	FP1	C19239	071376	N	DV	B21		T			DAMPER 66 ADV 100B DID NOT FULLY CLOSE	SOLENOID NOT IN PROPER ADJUSTMENT
B	T12	C22652	091378	N	DV	B24	S	D			AD VALVE (4092C) FAILED TO CLOSE/COMMAND FAULT	DESIGN ERROR IN AIR SUPPLY SYSTEM
W	KE1	C14387*	031276	N	DV	B24	S	D	02		DAMPERS ASV-50465 FAIL TO CLOSE ON S.I. SIGNAL	STICKY SOLENOID PILOT VALVES
L	CC1	C22600*	092378	N	DV	C12		L	02		#116#12 SFP EXT.FAN DISCH.DMPRS.LEAKING INTERNALLY	VLVS WERE LUT OF ADJUSTMENT
G	LA1	C20460	012078	N	DV	F00		U			ACTUATOR FOR DAMPER VALVE A073188 MALFUNCTIONING	CAUSE UNKNOWN
G	FN2	C22496	091778	N	DV	F04		D			ELECTRICAL CABLES ROUTING INTERFERES W DAMPER VALS	DESIGN ERROR, CABLES REROUTED
W	Z11	C22845	051478	R	DV	F04		D			1B KCFC ACCIDENT INLET DAMPER FAILED TO SHIFT	DESIGN PROB/DIFF PRESS FLEXED&BUND BLADE
C	SL1	C21835	061578	N	DV	F12		D			MOTOR OPERATED DAMPER VALVE FAILED TO OPERATE	OUT OF ADJUSTMENT

DAMPER VALVE

W N	P L A N T	CCNT.NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	I T E M	C L A S S	C L A S S C O D E	K E Y	FAILURE MODE	FAILURE MECHANISM
W	PR1	014061	012176	R	DV	F12	R	D			DAMPER FOUND IMPROPERLY POSITIONED	BINDING SHAFT BUSHING/POSS LUBRIC PROBLEM
W	PK1	018859	070177	R	DV	F12	R	U			DAMPER FAILED TO OPERATE DURING TEST/COUPLING PROB	PINS SHEARED/RANCON ACTUATOR TO DAMPER
W	PR1	018808	072677	R	DV	F12	R	U			DAMPER FAILED TO OPERATE/ACTUATOR FAILED(RANCON)	REPLACED BOTH ACTUATORS(BINDING DAMPER T)
W	PR1	021640	051678	R	DV	F12	R	T			DAMPER FAILED TO OPERATE AS REQUIRED	RANCON NC,R-26C ACTUATOR FAILED/LUBRICNTT
W	Z11	016099*	092376	R	DV	F12	B	D	02		TWO VENT FAN DAMPERS FAILED TO SHIFT TO ACCIL MODE	STICKY ACTUATING SHAFT/COUNTERWT PROBLEM
W	Z12	017037*	012877	N	DV	F16	S	D	02		TWO AIR COND DIV(OFCV-AV42A/B) FAILED TO OPERATE	COMPAND/STICKING RELAY
D	AK1	020863A	030878	N	DV	F24	S	D			DAMPER CV2101 DID NOT OPERATE PROPERLY	CV2101 AIR SUPPLY INCORRECTLY ADJUSTED
W	IP3	015576	081076	N	DV	F24	S	D			CONT.ROOM DAMPER "C" DID NOT TRANSFER ON SIGNAL	MALFUNCTIONING RELAY IN SUPPLY LINE
W	PT1	017805	043077	N	DV	F24	I	D			CONTROL RM VENT VALVE(DAMPER) FAILED TO OPERATE	FOREIGN PATTERN IN AIR REGULATOR
W	PT1	017864	052877	N	DV	F24	I	D			CONTROL RM VENT VALVE(DAMPER) FAILED TO OPERATE	FOREIGN PATTERN IN AIR REGULATOR
D	DB1	020270	010578	N	DV	V00	S	D			INLET BAL.DAMPERS TO EVS FANS 1-161-2 FOUND CLOSED	EXACT CAUSE UNKNOWN/PROBABLY PERSONNEL ER
G	CC1	014358	020776	Y	DV	V01	S	D			INCORRECT VALVE LINEUP ON RX BLDG VENT DAMPER	PERSONNEL ERROR
W	BV1	020754	021778	N	DV	V01	T	D			AIR FLOW CALCUL. OF CONT. ROOM FANS OUT OF T.S.--	DAMPERS WERE POSIT.INCCR.//PERSONNL ERROR
W	BV1	020792	022378	N	DV	V01	T	D			AIR FLOW CALCUL. OF SLCRS FLTR BANKS OUT OF T.S.--	DAMPERS WERE POSIT.INCCR.//PERSONNL ERROR
W	Z11	019175	072777	Y	DV	V01	S	D			OPERATIONS TAGGED WRONG DAMPER OUT OF SERVICE	PERSONNEL ERROR

OPERATOR TYPE OR FUNCTION NOT STATED

VEN	PLANT	CONT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CN	PH	KEY	FAILURE MODE	FAILURE MECHANISM
L	CC2	G20307	011178	S	LV	A12	D					#21 SER.WTR.HT.XCHG.SLT.WTR.OUT.VLV FAILED TO OPEN	DAMAGED SEAT RINGS&CLAPPS JAMMED SEAT DSK
W	ZI2	G19499	021177	G	UV	A22	R	D				DIAPHRAGM GATE VALVE (2VC8465) FAILED TO OPEN	DIAPHRAGM FAILED(GRINNEL CORP)
G	BR2	G14111	020276	N	UV	BC0	U					2-CRC-V49 FAILED TO FULLY CLOSE	NO CAUSE GIVEN
G	FP1	G15982	100476	N	UV	B00	U					VALVE LN CONDENSER (D-1) STUCK OPEN	CAUSE NOT STATED
E	CE1	G17497	031677	G	UV	B10	T					CAUSTIC DRAIN VLV FAILED TO FULLY CLOSE	CAUSTIC DRIED ON VLV SEAT PREVENTING CLOS
W	SA1	G17125	020177	N	UV	B12	D					SERVICE WATER VALVE (12 SW223) FAILED TO CLOSE	BROKEN BOLT ON ACTUATING ROD
C	LC1	G16740	121976	N	UV	B17	U					#12 S/G BOT.BLCW.GROFICE BYPASS VLV WOULD NOT SHUT	DAPAGED BUSHING CAUSED VLV NOT TO SHUT
d	CR3	G19000*	090777	N	UV	C00	U	02	V			VLV INTER.LEAK/UNPLAN.RADIOACT.GAS RELEASE TLR.BLD	CAUSE OF VLV LEAK. NOT STATED
d	CR3	G20E43A	020178	N	UV	C60	R	U				NOBLE GAS FROM MAKEUP TK.LEAKED BY STP VL RUV-141F	CAUSE OF VLV LEAKAGE NOT GIVEN
E	II1	G16832	031376	N	UV	L00	U					VALVE FOR NACH TANK LEAKED THRU/1250 GALS IN 8DAYS	UNKNOWN
C	CC2	G17986	032277	E	UV	C00	U					#21 DG COOL.SERV.WTR.IMLET(2-CV-1587)LEAK.BY SEAT	CAUSE OF INTERNAL LEAKAGE NOT GIVEN
C	CC2	G18482*	071477	N	UV	C00	U	02	V			#22 CHG.PMP DISCH.PRESS.GA.DRN.VLVs LEAK.BY SEATS	CAUSE OF VLVs NOT TIGHT.SEAT. NOT GIVEN
C	FC1	G14580*	040276	G	UV	C00	U	02	V			LEAKAGE BY ION EXCHANGER CH-8A ISOLATION VALVES	VALVES TO BE INSPECTED/NO CAUSE GIVEN
C	FC1	G15353	072676	L	UV	C00	U					VALVE CH-152 LEAKING INTERNALLY	TIGHTENED VALVE
C	MI2	G15578	080476	H	UV	C00	R	U				VALVE CN #4 SI TANK LEAKING INTERNALLY	NO CAUSE GIVEN
G	BR1	G21E40	070178	Y	UV	C00	U					CXY.MDN.CAC-AQH-1259 DR.POT VLV MALFUNCTIONED	CAUSE OF VLV NOT SEATING FULLY NOT GIVEN
G	MI1	G20722D	032078	Q	UV	C00	U	03				SHUTDOWN COOL.VLVs(1-SG-2A,4A,4B)LEAK.EXCESS OF TS	CAUSE OF LEAKAGE NOT GIVEN
G	MI1	G20722E	032078	N	UV	C00	U					CLEANUP SYS.VLV(1-CU-3)LEAKING IN EXCESS OF T.S.LM	CAUSE OF LEAKAGE NOT GIVEN
G	MC1	G15440	080276	Q	UV	C00	U					COOL SLP VAL TO RCIC TURB LEAKING INTERNALLY	CAUSE UNKNOWN
G	NM1	G17724*	041677	C	UV	C00	U	02				DRYWELL AIR VENT + FILL VALVES LEAKING	CAUSE UNKNOWN

OPERATOR TYPE OR FUNCTION NOT STATED

V	F	C	E	S	F	T	C	C			
M	L	U	V	S	A	S	L	N			
N	N	N	N	S	C	T	A	N			
	T	NO.	DATE	S	P	CODE	CLASS	NUM	KEY	FAILURE MODE	FAILURE MECHANISM
G	OC1	018953	082777	T	UV	COO	U			GAS DRAIN VALVE V-7-29 FAILED TO CLOSE TIGHTLY	CAUSE UNKNOWN
G	PB2	014381	040376	L	LV	COO	U			RHR PUMP MIN FLOW VAL LEAKING INTERNALLY	CAUSE UNKNOWN
G	PB2	019452	102177	M	UV	COO	T			VALVE CONNECT OFF-GAS VIAL SAMPLER LEAKING	CAUSE UNKNOWN
G	QC1	014000	010476	Y	LV	COO	U			EXCESSIVE LEAKAGE THRU VALVE I-8802-B / TESTING	UNKNOWN/*INFO LATER*/COPES-VUL 1/2 GLOBE
W	BV1	016358	102476	H	UV	COO	R	U		PRI-SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W	BV1	016705	122876	H	UV	COO	R	U		PRI-SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W	BV1	023216*	110878	C	UV	COO	U	12		12 VLVs FOUND LEAKING DURING CONT.PENET.LEAK TEST.	NO CAUSE FOR LEAKAGE GIVEN
W	IP2	017568	032877	X	UV	COO	U			DRAIN VALVE ON MANIFOLD LEAKING INTERNALLY	CAUSE UNKNOWN
W	RG1	018785*	082277	M	UV	COO	U	02		LEAKAGE THRU AT LEAST TWO VALVES DILUTED NaOH	UNKNOWN
W	RO2	021616*	050978	L	UV	COO	R	U	C2	INLET VALVES SI-867 A & B (BIT) LEAKING INTERNALLY	CAUSE NOT STATED
W	RO2	021740*	061378	L	UV	COO	R	U	C2	INLET VALVES SI-867 A & B (BIT) LEAK. INTERNALLY	CAUSE NOT STATED
W	SA1	017159*	021077	W	UV	COO	D	02		INTERNAL LEAKAGE THRU 2 MS VALVES	UNKNOWN/CAUSED SEC FAILURE 017199A
W	TL3	015006	061176	N	UV	COO	R	U		THRU LEAKAGE CAUSED DILUTION OF BORON INJECT TANK	UNKNOWN
W	TU4	015005*	061276	N	UV	COO	R	U	02	TWICE TWO VALVES LEAKED THRU DILUTING BORON TANK	UNKNOWN/TWO VALVES 6-11-76/SAME TWO 6-12-76
W	YR1	018267*	062077	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/VALVES REPAIRED
W	YR1	018367*	062777	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE EVENT/VALVES REPAIRED
W	YR1	018420*	070477	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/VALVES REPAIRED-AGAIN
W	YR1	018484*	071177	G	UV	COO	R	U	03	EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/POOR PAST REPAIRS
W	YR1	018486*	071477	G	UV	COO	R	U	05	DECIDED TO REPAIR THE 3 PUR VALVES/2 OTHERS ALSO	UNKNOWN PROBLEM/PAST REPAIRS INSUFFICIENT
W	Z11	019138*	102076	N	UV	COO	U	02	V	LEAKING THRU A SERIES OF VALVES/RADIOACTIVE H2O	UNKNOWN

OPERATOR TYPE OR FUNCTION NOT STATED

PLANT	EVENT	CCNT.NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CHUM	KEY	FAILURE MODE	FAILURE MECHANISM
W ZI2		018570	071677	G	UV	C00	R	L			LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORCN TK	UNKNOWN
W ZI2		018571	071677	G	UV	C00	R	U			LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORCN TK	UNKNOWN
G Gk2		019490*	110277	C	UV	C02	D	02			SAMPLE LINE ISOLATION VALVES 8501-1A, 1B LEAKING	IMPROPER SEAT TO DISK CLEARANCE ADJ
G EN1		022706	100578	S	UV	C02	D				VALVE BODY SEAT FOR P41-F313B FAILED DURING MAINT.	IMPROPER MAINTENANCE PROCEDURES FOLLOWED
C MI2		019257	092377	G	UV	C04	D				BORIC ACID LEAKING THROUGH DISCHARGE VALVE	VCT PRESS L.T. HEAD PRESS
G Bk2		014290*	021076	C	UV	C04	C	D	03		3 BUTTERFLY VALVES LEAKING THRU//DESIGN ERROR	AIR OPERATOR ADDED TO EACH VALVE
W ZI2		017730*	033077	G	UV	C04	B	D	C2	V	INJECTION LINE VALVES LEAKING THRU DILUTING BORCN	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W ZI2		017729*	040177	G	UV	C04	B	D	C2	V	INJECTION LINE VALVES LEAKING THRU DILUTING BORCN	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
B TI1		017610*	032477	C	UV	C07	R	I	03	S	LOGICAL LEAKRATE TESTING IDENTIFIED SEVERAL VALVES--	--LEAKING THRU//NORMAL WEAR
G BF3		023031*	111478	P	UV	C07	T	35			35 ISOLATION VLVS LEAKING ABOVE LIMIT	NORMAL WEARING OF THE SEATS
L CC1		014700	041976	C	UV	C10	D				DRAIN LINE ISOLATION VALVE LEAKING THRU ON TESTING	FOREIGN MATERIAL&FREQ USE,DAMAGED SEAT
G PB2		022463*	090478	N	UV	C10	T	02	V		BALL VALVES IN RAD WASTE MANAGE SYST LEAK INTERNAL	DIRT DEPOSITS ON VALVE SEATING SURFACES
G PB3		014042	011076	U	UV	C10	T				FEEDWATER FLUSH VALVE MG-3663-UNACCEPTABLE LEAKAGE	DAMAGE TO SEATING SURFACES CAUSED BY RUST
G PB3		014213	011076	D	UV	C10	R	I			CORE SPRAY ACCUM.VENT VLV SV-5224B-UNACCEP.LEAKAGE	SEAT WAS DAMAGED BY FOREIGN MATERIAL
W IP3		022407	090378	H	UV	C12	K	D			BYPASS VAL FOR LOOP A ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED
W IP3		022405	091278	H	UV	C12	R	D			BYPASS VAL FOR LOOP B ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED
W TP1		021624	051978	K	UV	C13	T				LEAKAGE THRU PLUG VALVE EXCESSIVE DURING TESTING	LOWER SEAT GASKET MISSING
W YF1		020422	012678	H	UV	C13	D				VALVE SI-TV-604 WAS FOUND TO BE LEAKING THRU	SEAL RING FAILED
W SU1		014870	032676	G	UV	C22	R	D			CV 1-CH-85 RUPTURES DIAPHRAGM/LEAKAGE THRU VLV	GRINNEL DIAPHRAGM FAILED/NORMAL WEAR
W SU1		015559	082376	G	UV	C22	K	D			DIAPHRAGM VALVE (1-CH-125) LEAKED THRU EXCESSIVELY	RUPTURED DIAPHRAGM/GRINNEL/NORMAL WEAR

OPERATOR TYPE OR FUNCTION NOT STATED

PLANT	CONT. NO.	EVENT DATE	SY	COMP	FAIL CLDE	TYPE	CLASS	CN	KEY	FAILURE MODE	FAILURE MECHANISM
W SU1	017092*	012677	G	UV	C22	R	D	02		TWO DIAPHRAGM VALVES (1-CH-83/95) LEAKING THRU	EXCESSIVE DIAPHRAGM WEAR/OVERTIGHTENING??
W SU1	017218	022077	G	UV	C22	R	D			DIAPHRAGM VALVE (1-CH-98) LEAKING THRU	EXCESS DIAPHRAGM WEAR/POSS OVERTIGHTENING
W SU2	018076	081577	G	UV	C22	R	D			DIAPHRAGM VALVE (1-CH-144) LEAKING THRU	CRACKED DIAPHRAGM ON GRINNEL VALVE
W YR1	017731	042577	Y	UV	C22		D			SYS VOL CALCULATIONS INDICATED VALVE LEAKING THRU	FAILED DIAPHRAGM IN 2 INCH GRINNEL VALVE
W ZI1	014235	020376	G	UV	C22		T			BOIC ACID VALVE (1VC8446A) FOUND LEAKING THRU	DIAPHRAGM FAILED DUE TO TIME/TEMPERATURE
W ZI2	015191	061576	G	UV	C22	R	T			BOIC ACID FILT BYPASS VLV (1VC8468) LEAKING THRU	FAILED DIAPHRAGM ON GRINNEL 2" MOD 2471
W ZI2	016342	081476	G	UV	C22	R	T			HOLDUP TANK VALVE QVC8264 LEAKING EXTERNALLY	DIAPHRAGM FOUND RUPTURED
G CC1	019292	091277	S	UV	C25		T			A HEAT EXCHANGER OUTLET VALVE LEAKING THRU	PORTION OF RUBBER VALVE SEAT MISSING
G EN1	018189A	051877	L	UV	C25		T	07		7 RHR VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189B	051877	H	UV	C25		T	04		4 HPCI VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189C	051877	Q	UV	C25		T	03		3 RCIC VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G EN1	018189D	051877	D	UV	C25		T	02		2 CORE SPRAY PUMP VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G CC1	022651A	101878	T	UV	C25		T			OFF GAS SYSTEM ISC VALVE V-7-31 LEAKING INTERNALLY	VALVE HAS DAMAGED RUBBER SEAT
W TR1	021624A	051978	K	UV	C25		D			TWO BUTTERFLY VALVES LEAKED THRU EXCESSIVELY/TEST	RUBBER SEATS REQUIRED RETORQUING
B AF1	016665	120176	N	UV	D00		U			VLV SF-11 HAD A CRACK IN THE HEAT AFFECTED ZONE	REASON FOR CRACK IS UNKNOWN
B DE3	023312	120878	U	UV	D60		U			VALVE 3FDW-46 LEAKED ON RTC	REASON FOR LEAKAGE NOT STATED
B RS1	015612	080576	L	UV	D00		U			VENT VALVE ON DECAY HEAT COOLER EXTERNAL LEAKAGE	UNKNOWN/NIPPLE REPLACED/POSS VIBRATION
G BR1	021253*	042178	P	UV	D00		U	02	W	VALVES FOUND LEAKING WATER INTO PUMP SPEED CONTROL	UNKNOWN/CAUSE OF LEAKAGE NOT STATED
G FP1	016136	061776	N	UV	D60		U			LEAKING PUMP DRAIN VALVE ON FEEDWATER PUMP	CAUSE UNKNOWN
W IP3	022403	091278	X	UV	D60		U			MANIFOLD STOP VLV 561A LEAKING BORATED WTR. EXTERN. NO CAUSE FOR LEAKAGE GIVEN	

OPERATOR TYPE OR TION NOT STATED

PLANT	CONTR. NO.	EVENT DATE	SUM	CODE	FAIL CODE	VALVE	UNION	NUM	MARK	FAILURE MODE	FAILURE MECHANISM	
W SL1	015958	090976	F	UV	D00				U	EXTERNAL LEAKAGE OF NITROGEN FROM ST VALVE HCV1549	BODY TO BONNET LEAK/UNKNOWN CAUSE OF LEAK	
W SU1	021132	040778	G	UV	D00				U	DIAPHRAGM VALVE 1-CH-93 DEVELOPED EXTERNAL LEAK	UNKNOWN/BODY TO BONNET LEAK	
W IP3	022675	100478	N	UV	D12				U	VALVE FM-1 LEAKING EXTERNALLY	VALVE BODY RUPTURED	
W Z11	018056	032277	G	LV	L12				D	SENSING LINE VALVE (JVC8157) LEAKED EXTERNALLY	BROKEN PACKING GLAND STUD	
G BR1	019086	051177	S	UV	D13				D	RHR SERVICE WTR.HEAT XCHGR.18 IN.VLV GASKET RUPT.	RUBBER GASK.MAT.NOT DESIGN.FOR OP.PRESS.	
G DR2	016017	052276	M	UV	D13				T	VALVE 3-220-1 LEAKING BODY TO BONNET	DETERIORATED PRESSURE SEAL RING	
W JF1	019699	111377	B	UV	D13				T	VALVE HV3226 LEAKING EXTERNALLY (STM. SUP. VLV)	LOWER SEAT GASKET BLOWN	
B CR3	017322A	030777	X	UV	D14				T	PLV-26 EXTERNAL LEAKAGE	PACKING FAILURE / REPLACED PACKING	
B CP3	019673	093077	N	LV	D14				T	LEAK.FROM MAKE-UP DISCH.PRESS.IND.ISO.VLV HUV-184	PACKING FAILURE/RADICAC.GAS RELEASED	
B CB1	020269A	010378	Y	UV	D14				T	LEAKAGE OBSERVED FROM PACKING ON VLV DH2735	PACKING WAS LCCE ON VLV/VLV WAS REPACED	
B CL1	020092	122077	K	UV	D14				T	VALVE 1PC-2 LEAKING EXTERNALLY	VALVE PACKING FAILED	
B DE2	021130	040778	M	UV	D14				T	VALVE 2RC-3 LEAKING EXTERNALLY	VALVE PACKING FAILURE	
C CC1	021057	041176	G	UV	D14				D	VLV CVC-397(LETDWN.ISO.VLV)HAD EXT.PACKING LEAK	VLV STM.PACKING WAS WORN	
C CC2	019265	100477	G	UV	D14				T	LETDOWN CONT.VLV(2-CV-1100-(V)HAD EXT.LEAK ON PACK	PACKING FAILURE/VLV REPACED,LEAKAGE STOP	
G BF2	020775	031878	K	UV	D14			R	T	VLV FCV-68-33 LEAKING EXTERNALLY INTO DRYWELL	LEAKAGE OCCURRED FROM THE PACKING	
G BF3	018642	073077	K	UV	D14			R	T	VLV FCV 3-66-33 HAD EXTERNAL LEAKAGE INTO DRYWELL	PACKING LEAK;NORMAL WEAR & DETER.OF PACK.	
G BR1	018655*	071777	K	UV	D14			C	T	03 B	VLV EXT. LEAK. ON 3 CCCAS.CAUSED INC.LEAK.INTL SUM	PACKING LEAKS FROM VARIOUS VALVES
G BR1	019390	101477	Y	LV	D14				T	EXTERNAL LEAKAGE RECIRC. PMP 1A DISCH.EQUALIZR VLV	VLV B32-F043A HAD PACKING LEAK;REPACED	
C BR1	019390*	101477	Y	UV	D14			C	T	06	PACKING ADJUSTED ON SIX VALVES WITH PACKING SEEPAG	PACKING ADJUSTED AS PREVENTIVE MAINTENANC
G BR2	022252	081878	K	UV	D14				T	EXT.VLV LEAKAGE(PACKING)CAUSED HI.TEMP.IN DRYWELL	FAILED PACKING IN VLV CAUSED LEAKAGE	

OPERATOR TYPE OR FUNCTION NOT STATED

VEN	PLANT	CONT.NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CN	MU	KEY	FAILURE MODE	FAILURE MECHANISM
G	CC1	016004	111276	P	UV	D14		L				VALVE LEAKED EXTERNALLY/CRIPPED ON SW/PUMP STOPPED	PACKING NEEDED TIGHTENING
G	CU1	018009*	041777	M	UV	D14		T	03			THREE ROCKWELL 1612-JIMMY VALVES LEAKING EXTERNALLY	DEFECTIVE VALVE STEM PACKING
G	CR2	019156*	090P77	M	UV	D14		C	U	02	V	STEAM VALVE GLAND LEAKS CAUSED HI TEMP ISOL SIGNAL	VALVES WERE REPACKED
G	PB2	019952	120277	H	UV	D14		T				FPCI STM ISO VAL LEAKING EXTERNALLY	PACKING FAILURE
G	PB2	020724	022478	K	UV	D14		R	T			EXTERNAL LEAKAGE NO-2-2-65A(RECIRC.SYS.LP.X-COMN.)	FAILED PACKING ON VLV CAUSED LEAKAGE
G	PB2	021193	042678	M	UV	D14		T				CRD ACCUM.CHGNG.VLV 3-13-111 LEAKING EXTERNALLY	PACKING FAILURE/NORMAL AGING OF PACKING
W	BV1	017622	041277	Y	LV	D14		T				A HIGH LEAK RATE COOL SYS WTR WAS OBSERVED	FAILED PACKING RX COOL PHP SEAL HDR FL VL
W	DC1	020324	011078	G	UV	D14		T				EXTERNAL LEAKAGE FROM PRESSURIZER AUX SPRAY VALVE	PACKING FAILURE
W	DC2	021467	051978	K	LV	D14		T				EXTERNAL LEAKAGE FROM VALVE BETWEEN RCS & RHR	PACKING FAILURE
W	IP3	020434A	020378	N	UV	D14		T				VALVE 565C LEAKING EXTERNALLY	PACKING FAILURE
W	IP3	020434B	020378	N	UV	D14		T				VALVE 571C LEAKING EXTERNALLY	PACKING FAILURE
W	IP3	022404*	090878	M	UV	D14		I	02			ISO VALS 561A,561B LEAKING EXTERNALLY	PACKING FAILURES
W	JF1	019363	081877	H	UV	D14		T				1A ACCUM.NITRO.SUP/VENT ISO.VLV LEAKING EXTERNALLY	PACKING LEAK
W	JA1	019609*	110877	H	UV	D14		C	T	02		TWO VALVES (136145J143) (SI) LEAKED EXTERNALLY	PACKING FAILED
C	CC1	023381	120978	C	UV	D22		T				#11 RX.COOL.CHG.PUMP DISCHG.ISO.VLV.LEAK.EXTERNAL.	BODY TO BONNET SEAL WELD FAILURE
W	IP2	021908	062678	L	UV	D22		D				DIAPHRAM VALVE LEAKING EXTERNALLY, 2 IN VAL	RUPTURED DIAPHRAGM / CRACKED BONNET
G	BF2	021052B	042078	C	UV	D25		T	02	V		DRYWELL TO SUP.CHBR.VENT.SYS.) VALVS.LEAK.BY SEAT	SEATING SURFS.DETERIOR.THROUGH NORM.OPER.
G	MI1	019629	103177	G	UV	FC0		U				ISO.COND.STM.SUPPLY VLV 1-IC-1 FOUND INOPERABLE	CAUSE OF OCCURRENCE HAS NOT BEEN DETERM.
G	NP1	018296	071277	L	UV	FC0		U				NO.11 EMER CORE COOL SYST INOPERABLE,VAL FAILURE	CAUSE UNKNOWN
W	ZT1	020112*	120377	S	UV	FC0		R	02	V		SERVICE WATER VALVES WERE INOPERABLE	UNKNOWN

OPERATOR TYPE OR FUNCTION NOT STATED

VEN	PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	COUNT	KEY	FAILURE MODE	FAILURE MECHANISM
W	Z11	020105*	120877	S	UV	F00	R	U	02	V	SERVICE WATER VALVES WERE INOPERABLE	UNKNOWN
W	Z12	017678	042877	U	UV	F00		U			EXHAUST VALVE FAILED TO HOLD VACUUM	CAUSE NOT GIVEN
W	Z12	020051	010978	N	LV	F00		U			A GATE VALVE PROVIDING FOREBAY CIRC H2O STUCK	UNKNOWN
W	SA1	019888*	110277	N	LV	F02	C	D	10		VALVE INTERNALS LEFT OUT IMPLEMENTING ENG-PR CDF19	PERSONNEL ERROR DURING MAINTENANCE
W	DC1	020520	020978	N	UV	F04		D			FIRE PUMP TEST VALVE 1-FP-243 FOUND FULL OPEN	VALVE COLL VIBRATE TO OPEN POS(LOCKED)
B	TI1	034718	042776	L	UV	F12		U			VALVE FAILED TO OPERATE (DI-V1)	STEM NEEDED REPLACED
G	PR2	014316	022476	N	UV	F12		D			CELL DISTR. VLV ON C COOL. TOWER FAILED	FAIL OF STEM BUSH. RETAIN PLT, DIST. VALVE
W	IP2	013787A	050777	F	UV	F12		D	02		VALVES TCV-1104 & 05 DID NOT OPERATE PROPERLY	BINDING OF VALVE INTERNALS
W	PR2	020473	012878	R	LV	F12		D			CLAMP REPACKING VALVE STEM FOUND BROKEN(MV-32154)	PARTS FAILED FOR UNKNOWN REASON
W	BV1	021644	062278	F	UV	G05		D			INFLATABLE PLUG FOUND IN RECIRC PUMP INLET VALVE	PERSONNEL ERROR DURING CONSTRUCTION PHASE
W	SL1	020815	030578	S	UV	G09	R	T			ISOLATION VALVE ON COOLER (1-SW-E-18) PLUGGED	DISC SEPARATED FROM STEM/CORRODED STEM
W	SU2	020819	030578	S	UV	G09	R	T			SEAL COOLER 2-SW-E-18 ISOLATION VLV PLUGGED	GATE SEPARATED FROM STEM DUE TO CORROSION
G	CC1	0228518	101878	T	LV	G10		F			DRAIN VALVE V-7-25 OBSTRUCTED BY CORR LIK MATRL	ASSUMED THAT PATRL NOT REMOVED DUE CCNST
G	FB3	015853	090176	Y	UV	G10		T			DRYWELL RAD. MONIT. SYS. PRESS. CONT. VLV HAD FLOW REST	FLOW BLOCKAGE DUE TO FOREIGN WATER, CONT.
W	SL2	019505	102977	G	UV	G10		T			NO FLOW COULD BE ATTAINED THROUGH FCV-2113A	BROWN CRYSTALLIZATION ON VALVE SEAT
B	TI2	022390*	082478	X	UV	I02		D	04	Z	CABLES TO SAFETY RELATED VALVES NOT SPLICED AS REQ	PERSONNEL ERROR/CONTRACTOR PERSONNEL
C	SL1	015005	060476	Y	UV	I05		D			RECORDS REVIEW SHOW VALVES OF H2 SYS NOT TESTED---	---FOR A1 ENVIRONMENT/REPLACED VALVES
G	BF2	014104	011276	N	UV	I05		D			DEMIN H2O TO DRYWELL VALVE FOUND NOT SEISMIC QUAL	PERSONNEL ERROR/PROBABLE Q.C.
W	SL1	021732*	052878	P	UV	I06	B	D	02	V	PROCEDURAL DISCREPANCY ABOUT WHAT LUBRICANT TO USE	FOREIGN MATERIAL ON VALVE SEAT SURFACES
B	DB1	022366	081578	S	UV	T01		D			PORT OF SERVICE WTR. VLV. TEST NOT PERF. IN REQ. TIME	PERSONNEL ERROR/INSTRUCTIONS MISINTERPRET

OPERATOR TYPE OR FUNCTION NOT STATED

UNIT	PLANT	CONT. NO.	EVENT DATE	OPER. SPS	CODE	FAIL CODE	TYPE	C NUMBER	C/CN	PLN	KEY	FAILURE MODE	FAILURE MECHANISM
W	DC2	G21080	040378	P	UV	TC1		D				ALL CLASS 1,2,63 ASME VALVES NOT INSPECTED AS REQ.	PERSONNEL ERROR/MISUNDERSTOOD REQUIREMENT
W	NA1	G21502	051078	C	UV	TC2		D				TV-SS112A WAS NOT TIMED PRIOR TO RETURNING TO SERV	MAINTAINANCE PERSONNEL ERROR
W	Bv1	G21044	033178	G	LV	TC3		D				TECH SPEC VIOLATION, VALVE POSITION NOT VERIFIED	PERSONNEL ERROR/FAILED TO SCHEDULE TEST
B	DB1	G21958	071378	P	LV	TC6		W				DISCOVERED 2 REQUIRED TEST NOT BEING PERFORMED/T.S	TESTS NOT INCORPORATED INTO SCHED. PROGRAM
B	DE3	G20640	020878	S	UV	V00	S	D				LPSW PUMP SUCT VAL, CLSD DUR PUMP START UP	CAUSE UNKNOWN (PROBABLE PERSONNEL ERROR)
C	LC1	G17925	051976	N	UV	V00	S	D				BGRIC ACID STOR. TK.#11 DRAIN. BELOW MINIMUM LEVEL	CAUSE NOT DETERMINED/PROB. PERSON. ERROR
B	AR1	G19013	061276	G	UV	V01	S	D				INCORRECT VALVE LINE-UP/TANK OVERFLOWED	PERSONNEL ERROR
B	AR1	G23161	112178	U	UV	V01	S	D				CONDENSATE VLV. CS-38 OPEN WHEN REQUIRED TO BE SHUT	PERSONNEL ERROR
B	DB1	G19361	102077	B	UV	V01	S	D				BOTH ALX. FC. PMP. SUCTS. LINED UP TO GENERATOR STR. TK	PERSONNEL ERROR/IMPROPER COOL. WTR. LINEUP
B	DB1	G19939	121277	J	UV	V01	S	D				SER. WTR. CUT. ISC. VLV. COMP. COOL. WTR. LPI-2HTXCH. CLOSE	PERSONNEL ERROR/IMP. VLV LINEUP/T.S. VIOL.
B	DB1	G21176	043078	L	UV	V01	S	D				VLVS GH11612 WERE NOT OPENED WHEN REQ. DURING S/D	PERSONNEL ERROR & PROCEDURE INADEQUACY
B	DE2	G15535	080976	L	UV	V01	S	D				LOW PRESS INJECT TRAIN A NOT ISO PROPERLY	PERSONNEL FAIL TO FOLLOW T.S. REQUIREMENTS
B	RS1	G23502	121578	L	UV	V01	S	D				INCOMPLETE VALVE LINEUP CAUSED SEVERE F20 HAMMER	PERSONNEL ERROR
B	T11	G16109	101276	N	UV	V01	S	C				INCORRECT VALVE LINEUP LEAD TO HI DISSOLVED SOLIDS	PERSONNEL ERROR/700PPM DISCHARGED RIVER
C	CC1	G14467	040576	N	UV	V01	S	D				#12 S/G BLOWDOWN DRG. BYPASS 1-80-121 POSIT. IN CORR.	T.S. VIOL./PERSONNEL ERROR (SHUT WRONG VLV)
C	CC1	G23262	121678	N	UV	V01	S	D				IMPROPER VLV. LINEUP ON MAKE-UP WATER DEMINERALIZ.	PERSONNEL ERROR
C	CC2	G22915	111578	N	UV	V01	S	D				RWT LOCAL SAMPLE VLV. OPEN WHEN REQ. TO BE SHUT	PERSONNEL ERROR
C	FC1	G14589	050676	N	UV	V01	S	D				VALVE HCV-2508 WAS CLOSED, SHOULD BE OPEN	IMPROPER VALVE LINEUP / PERSONNEL ERROR
C	MY1	G19261	102077	L	UV	V01	S	D				IMPROPER VALVE LINEUP LPSI PUMPS	PERSONNEL ERROR
C	MY1	G22398	090778	G	UV	V01	S	D				VLV. LINEUP ERROR ALLOWED RCS WTR. AT 1250 PPM BORO-	-N TO DISCH. BACK TO RWST//PERSONNEL ERROR

OPERATOR TYPE OR FUNCTION NOT STATED

Y R M D	CONT. NO.	EVENT DATE	S Y M C O D E	C U P S P	FAIL CODE	T L C L C N X E S P M Y	FAILURE MODE	FAILURE MECHANISM	
C	PA1 016927	040876	Y	UV	V01	S	D	GRAIN LINEUP PERFORMED ON WRING WST-GAS DECAY TR.	PERSONNEL ERROR
C	PA1 022229	060778	N	UV	V01	S	D	INCORRECT HANDJACK OPER FOR CV-0437A,CV-04373	PERSONNEL ERROR
C	SL1 012504	070576	M	UV	V01	S	D	IMPROPER VLV.LINEUP TO RWT (TANK OVERFLOWED)	PERSONNEL ERROR
C	BR1 020519	040178	K	UV	V01	S	D	INCORRECT VALVE LINEUP CAUSED RESIN DAMAGE	PERSONNEL ERROR
C	BR2 014128	011976	N	UV	V01	S	D	OFF GAS RADIAT.MON.SAMP.VLV WAS FOUND SHUT/TS VIO.	PERSONNEL ERROR
C	BR2 014311A	020276	N	UV	V01	S	D	2-CAC-V50 WAS OPENED WITH A LCD EXISTING/T.S. VIO.	PERSONNEL ERROR
C	CO1 016387	110176	N	UV	V01	T	D	FLUSHING VALVE OF RADWASTE MCNITCH LEFT OPEN	PERSONNEL ERROR
C	CO1 023378	121278	N	UV	V01	S	D	FLUSH.VLV.OF THE RADWASTE EFF.MOBI1.IMDV.LEFT OP--	EN//PERSONNEL ERROR
C	CA1 020474	070178	N	UV	V01	S	D	COCKING TOWER BLOWDOWN DISCHARGE VALVE OPENED WITH	--OUT AFFRCVAL//PERSONNEL ERROR
C	DR2 016171	100376	Y	UV	V01	S	D	STACK GAS SAMPLE PUMP LOW FLOW/IRP. VLV LINE LP	PERSONNEL ERROR
C	DR2 020170	010578	G	UV	V01	S	D	SUCTION VALVE 2-1101-4 CLOSED CONTRARY TO T.S.	OPERATING PERSONNEL ERROR
C	MC1 017373	032177	N	UV	V01	S	D	AIR EJECT.SAMP.SYS.SUP.VLV SHUT WHEN REQ. OPEN	PERSONNEL ERROR
C	MC1 022809	100178	C	UV	V01	S	D	2 VLVs NOT CLOSED WHEN REQUIRED TO BE	PERSONNEL ERROR
C	NP1 019404	102677	M	UV	V01	S	D	CHG.WTR.VLV TO SCRAM ACCUMULATOR IN IMPROPER LINE--	LP//PERSONNEL ERROR
C	P82 015711	091376	N	UV	V01	S	D	IMPPROPER VAL LINEUP TO SETTLING BASIN	PERSONNEL ERROR
C	P83 019051	092577	M	UV	V01	S	D	CHARGING WATER VLVs. TO SCRAM SYS.IN IMPROPER LIM--	EUP//PERSONNEL ERROR
C	P11 018497	080277	N	UV	V01	S	D	VALVE IN TRUCK LOCK, OPENED IN VIOLATION OF T.S.	OPERATIONS PERSONNEL ERROR
C	P11 023500	102878	N	UV	V01	S	D	BLCK VALVE TO FCV-118 SHUT WHEN REQUIRED TO BE C--	PER//PERSONNEL ERROR
C	CC2 018575	071977	L	UV	V01	S	D	VALVE FOUND CLOSED BETWEEN A & B LOC/LOSS OF LPCI	PERSONNEL ERROR/INADVERTANT CLOSURE
C	VY1 014735	051276	H	UV	V01	S	D	IMPROPER VLV.LINEUP ON HPCI GLAND SEAL CONDENSER	PERSONNEL ERROR

OPERATOR TYPE OR FUNCTION NOT STATED

EVENT NO.	CCNT. NO.	EVENT DATE	S.P.	C	FAIL CODE	T	L	C	M	K	FAILURE MODE	FAILURE MECHANISM
M 8V1	015673	061276	C	UV	V01	T	D				VLVS HCV-CV-151,151-1 WERE OPENED IN VIC. OF T.S. OPER. ERROR,USED IT-S-WHICH WID,ANOTHT-T-S	
M 8V1	018835	072577	N	UV	V01	S	D				IMP. VLV LINEUP#88 PRI GRADE WTR STOR TANK OVERFLW. PERSONNEL ERROR	
M DC1	019569	111877	F	UV	V01	S	D				TBC CONTAINMENT SPRAY VALVES FOUND CLOSED	PERSONNEL ERROR/CLOSED UNIT1 INSTEAD OF 2
M DC1	022261	060278	F	UV	V01	S	D				BURON INJECTION THROTTLE VALVES CUT OF ADJUSTMENT	PERSONNEL ERROR/INCORRECT TEST CRITERIA
M UC2	022350	090378	N	UV	V01	S	D				CONDENSATE VALVE CLOSED WHEN REQ TO BE OPEN	PERSONNEL ERROR
M IP3	015925	093076	K	UV	V01	S	D				INADVERTENT CLOSURE OF RHR ISO VALVE	PERSONNEL ERROR
M JF1	021979	071278	M	UV	V01	S	D				TND BURIC ACID TK SUPPLY VALS IN CLOSED POSITION	PERSONNEL ERROR
M KE1	015295	081376	N	UV	V01	S	D				WASTE NEUT. DRN. VLV LEFT OPEN,ALLOW,RAD. RELEASE	PERSONNEL ERROR
M KE1	017824	052277	J	UV	V01	S	D				VAL ON B PUMP DISCH IN CLOSED POSITION	PERSONNEL ERROR / IMPROPER VLV LINE UP
M KE1	019084	071677	N	UV	V01	S	D				PART. OPEN VALS IN DISCH PATH FROM WASTE NEUTR. TK.	PERSONNEL ERROR / IMPROPER VLV LINE UP
M KE1	021012	032978	N	UV	V01	S	D				SAMPLE VALS FOR MONITOR R-19 IN CLCSEC POSITION	IMPROPER VLV LIN UP / PERSONNEL ERROR
M NA1	022270	081878	N	UV	V01	T	D				IMPROPER VLV LINEUP ON UNIT #2 CHILLED WTR. CHILLER PERSONNEL ERROR	
M NA1	022265	100478	B	UV	V01	S	D				IMPROPER VALVE LINEUP,AUX FEED PUMP TO A,B,C STAGN OPERATING PERSONNEL ERROR	
M PRI	016285	102476	N	UV	V01	S	D				INCORRECT VLV LINEUP MADE ON SPENT FUEL PIT	PERSONNEL ERROR
M PT1	019458	103177	S	UV	V01	S	D				VALVE LINE-UP NOT PROPERLY MADE/RADWASTE DUMP MADE	PERSONNEL/OPERATOR FAILED TO CLOSE VALVE
M PT1	021627	061478	Y	UV	V01	S	D				IMPROPER VALVE LINE-UP DISCOVERED/POSS RAD RELEASE	PERSONNEL ERROR
M RG1	021334	041978	G	UV	V01	S	D				OPERATOR OPENED WRONG VALVE/DECREASE BORON CONCEN	PERSONNEL ERROR/PROCEDURE CHANGED
M RU2	022627	042277	N	UV	V01	S	D				COMPRESSED AIR ISO VAL CLOSED,S.B. OPEN	PERSONNEL ERROR
M SA1	019606	102777	L	UV	V01	S	D				IMPROPER VLV LINEUP ON COMP. COOL. WTR. TO RHR PLMP	PERSONNEL ERROR
M SC1	023179	120578	N	UV	V01	S	D				RECIRC VALVE ON HYDRAZINE PURP LEFT OPEN INADVERT	PERSONNEL ERROR

OPERATOR TYPE OR FUNCTION NOT STATED

VEN	PLANT	CONT.NO.	EVENT DATE	SYMPTOM	FAIL CODE	TYPE	CLASS	CN NUM	KEY	FAILURE CODE	FAILURE MECHANISM
W	SL2	C15962	082076	H UV	VC1	S	D			OUTSIDE ISOLATION VALVE FOUND OPEN/NORMALLY CLOSED	PERSONNEL/FAILED TO FOLLOW ADMIN CONTROLS
W	TR1	021419	042578	L UV	VG1	S	D			DRAIN VALVE LEFT OPEN/LEAD TO LOSS OF FLOW	PERSONNEL ERROR
W	TR1	022005A	070778	U UV	VO1	S	D			IMPROPER VLV.LINEUP ON CONDENSATE STORAGE TANK	PERSONNEL ERROR
W	Z11	016043	100476	G UV	VC1	S	D			VALVE LINE-UP PROBLEM/BORON CONCENTRATION DILUTED	PERSONNEL ERROR
W	Z11	217255	021877	L UV	VC1	S	D			IMPROPER VALVE LINEUP/UNIT-1 VAL CLOSED INSTEAD-2	PERSONNEL ERROR/NEITHER VAL TAGGED FOR ID
W	Z12	017407	031077	C UV	VO1	S	D			VLVS. Z1W015460155 OPEN WHEN REQ. TO BE CLOSED	PERSONNEL ERROR
W	Z12	C19137	083177	H UV	VC1	S	D			DRAIN VLV OPENED TO 2D ACCUM. INSTEAD OF 2C ACCUM.	PERSONNEL ERROR
B	DE1	C18292	062977	N UV	VO2	S	D			*B*TRAIN PENET.RM VENT.SUCT.ISO.VLV.CLOSED WHEN R-	REQUIRED TO BE OPEN//PERSONNEL ERROR
L	SL1	022908	110378	L UV	VO2	S	D			ISOL VALVES INADVERT OPENED BETW SPRAY&SHUTDOWN --	--COOLING SYSTEMS//PERSONNEL ERROR
C	BR2	C15427	071176	K UV	VO2	S	D			BONNET VENT VLS 2-832-F04686F0478 INADV.LEFT OPEN	PERSONNEL ERROR/NCT CLOSE.AFTER MAINTENAN
G	DR2	C14748	052676	N UV	VO2	S	D			SAMPLE VALVE ON SUCTION SIDE OF PUMP IN CLOSED POS	PERSONNEL ERROR FAILURE TO OPEN VALVE
C	FP1	019768	113077	N UV	VO2	S	D			VALVE ON MAIN STM COLLECT SYST INADVERTENTLY OPEN	MAINTAINENCE PERSONNEL ERROR
G	PB3	C20645	031078	T UV	VO2	S	D			RECOMBINER-COMP INLET-SUMP DRAIN VLV IMPROPER L/U	MAINTENANCE PERSONNEL ERROR
W	JF1	C20993	032578	B UV	VO2	S	D			MDAPP & TDAPP RECIRC BYPASS ISO VLVS OPEN	PERSONELL ERROR
W	RC2	C16936	012577	G UV	VO2	S	D			IMPROPER VLV LINEUP (BORIC ACID STORAGE TANK)	PERSONNEL ERROR
W	YR1	C23104	113078	P UV	VO2	S	D			VALVE CLCSED WHEN REQ OPEN(TO ISOL ANOTHER VALVE--	--FOR CLEANING//PERSONNEL ERROR(MANAGENT)
B	DB1	019984	121677	B UV	VC3	S	D			ALX.50WTR VLVS AF5996608 SHUT)MS107A,AF38716728K.D	PERSONNEL ERROR;IMPREPER VLV LINEUP
G	FP1	017659	022477	H UV	VO3	S	D			VALVES ON HPCI ROUTE FROM COND TM TO TERUS L/U IMP	OPERATOR ERROR/ TESTING PERSONNEL
W	IP2	015520	080576	H UV	VC3	S	D			SI PMP5 COMMON SUC.VLV(846)IN IMPROPER POSITION	PERSONNEL ERROR/DID NOT OPEN VLV AS REQR.
L	CR3	017546	042477	R UV	VO6	T	D			VLV.SWV-151 WAS IN SHUT POSI.;GIVING CONT.TEMP.ALA	PRCEDURAL INADEGLACY

C24

OPERATOR TYPE OR FUNCTION NOT STATED

PLANT	CCMT.NO.	EVENT DATE	S Y M	C S P	FAIL CODE	Y M S P M Y	FAILURE CODE	FAILURE MECHANISM
E CR3	C18843	081077	R	UV	V06	T D		PROCEDURAL INADEGLACY
E CR3	C194CC	112977	R	UV	V06	T D		SWV-151(IND.COOL.WTR.SLP.VLV)SHUT WHEN REQ.TC OPEN PROCEDURAL INADEGLACY(THIRD OCCURENCE
D CR3	C23250	10C178	Y	UV	V06	S D		VALVE MWV-476 WAS LEFT OPEN AFTER SYS MODIFICATION PROCEDURAL DISCREPANCY(PERSONNEL)
D DB1	C19248	111777	B	UV	V06	S D		ALX.FDWTB.VLV5 AF5996608 CLOSED IT.S.VIOLATION PROCEDURAL DEFICIENCY)TEST PROCEDURE REVI
D T11	C13949	011C76	Y	UV	V06	S D		IMPRCPR VLV. LINEUP TO RM-2A(COOL.LEAK DET.SYS.) INADEGUATE PROCEDRES
D T11	C14220	022176	G	UV	V06	S D		IMPROPER VLV LINEUP GM WAM MAKEUP AND PURIF. PUMP PROCEDURE AND PERSONNEL ERROR
D CC1	C17476	031377	L	UV	V06	S D		150.VLV ADD.TO AUX SPRAYLN OLR.PRICR OUT.LEFT SHUT VLV.NCT INCLUDED IN VLV LINEUP/PROCED.ERR
G DM2	C14689	051976	G	UV	V06	S D		INCORRECT VLV L/U)SBLC SYSTEM-BOROM TANK DISCREPANCY IN PROCEDURE
G MCI	C18242	062777	Y	UV	V06	S D		VAL GM AIR EJECT MONIT SYST POSITIONED IMPROPER VAL WAS IMPROPERLY TAGGED
K BV1	C20496	012178	L	UV	V06	S D		THE RMST WAS DRAINED TOO LOW DUE TO INCOR.VLV L/U PROCEDURAL DISCREPANCY
K KE1	C21369	042378	L	UV	V06	S D		RHR VENT VLV. OPEN)WHEN IT SHOULD HAVE BEEN CLOSED DEFECTIVE PROCEDRES

APPENDIX Q

VALVE REPORTS SORTED BY TYPE OF EVENT

CONTENTS

CODES USED IN ONE-LINE DESCRIPTIONS 631
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RECURRING COMMON CAUSE 635
RECURRING 636
COMMAND FAULT 650
RECURRING COMMAND FAULT 671

CODES USED IN LER ONE-LINE DESCRIPTIONS

FAILURE MODE		FAILURE MECHANISM		EVENT CLASSIFICATION	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
A	FAILED TO OPEN	00	UNKNOWN		
B	FAILED TO CLOSE	01	UNKNOWN	D	CHANGE OF STATE
C	INTERNAL LEAKAGE	02	UNKNOWN	T	AGE
D	EXTERNAL LEAKAGE	03	UNKNOWN	U	UNKNOWN
E	INTERNAL LEAKAGE/RUPTURE	04	UNKNOWN		
F	EXTERNAL LEAKAGE (CHECK VALVES)	05	UNKNOWN		
G	FAILED TO OPERATE AS REQUIRED	06	UNKNOWN		
H	PLUGGED FAILS TO REMAIN OPEN	07	UNKNOWN		
I	PREMATURE OPEN (CHECK VALVES)	08	UNKNOWN		
J	MAINTENANCE/REPLACEMENT	09	UNKNOWN		
K	TECHNICAL SPECIFICATION VIOLATION	10	UNKNOWN		
L	IMPROPER VALVE CONFIGURATION	11	UNKNOWN		
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COMPONENT		ACTIVITY RESULTING IN DISCOVERY		ACTIVITY RESULTING IN DISCOVERY	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
MV	MOTOR OPERATED VALVE (ELEC.)	00	UNKNOWN	D	DEMAND ON COMPONENT
AV	PNEUMATIC OPERATED VALVE	01	UNKNOWN	M	MAINTENANCE
SV	SOLENOID OPERATED VALVE	02	UNKNOWN	N	NORMAL OPERATION
RV	RYDRAULIC OPERATED VALVE	03	UNKNOWN	O	OPERATIONAL REVIEW
XV	EXHAUST OPERATED VALVE	04	UNKNOWN	U	UNKNOWN
CV	CHECK VALVE	05	UNKNOWN		
RV	RELIEF VALVE	06	UNKNOWN		
DV	DAMPING VALVE	07	UNKNOWN		
UV	OPERATOR TYPE OR FUNCTION NOT STATED	08	UNKNOWN		
-----		-----		-----	
TYPE OF EVENT		NUMERICAL KEY WORDS		NSSS VENDOR	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
B	RECURRING COMMON CAUSE	V	VALVES	B	BABCOCK & WILCOX
C	COMMON CAUSE	A	SOME	C	COMBUSTION ENGINEERING
R	RECURRING	S	SEVERAL	G	GENERAL ELECTRIC
S	COMMAND FAULT	Z	OTHER	M	WESTINGHOUSE
T	RECURRING COMMAND FAULT				

631

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

<u>CODE</u> ---	<u>PWR</u> ---	<u>CODE</u> ---	<u>BWR</u> ---
A		A	AUTOMATIC DEPRESSURIZATION
B		B	CONTAINMENT ISOLATION (INCL PENETRATIONS)
C		C	LOW PRESSURE CORE SPRAY
D		D	ELECTRIC POWER
E		E	CONTAINMENT SPRAY INJECTION
F		F	STANDBY LIQUID CONTROL (BERGN)
G		G	HIGH PRESSURE COOLANT INJECTION
H		H	COMPONENT COOLING WATER
I		I	REACTOR COOLANT RECIRC
J		J	LOW PRESSURE COOLANT INJECTION (RHR)
K		K	REACTOR PROTECTION (CONTRG RCD)
L		L	NONSAFETY-RELATED
M		M	SYSTEM UNKNOWN/NOT APPLICABLE
N		N	REACTOR CORE ISOLATION COOLING
O		O	CONTAINMENT FAN COOLING SYSTEM
P		P	SERVICE WATER
Q		Q	CONDENSATE AND FEED
R		R	MAIN STEAM
S		S	REACTOR PROTECTION (PPS)
T		T	CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
Y		Y	FAILED FUEL ELEMENT DETECTION
Z		Z	FAILED FUEL ELEMENT DETECTION

COMMON CAUSE

<u>V E N T</u>	<u>P L A N T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S T E M</u>	<u>C O M P O N E N T</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C O N T A I N M E N T</u>	<u>K Y E</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	AR1	G14837*	051276	N	RM	F14	C	I	02		2 VLVS DID NOT OPER. WHEN REQUIRED TO	FRICTION BETWN STEM & PACKING DUE TO AGE
B	AR1	018854*	072677	C	RM	C10	C	T	02	V	ISOLATION VALVES LEAKED THRU DURING CONT LEAK TEST	FOREIGN MATERIAL PROBABLY CAUSED LEAKAGE
B	DB1	023568*	121678	W	RV	A06	C	D	13		13 MN. STM. SAFE. RV NOT WITHIN LIMITS OF SETPOINT	PROCEDURAL DISCR. (PROC. DOESN'T ACC FOR T)
B	RS1	019535*	092177	C	AV	C25	C	T	02		RB PURGE INLET & OUTLET VALVE LEAKED THRU ON LLRT	SEAT DEGRADATION ON 66 IN BUTTERFLY VALVE
B	T11	016830B	051076	C	RM	C05	C	D	02		2 VALVES LEAKED THRU ON CONTAINMENT LEAKRATE TEST	FAB ERROR/SEAT RINGS WELDED IMPROPERLY
C	CC1	015271A	062776	G	RV	D04	C	D			PIN-HOLE LEAK DISCOV. IN BONN.#11 BOR. ACD. PMP. RELIE	SUC. REL. MADE OF CARBON STEEL; DESIGN ERROR
C	CC1	015271B	062776	G	RV	I04	C	D			#12 BORIC ACID PUMP SUC. RELIEF MADE OF WRONG WATER	DESIGN ERROR
C	SL1	G22185*	072878	P	MV	I05	C	D	05	Z	VENDOR NOTIFIED PLANT OF POTENTIAL MOV FAB PROBLEM	LOCKNUTS STAKED WRONG ON SCHE/REPAIR SAME
G	BF1	019957*	090877	W	AV	C00	C	U	07		7 MSIV'S WERE ABOVE ALLOWABLE INDIVIDUAL LEAK RATE	CAUSE OF LEAKAGE NOT GIVEN
G	BF1	020493A	021478	W	RV	I05	C	D	02		LINEAR INDIC. FOUND IN 2 MN. STM. RVS, BODY CASTINGS	CAUSED BY CASTING SHRINKS OR NONMETAL. INC
G	BF2	020493B	021478	W	RV	I05	C	D	02		LINEAR INDIC. FOUND IN 2 MN. STM. RVS, BODY CASTINGS	CAUSED BY CASTING SHRINKS OR NONMETAL. INC
G	BR1	018695*	071777	K	UV	D14	C	T	03	B	VLV EXT. LEAK. ON 3 OCCAS. CAUSED INC. LEAK. INTO SUM	PACKING LEAKS FROM VARIOUS VALVES
G	BR1	019390*	101477	Y	UV	D14	C	T	06		PACKING ADJUSTED ON SIX VALVES WITH PACKING SEEPAG	PACKING ADJUSTED AS PREVENTIVE MAINTENANC
G	BR2	014340*	021076	C	UV	C04	C	D	03		3 BUTTERFLY VALVES LEAKING THRU//DESIGN ERROR	AIR OPERATOR ADDED TO EACH VALVE
G	BR2	017589*	021777	N	SV	A21	C	T	02		CONT. SAMPLE VLVS CAC-PV-344163442 FAILED TO OPEN	SOLENOIDS ON VLVS WERE STICKING
C	DR2	018181	060377	L	MV	I01	C	D			LPCI VALVE 2-1501-3A, CLOSING VALVE BENT STEM	PERSONNEL ERROR
G	DR2	019156*	090877	W	UV	D14	C	U	02	V	STEAM VALVE GLAND LEAKS CAUSED HI TEMP ISOL SIGNAL	VALVES WERE REPACKED
G	FP1	022465*	091478	C	RM	C13	C	U	03		VAC BREAKER VALVES 27-VB-3,4,5 LEAKED EXCESSIVELY	REPLACED "O" RING SEALS
G	PB2	020684*	030178	W	RV	I05	C	D	04		DURING INSPECT.; CRACKS FOUND NEAR SEATS OF 4 S. RVS	CRACKS WERE CAUSED BY PRE-EXIST. CAST. DEF.
G	QC1	018111*	042677	G	RV	A10	C	T	02	V	RELIEF VALVES LIFTED AT MUCH HIGHER THAN SETPOINT	BORON PRECIPITATED IN VALVE

COMMON CAUSE

<u>V</u>	<u>E</u>	<u>N</u>	<u>P</u>	<u>L</u>	<u>A</u>	<u>N</u>	<u>T</u>	<u>C</u>	<u>O</u>	<u>N</u>	<u>T</u>	<u>E</u>	<u>S</u>	<u>S</u>	<u>C</u>	<u>O</u>	<u>N</u>	<u>T</u>	<u>F</u>	<u>A</u>	<u>I</u>	<u>L</u>	<u>R</u>	<u>E</u>	<u>M</u>	<u>O</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>A</u>	<u>I</u>	<u>L</u>	<u>R</u>	<u>E</u>	<u>M</u>	<u>E</u>	<u>C</u>	<u>A</u>	<u>S</u>	<u>E</u>
<u>EVENT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MU</u>	<u>PH</u>	<u>OFF</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>																											
G	QC1	021127*	042178	H MV	104	C D	02	V	GE	NOTIFIED	QC	THAT	RECTRC	SUCTION	VALVES	COULD---	---	CLOSE	SPURIOUSLY/DISABLED	ELECTRICALLY																				
G	QC2	020396*	011578	M AV	C25	C T	03	3	MSIV	HAD	EXCESSIVE	THRU	LEAKAGE	ON	LEAKRATE	TEST	SEATING	SURFACES	WERE	LAPPED																				
G	YY1	014584*	051076	L MV	A14	C T	02		TWO	24	INCH	MOVS	(RHR-27A/B)	FAILED	TO	OPEN	/	TEST	PACKING	MAINTENANCE	PROBLEM																			
G	YY1	015184*	070676	A RV	A22	C T	03	3	TARGET	ROCK	RVS	FAILED	TO	OPERATE(SIGNAL/MANUAL)	DIAPHRAGM	IN	AIR	OPERATORS	FAILED/HEAT																					
M	BV1	020131*	121877	L RV	H00	C U	02	V	RELIEF	VLVS	LIFTED	AT	SETTING	LOW	THAN	NORMAL	NO	CAUSE	GIVEN	FOR	RV	LIFTING	LOW																	
M	BV1	023318*	122078	C RM	C12	C D	02	V	CONT.AIR	EJECTOR	PENET.	ISO.	VLVS.	LEAKING	RUBBER	VLV.SEAT	WARPED	&	UNABLE	TO	SEAL																			
M	DC1	014736*	050276	C RM	C25	C T	03	B	VALVES	LEAKED	THRU	DURING	CONTAINMENT	100L	TESTING	SEAT	PROBLEMS/DEPOSIT	BUILDUP	AND	WEAR																				
M	DC1	022332*	082878	N RM	A02	C D	02		TWO	VALVES	TO	MAIN	COND	AIR	EJECTORS	FAILED	CLOSED	IMPROPER	REPAIRS	PERFORMED	ON	THE	VALVES																	
M	DF2	023030*	112178	F CV	A05	C D	02		CHK.VLVS.	CTS-127EGW	TO	THE	LOWER	CONT.SPRAY	NGZZL-	-ES	INSTALLED	BACKWARDS//FABRICATION	ERR.																					
M	IP3	021914*	070378	N RM	B26	C D	04		S/G	SAMP.VLVS	1223A, 24A, 25A, 626A	WOULDN'T	CLOSE	ON-	-N	SIGNAL//FAIL.	OF	SNAP	LOCK	LIMIT	SWTCHS																			
M	KE1	019456*	102177	E CV	E04	C D	02	V	REVERSE	LEAK.PAST	D.G.	AIR	COMP.	CHECK	VALVES	DESIGN	PROB.,	REPLACED	CHK.VLVS.	NEW	STYLE																			
M	PR1	017488*	032477	C CV	E10	C T	06	Z	LEAKRATE	TEST	SHOWS	3	PENETRATIONS	LEAKING	THRU	FOREIGN	MAT	ON	SEATING	SURFACES																				
M	PR1	017488A	032477	C RM	C25	C T	02	V	PURGE	SUPPLY	VALVES(BUTTERFLY)//LEAKED	THRU	SEAT	PROBLEM/REPLACED	SEATS																									
M	PT2	022841*	091378	G RV	C00	C U	02		2-CROSBY	3/4	INCH	RELIEF	VALVES	LEAKED	THRU	UNKNOWN/	VALVES	WERE	REPLACED	WITH	SPARES																			
M	SA1	017788*	051977	Y XV	D14	C T	02		TWO	MANUAL	VALVES	11PS24/1PS28//EXTERNAL	LEAKAGE	LEAKS	PAST	PACKING/BACKSEATED	TEMPORARILY																							
M	SA1	019888*	110277	N UV	F02	C D	10		VALVE	INTERNALS	LEFT	OUT	IMPLEM.F	ENG-PR	CONF19	PERSONNEL	ERROR	DURING	MAINTENANCE																					
M	SA1	019609*	110877	H UV	D14	C T	02		TWO	VALVES	(136145J143)	(S1)	LEAKED	EXTERNALLY	PACKING	FAILED																								
M	SU2	019478*	101177	S MV	F20	C D	04		4	MOVS	IN	SERVICE	H2O	SYS	FAILED	TO	OPERATE	PIT	CONTAINING	THEM	WAS	FLOODED																		
M	TR1	016664*	120976	C MV	F20	C D	02		CONTAINMENT	VALVES	(NO-5663/5671)	FAILED	TO	OPERAT	FRICTION	IN	OPERATOR/INCREASED	CLOSE	TIME																					

RECURRING COMMON CAUSE

VEN	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CONUMPH	KEY	FAILURE MODE	FAILURE MECHANISM
B	DE3	023396	121678	N	RM	B26	B	T			ISOL VALVE 3FDW-106 FAILED TO CLOSE (RECURRING)	REPAIRED LIMIT SWITCH
B	RS1	016558*	111176	L	MV	A23	B	T	02		TWO DE'AY HEAT MOVS FAILED TO OPEN FOR MONTH TEST	TORQUE SWITCHES NEEDED RESET/TESTED WEEKLY
C	FC1	020365	011778	G	RV	D11	B	T			WELD ON 1-B CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	020585	021578	G	RV	D11	B	T			WELD ON CH-1A CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	021118	040878	G	RV	D11	B	T			WELD ON VALVE CH-219 CRACKED	VIBRATION OF PIPING IN SERVICE
G	BR2	015542	081176	N	AV	B04	B	D			ISO.VLV 2-CMC-PV-1260 WOULD NOT CLOSE FULLY	DESIGN PROB./CLOSING SPRING NOT STRONG EN
G	CO1	021196*	041578	T	AV	B19	B	T	02		VALVES AR-153AV+AR-154AV FAILED TO CLOSE	LACK OF VALVE PISTON+CYLINDER LUBE
G	QC2	016473*	110176	A	RV	A12	B	D	02		TWO ELECTROMATIC RELIEFS FAILED TO OPEN ON TESTING	INTERNAL BINDING DUE TO CORROSION PROBLEM
W	DC1	017245*	022277	C	CV	E10	B	T	G2	V	CHECK VALVES FAILED LEAKRATE TEST	LAKE WATER DEPOSITS ON SEATING SURFACES
W	DC1	017245A	022277	C	RM	C12	B	D	03	S	SEVERAL CONTAINMENT ISOLATION VALVES LEAKING THRU	LOOSE ACTUATORS WERE PRIMARY CAUSE
W	DC1	021769*	062178	C	CV	E10	B	T	G2	V	CHECK VALVES FAIL LEAKRATE TESTING	LEAKAGE PAST SEAT/PROBABLE FOREIGN MATER
W	DC1	021769A	062178	C	RM	C12	B	D	G2	V	CONTAINMENT PURGE VALVES LEAKING THRU ON TESTING	ADJUSTMENT OF BUTTERFLY VALVE/DESIGN PROB
W	PR2	023222*	112878	C	RM	C25	B	U	02		OUTER CONT. EXH & SUPPLYS(25A&25B) LEAKING THRU	SEATS NOT ADJUSTED PROPERLY(RECURRING)
W	RG1	013995*	011176	C	AV	C25	B	U	02		CV PURGE SUPPLY&EXHAUST VALVE LEAKED THRU/TESTING	RUBBER SEAT SHOES REALIGNED/LOW TEMP PROB
W	RG1	018076*	020776	C	AV	C00	B	U	G2		CV PURGE EXH & SUP VALVES LEAKED THRU DURING TEST	UNKNOWN
W	SU1	021732*	052878	P	UV	I06	B	D	G2	V	PROCEDURAL DISCREPANCY ABOUT WHAT LUBRICANT TO USE	FOREIGN MATERIAL ON VALVE SEAT SURFACES
W	SU2	021987*	071278	F	MV	I06	B	D	02		INSPECTION OF MOVS AFTER MAINT/EXCESS LUB ON SEATS	VALVES HAD TO BE CLEANED/PROCEDURAL PROB
W	Z11	016699*	092376	P	DV	F12	B	D	G2		TWO VENT FAN DAMPERS FAILED TO SHIFT TO ACCID MODE	STICKY ACTUATING SHAFT&COUNTERWT PROBLEM
W	Z11	016377*	110476	C	AV	C25	B	T	02		VALVES 1ADVR0002/1ADVR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	016609*	112276	C	AV	C25	B	T	02		VALVES 2ADVR0002/2ADVR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	017042*	011677	C	AV	C25	B	T	02		VALVES 1ADVR0002/1ADVR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	017254*	021377	C	AV	C10	B	T	02		VALVES 1ADV-RV0002/RV0004 LEAKED THRU	EXTRANECUS MATERIALS CAUGHT IN THEIR SEAT
W	Z11	019165*	090177	C	AV	C25	B	D	02		VALVES 1RV0001/1RV0003 LEAKED THRU	SEATS WERE OUT OF ADJUSTMENT
W	Z12	017730*	033077	G	UV	C04	B	D	G2	V	INJECTION LINE VALVES LEAKING THRU DILUTING BOREN	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W	Z12	017729*	040177	G	UV	C04	B	D	G2	V	INJECTION LINE VALVES LEAKING THRU DILUTING BOREN	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W	Z12	018537*	072177	G	MV	C12	B	D	G2		VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BOREN	DARLING 4" GATE VALVES REQUIRED ADJUSTMNT
W	Z12	019500*	101277	G	MV	C12	B	T	02		VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BOREN	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
W	Z12	023161*	020578	W	HV	F27	B	D	G2		TWO MSIVS FAILED TO OPERATE IN TIME REQUIRED	PILOT FAILURE/2 TELEDYNE DC SOLEEN FAILED

RECURRING

<u>VE</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	ARI	016566	102176	R	SV	F10	R	T			VLV CV-6202 WOULD NOT REMAIN IN CLOSED POSITION	SOLENOID VLV ACTU. WAS NOT FUNC. PROPERLY
B	CR3	017168A	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN REMOTE ACTUATN	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	017168B	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-41 WOULDNT OPEN REMOTE ACTUATN	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	01732C	022577	W	RV	H00	R	U			MN. STM. RELIEF VLV MSV-36 OPEN. BEFORE SETPOINT	CAUSE OF PREMATURE OPENING NOT KNOWN
B	CR3	017319	030877	W	RV	H00	R	U			MN. STM. RELIEF VLV MSV-3 OPENED PREMATURELY	CAUSE OF FAILURE UNKNOWN
B	CR3	017656B	041577	C	RM	B04	R	D			VLV. CAV-2 FAIL. TO CLOSE; CONTAINMENT ISOLATION VLV	CLOSURE SPRING NOT STRONG ENOUGH
B	CR3	018561	071577	L	MV	A23	R	T			VLV DHV-41 WOULD NOT OPEN FROM CONTROL ROOM	CAUSED BY SHIFT IN TORQUE SWITCH SETTING
B	CR3	018562	071577	L	MV	A00	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN FROM CONT. ROOM	CAUSE OF FAILURE UNKNOWN
B	CR3	019305	091677	W	RV	H00	R	D			MN. STM. SAFETY VLV. MSV-42 RELIED AT PRESS. BELW SP	SETPOINT DRIFT (CAUSE OF DRIFT NOT STATE)
B	CR3	020843A	020178	N	UV	C00	R	U			NOBLE GAS FROM MAKEUP TK. LEAKED BY STP VL MUV-141F	CAUSE OF VLV LEAKAGE NOT GIVEN
B	CR3	020843B	020178	N	CV	E00	R	U			NOBLE GAS FROM MAKEUP TK. LEAK. BY CHECK VLV MUV-140	CAUSE OF VLV LEAKAGE NOT GIVEN
B	CR3	020752A	021078	C	SV	B00	R	U			VLV CAV-2 FAILED TO CLOSE; VIOLATED T.S. REQ.	CAUSE OF FAILURE NOT GIVEN
B	DE1	017418	031677	U	RM	B14	R	T			VALVE 1FDW-108 FAILED TO CLOSE	VALVE PACKING FAILED (HARDENED)
B	DE1	018295	061577	U	RM	B00	R	U			CONT. ISO. VLV 1FDW-108 FAILED TO CLOSE	NO DEFINITE REASON FOUND FOR FAILURE
B	DE1	019881	112977	U	RM	B19	R	T			VALVE FDW-108 FAILED TO CLOSE	VAL. STEM NEEDED LUBRICATION
B	DE1	021320	031578	U	RM	B19	R	T			VALVE 1FDW-108 FAILED TO CLOSE	VAL STEM NEEDED LUBRICATION
B	DE2	019882*	111677	U	RM	B19	R	T	02		VALVES FDW-106 +108 FAILED TO CLOSE	LACK OF VAL STEM LUBRICATION
B	DE3	020159	010578	U	RM	B14	R	T			VALVE FDW-108 FAILED TO CLOSE	VALVE PACKING FAILURE
B	T11	016661	120776	N	RM	B02	R	D			48 INCH BUTTERFLY VALVE FAILED TO CLOSE/TESTING	PERSONNEL ERROR/INADEQUATE MAINTENANCE
B	T11	017610*	032477	C	UV	C07	R	T	03	S	LOCAL LEAKRATE TESTING IDENTIFIED SEVERAL VALVES--	--LEAKING THRU//NORMAL WEAR

RECURRING

M E N	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N D I T I O N	K E Y	FAILURE MODE	FAILURE MECHANISM
C	CC1	014703	093176	S	RM	I04	R	D			BUTTERFLY VALVE TO BE REPLACED WITH GATE(1CV5210)	POOR DESIGN/PIPE ERRODED DOWNSTREAM OF VI
C	CC1	016403	111776	H	MV	A23	R	D			AUX.HI.PRESS.LP.ISO.VLV SI-617 FAILED TO OPEN	DEFECTIVE TORQUE SWITCH;BURNED CONTACTS
C	CC1	021056*	033078	W	RV	A06	R	D	09		9 MN.STM.SAFE-REL.VLV SETTINGS OUT OF TOLERANCE	PROCEDUR.CHG.CAUSED RV SETPOINTS TO BE WR
C	CC2	017906	051477	W	RV	H12	R	T			S/G SAFETY VLV LIFTED BELOW SETPOINT (2-RV-3993)	DRIFT IN VLV'S SPRING TENSION/ADJ.TENS.
C	CC2	018040*	061477	W	RV	H12	R	T	04		3 SAFE.VLV'S #22S/G#1 SAFE.VLV #21S/G LIFTED PREMAT	DRIFT IN THE VLV'S SPRING TENSION
C	CC2	022637*	102378	W	RV	A06	R	D	12		12 MN.STM.SAFE-REL.VLV SETTINGS OUT OF TOLERANCE	PROCEDUR.CHG.CAUSED RV SETPOINTS TO BE WR
C	FC1	015209A	052876	W	RV	H00	R	U	02		RELIEF VALVES OPENED BELOW SET PRESSURE	PRESSURE SETPOINT HAD DRIFTED
C	FC1	015209B	052876	W	RV	H00	R	U	06		6 RELIEF VALVE SETPOINTS BELOW DESIRED PRESSURE	SETPOINTS HAD DRIFTED
C	FC1	016025*	100176	W	RV	A00	R	U	05		5 RELIEF VALVE SETPOINTS DRIFTED FROM TECH SPEC	UNDER INVESTIGATION
C	FC1	016334*	111076	K	RV	H06	R	D	02		VALVES RC-141+RC-142 LIFTING PRESS OUT OF SPEC	LIFTING PRESS SET WITH NITROGEN
C	FC1	017745A	042577	G	CV	E00	R	U	02		VALVES CH-284+HG-100 LEAKING INTERNALLY	UNDER INVESTIGATION
C	FC1	017745B	042577	G	RV	C00	R	U			LEAKAGE THROUGH RELIEF VALVE HG-105	UNDER INVESTIGATION
C	FC1	019401*	093077	W	RV	A00	R	U	03		3 RELIEF VALVE PRESS. SETTINGS DRIFTED OUT OF SPEC	CHANGE IN ENVIROMENTAL CONDITIONS
C	FC1	019551	102677	K	RV	A00	R	U			VALVE RC-142 RELIEF PRESSURE OUT SPEC HIGH	COULD NOT BE DETERMINED
C	FC1	022468A	090878	G	CV	E00	R	U	02		CVS CH-284 + HG-100 LEAKING INTERNALLY	CAUSE UNKNOWN
C	FC1	022468B	090878	G	RV	C00	R	U			RV HG-105 LEAKING INTERNALLY	CAUSE UNKNOWN
C	M12	017891	030676	S	RM	F12	R	D			SEAWATER TEMP CONTROL VLV INOPERABLE	TENSION PIN SHEARED BETW VAL AND OPER
C	M12	015578	080476	H	UV	C00	R	U			VALVE ON #4 SI TANK LEAKING INTERNALLY	NO CAUSE GIVEN
C	M12	017346	030277	S	RM	F12	R	D			C RBCOM HX SERV WAT OUT TEMP CV FAILED TO OPERATE	SHEAR OF PIN COUPLING OPER TO STEM
C	M12	017620	040777	H	CV	E00	R	U			INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN

RECURRING

W H	P L A N T	CONT.NO.	EVENT DATE	S M S	C O M P	FAIL CODE	M O D E	C O N M U P H	K E Y	FAILURE MODE	FAILURE MECHANISM
C	MI2	018740	072177	H	CV	E00	R	U		S.I.HEADER CHECK VLV. 2-SI-648 LEAKING INTERNALLY	NO CAUSE GIVEN
C	MI2	018971	081577	H	CV	E00	R	U		INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN
C	MY1	020761	021678	K	MV	I02	R	D		THERM.OVERLD.LINK.NDT REMOVED FROM #1 LP. COLD LE-	-G ISO.VLV.BRKR.//PERSONNEL ERROR(MAINT.)
C	MY1	022401*	082478	K	MV	I01	R	D	06 Z	THERM.OVERLD.LINK.NOT REMOVED FROM RCS LOOP ISO.V-	-LVS BRKRS.AS REQUIRED//PERSONNEL ERROR
C	PA1	017905	021977	S	CV	F12	R	T		DISCH CV,SERV WATER PUMP PC7 STUCK	CV FLAPPER STUCK,VAL LUBED AND RET TOSERV
C	PA1	019461	092077	S	CV	A09	R	T		CV FOR SERV WATER PUMP P-78 FAILED CLOSED	CORRODED HINGE PIN
C	PA1	021326	042878	S	CV	A09	R	T		P-78 SER. WTR. PMP. DISC. CK. VLV. STUCK SHUT	CV HINGE PIN CORRODED
G	BF1	017525	042177	M	RV	B27	R	D		MN.STM.SAFE.RELIEF VLV. FAILED TO RESEAT	SEVERE STM.OVIS ON PILOT DISC
G	BF2	016807	111676	H	MV	A23	R	D		HPCI TURB.STM.SUP.VLV 2-FCV-73-16 FAILED TO OPEN	TOR.SWT.GEAR ASS.PIN FOR VLV OPER.SHEARED
G	BF2	020380	020578	M	RV	B00	R	U		RELIEF VALVE 2-1-41 OPENED AND FAILED TO RESEAT	CAUSE OF MALFUNCTION UNKNOWN
G	BF2	020469	021378	M	RV	B00	R	U		RELIEF VALVE 2-1-5 OPENED AND FAILED TO RESEAT	CAUSE OF MALFUNCTION UNKNOWN
G	BF2	020775	031878	K	UV	D14	R	T		VLV FCV-68-33 LEAKING EXTERNALLY INTO DRYWELL	LEAKAGE OCCURRED FROM THE PACKING
G	BF2	021401	050478	G	RV	H12	R	D		RELIEF VLV.ON #8" STBY.LIQ.CONT.PUMP OPEN.BELOW SP	CAUSE OF IMP.SET POINT SETTING NOT GIVEN
G	BF3	019562	012277	G	RV	H08	R	D		RELIEF ON 3A STBY.LIQ.CONT.PUMP OPEN.BELOW SETPOINT	DISC BOUND IN GUIDE;VLV.SEATS DAMAGED
G	BF3	018634	091877	Y	SV	C00	R	U		ASCO SOLENOID VALVE LEAKING AIR TO OXYGEN ANALYZER	UNKNOWN(SN 97009A) FSV-76-42B
G	BF3	018635	062177	G	RV	H08	R	D		RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	SCORED AREA ON PLUG GUIDE AND PLUG
G	BF3	018637	070577	H	MV	A23	R	D		HPCI TURB.STM.SUP. 3-FCV-73-16 FAILED TO OPEN	TOR.SWT.GEAR ASS.SHEARED;CAUS.OVLD ON MT
G	BF3	018542	072577	G	RV	H08	R	D		RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	DISC GUIDE WAS GALLED WITH THE VLV DISC
G	BF3	018642	073077	K	UV	D14	R	T		VLV FCV 3-68-33 HAD EXTERNAL LEAKAGE INTO DRYWELL	PACKING LEAK;NORMAL WEAR & DETER-OF PACK.
G	BF3	020524	021378	L	MV	F12	R	D		VLV FCV.3-74-52 WAS FOUND INOPERABLE	UPPER BRNG.LOCKNUT STRIPPED FROM NOR. POS

RECURRING

EVENT	PLANT	CONT. NO.	EVENT DATE	SHEETS	CORR.	FAIL CODE	TYPE	CLASS	C ON NUM	KEY		FAILURE MODE	FAILURE MECHANISM
G BF3	020923	041578	M RV	800	R D							RELIEF 3-1-31 FAILED TO RESEAT AT PROPER PRESSURE	CAUSE OF MALFUNCTION IS NOT KNOWN
G BF3	021245	042878	L MV	F12	R D							VLV FCV 3-74-52 WAS FOUND INCOPERABLE	UP.BRNG.LOCKNUT STRIPPED FROM NOR.POSITIN
G BF3	022126*	081778	M RV	H27	R D	03						MM.STM RVS MSRV1-41,30,634 OPENED BELOW SETPCINTS	VLV FAILURES WERE CAUSED BY PILOT VLV.PRB
G BF3	022126A	081778	M RV	800	R D							A MAIN STM RELIEF VLV DID NOT CLOSE AFTER LIFTING	CAUSE OF FAILURE NOT GIVEN
G BF3	022125	082278	M RV	H12	R D							DURING STARTUP MSRV 1-4 OPENED BELOW SETPOINT	PREMATURE OPEN.DUE TO EXCESS.2ND.STG.LEAK
G BF3	022461*	091778	M AV	C00	R U	04						FOUR MSIV'S FCV-1-14,1-26,1-51,1-52 EX.T.S.LEAK LM	CAUSE OF EXCESSIVE LEAKAGE IS NOT KNOWN
G BR1	020964	032378	Y CV	E00	R T							FAULTY CK.VLV IN SAM.DR.LN. ALLOWED H2O INTO MONIT	MON.CAC-AQH-1262-1 CK VLV FAIL.CAUSE UNKN
G BR1	020921	033178	Y CV	E00	R T							RAD.MON. SAMP.DR.LN. CK.VLV FOUND STUCK OPEN	CAUSE OF CK.VLV. FAILURE NOT STATED
G BR1	021089A	041078	C MV	B26	R T							VLV E41-F003 FAILED TO ISOLATE DURING TESTING	DIRT.CONT.ON LIMIT SWT.&POOR.SEAT.MTR.BR.
G BR1	021089B	041578	C MV	B20	R D							DURING AN ACT.HI.STMLN.FLOW,VLV E41-F003 FAIL.TO.S	DIRT.CONT.ON LIMIT SWT.&POOR SEAT.MTR.BR.
G BR1	022089	071678	M MV	F20	R U							OUTBOARD MN.STMLN.DR.ISO.VLV B21-F019 WOULDNT DPR	MTR.BRUSH.NOT MAKING PROP.CONT.W/COMMUTAT
G BR1	022820	102878	M MV	F20	R U							MN.STMLN.DR.ISO.VLV B21-F019 FAILED TO OPERATE	FAULTY MTR. BRUSH HOLDER
G BR2	014646	020476	Q CV	A12	R D							RCIC TURB.DISCH.CK.VLV E91-F04D WOULD NOT OPEN	DISC STUD BROKEN/DISC BLOCKING EXH. FLOW
G BR2	015400	061176	N SV	A21	R D							AIR SUPPLY VLV 2-CAC-PV-3442 FAILED TO OPEN	BROKEN RETAIN.RING ON SOLENOID COIL
G BR2	015409	062076	N SV	A21	R U							CAC-PV-3442 SERIES EFFLUENT VLV WOULD NOT OPEN	VLV SOLENOID WAS STICKING/SEATS WERE LEAK
G BR2	020205	122677	Y XV	C00	R U							NEEDLE VLV ON OXY.ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G BR2	020455	012678	Y XV	C00	R U							NEEDLE VLV ON OXY.ANALYZER LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN/VLV REMOVED
G C01	014359	012476	L MV	F20	R D							VLV RHR-MO-34A WOULD NOT OPERATE BY MTR.OPERATOR	SHEARED WOODRUFF KEY.IN MTR.OPERATOR
G C01	016659	111776	C RM	B00	R U							VALVE PC-238 AV FAILED TO CLOSE FULLY	CAUSE UNKNOWN,BELIEVED OPERATOR RELATED
G C01	017361	021977	L MV	B20	R D							MOTOR OPERATED VALVE RHR-MO-34 WOULD NOT CLOSE	SHEARED KEY BETWEEN VALVE AND OPERATOR

RECURRING

<u>EVENT</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G DA1	016451	102976	W MV	A26	R D							MSIV-LCS MOV8401A FAILED TO OPEN DURING TEST	INSUFFICIENT LIMIT SWITCH CONTACT PRESS
G DA1	016445	110476	W MV	A23	R U							MSIV LEAKAGE CONTROL VALVE MCV8401A FAILED TO OPEN	OPEN TORQUE SWITCH, TS-1, FAILED
G DA1	016361	111276	W MV	A26	R U							MSIV LEAKAGE CONTROL VALVE MCV8401B FAILED TO OPEN	LIMIT SWITCH OUT OF ADJUSTMENT
G DR2	014542	041276	G RV	H25	R T							SBLC RELIEF VALVE 1105-A LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G DR2	014530	041376	G RV	H25	R T							SBLC RELIEF VALVE 1105-B LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G DR2	019155	091277	K RM	B02	R D							RECIRC SUCTION VALVE 202-4B WOULD NOT CLOSE	VALVE PACKING TOO TIGHT MAINT ERROR
G DR2	019218*	100477	U CV	E12	R T 02							REACTOR FEED CV 2-220-58B, 62B, LEAKING INTERNALLY	WORN SEAT/DISK ASSY PINS, WORN SEAT RING
G DR2	019985	120977	W RV	A00	R U							ELECTROMATIC RELIEF VALVE 3B FAILED TO OPEN	CAUSE UNKNOWN
G DR2	019808	121277	C CV	F12	R D							VACUUM BREAKER 2-1601-32B INOPERABLE	MECHANICAL BINDING OF VALVE PARTS
G DR2	020471*	021078	C CV	B10	R T 02							TWO VACUUM BREAKER VALVES NOT CLOSING FREELY	EXCESS GREASE IN THE SHAFT SEALS
G DR2	021512*	051378	C CV	F17	R T 02							VACUUM BREAKERS 2-16C1-33E&F FOUND INOPERABLE	SWELLING OF TEFLON SHAFT BUSHINGS
G DR2	022974	111578	C SV	A21	R T							AC 1601-56 FAILED TO OPEN	SHORTED CUT COIL ON SOLENOID
G DR2	023334*	112378	W AV	F12	R U 02							2 MSIV FAILED TO CLOSE IN REQUIRED TIME	MINOR ADJUSTMENTS TO SPEED CONTROL VALVES
G DR3	016C16A	092176	U CV	E10	R T							FEEDWATER CHECK VALVE 3-220-58A LEAKING INTERNALLY	DIRT IN SEATING AREA
G DR3	016016B	092176	U CV	E08	R T							FEEDWATER CHECK VALVE 3-220-62A LEAKING INTERNALLY	WORN DISK ASSEMBLY PINS
G DR3	018378A	061177	W RV	C02	R D							ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALLY	PILOT PIN ADJUSTED INCORRECTLY
G DR3	018378B	061177	W RV	C10	R T							ELECTROMATIC RELIEF VALVE 203-3E LEAKING INTERNALLY	DIRT UNDER VALVE SEAT
G DR3	018377	061277	W RV	C27	R D							ELECTROMATIC RELIEF VALVE 203-3D LEAKING INTERNALLY	DEFECTIVE PILOT VALVE STEM
G DR3	018376	061377	W RV	A10	R T							SOLENOID OPERATING LEVER FOR 203-3C STICKING	RUST BUILDUP ON GUIDE PINS
G DR3	019189	092477	Q MV	FC1	R D							BREAKER FOUND OPEN TO MC-3-4102	PERSONNEL ERROR

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RECURRING

<u>EVENT</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY S</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON PH</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G DR3	019996	123677	F MV	A00	K U						LPCI HX DISCH VALVE MD3-1501-3A FAILED TO OPEN	CAUSE UNKNOWN
G DR3	020602	020778	L MV	A00	R U						VALVE MD-3-1501-5C FAILED TO OPEN	CAUSE UNKNOWN
G DR3	022921	110478	M AV	F12	R U						MSIV 3-203-2A FAILED TO CLOSE IN PROPER TIME	SPEED CONTROL OUT OF ADJUSTMENT
G EN1	014792	050176	H MV	A26	R T						HPCI DISCHARGE VALVE E41-F006 FAILED TO OPEN	FAILURE OF A SNAP LOCK LIMIT SWITCH
G EN1	015555	061576	H MV	A00	R U						HVIC VALVE E41-F006 DID NOT FULLY OPEN	CAUSE UNKNOWN
G EN1	016841	120976	A RV	B00	R U						RELIEF VALVE WOULD NOT RESEAT	CAUSE UNKNOWN
G EN1	017110	010977	A RV	B27	R T						RELIEF VALVE B21-F0136 OPENED AND STUCK OPEN	GROSS LEAKAGE OF PILOT+2ND STAGE ASSEMBLY
G EN1	017189	020177	A RV	B00	R U						RELIEF VALVE B21-F0136 OPENED AND STUCK OPEN	CAUSE UNKNOWN, VALVE TO BE TESTED
G EN1	017190	020477	A RV	H27	R T						RELIEF VALVE B21-F0133 OPENED PREMATURELY	LEAKAGE BY VALVES PILOT SEAT
G EN1	020019*	100677	A RV	A00	R U 04						FOUR RELIEF VALVES FAILED TO OPEN FOLLOWING SCRAM	CAUSE UNKNOWN, VALVES BEING EXAMINED
G MI1	018157	061777	M RV	H27	R T						VALVE 1-MS-3D LIFTED BELOW SET PRESSURE	EXCESSIVE LEAKAGE BY PILOT SEAT
G MD1	015768	090276	F MV	B12	R D						VALVE MD-2008 FAILED TO OPEN	STEM CLAMP SCREWS SHEARED
G MD1	017034	011877	X XV	C02	R D						VALVE ON ACCUM T14-19 FAILED TO HOLD PRESSURE	VALVE PACKING INSTALLED INCORRECTLY
G MD1	016093	053177	C MV	B19	R T						ISO VALVE MD-2076 FAILED TO CLOSE	DETERIORATED GREASE, MAIN+LIM SW GEAR TRAN
G MD1	018468	071177	X XV	C01	R D						NITROGEN CHARGING VLV FAILED TO HOLD PRESSURE	OVERTIGHTEN, VAL. HAND. CAUSED "O" RING FAIL
G MD1	018510	071977	X XV	C14	R T						NITROGEN CHARGING VAL FAILED TO HOLD PRESS	PACKING AT END OF LIFE
G MD1	018669	081077	X XV	C14	R T						VALVE CRD HCU 30-11 WOULD NOT HOLD PRESS	PACKING FAILURE
G MD1	019050	090977	C MV	F04	R D						VALVE MD 2009 FAILED TO OPERATE PROPERLY	SET CLAMP SCREWS UNDERSIZED
G MD1	019466	091077	C MV	C10	R T						VALVE MD-2373 LEAKING INTERNALLY	FOREIGN MATRL ON VAL SEAT
G MD1	019467*	091377	C CV	E10	R T 02						VALVES AD-14-13A + AD-14-13B LEAKING INTERNALLY	SCALE ACCUM ON SEATING SURFACES

RECURRING

<u>VENT</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYSS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CONMUPH</u>	<u>WORK</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	MO1	019468	091677	C	CV	E10	R	T			VALVE LEAKING IN EXCESS OF T.S.	DIRT ON SEATING SURFACES
G	MO1	019469	101377	W	AV	C00	R	U			MSIV AD-2-80A LEAKING IN EXCESS OF T. S.	NO APPEARENT CAUSE
G	MO1	020395	020278	C	CV	B17	R	T			TORUS TO DRYWELL VAC. BRKR AD-2382B FAILED TO CLOSE	EXCESS FRICTION BETW VAL BUSHING + STEM
G	MO1	021755	060578	M	SV	F12	R	D			SCRAM PILOT VALVE FOR CRD 06-19 WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVE BROKEN
G	MO1	021985*	072878	M	SV	F12	R	D	07		SCRAM PILOT VALVES FOR CRDS WOULD NOT FUNCTION	BUNA-N DISK IN SCRAM PILOT VALVES BROKEN
G	MO1	022868	102078	C	CV	E10	R	T			HPCI-9 TURB EXT LINE CHECK VALVE LEAKING INTERNALY	ACCUMULATED DIRT ON SEATING SURFACES
G	DC1	018952	082977	C	CV	B04	R	D			TORUS TO DRYWELL VAC. BRK(V-26-5) FAIL. TO RECLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G	DC1	019198	092777	C	CV	B04	R	D			VAC BKR VAL V-26-9 FAILED TO CLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G	PB2	014153	020976	Q	MV	F02	R	D			RCIC D.B. STM ISO VAL MD-13-16 FAILED TO STROKE	VALVE PACKING TOO TIGHT / PERSONNEL ERROR
G	PB2	014464*	032976	C	CV	E10	R	T	04		FEED WAT CV 28A, 28B, 96A, 96B LEAKING EXCESSIVELY	RUST SCALE ON VAL SEATING SURFACES
G	PB2	015085	062976	W	RV	B27	R	T			MAIN STEAM RV 70A IN OPEN POSITION	PILOT VALVE SEAT LEAKAGE
G	PB2	016333	111476	W	RV	B10	R	T			MAIN STM RV 71F FAILED IN OPEN POSITION	DIRT UNDER PILOT DISK AND SEAT
G	PB2	016676A	010677	W	RV	B27	R	T			MAIN STM RV 71E FAILED OPEN	EXCESSIVE PILOT SEAT LEAKAGE
G	PB2	016676B	010677	W	RV	I27	R	T	03		MAIN STM RVS 71D, 66K FOUND TO NEED MAINT. ON INSP	EXCESSIVE PILOT VLV SEAT LEAKAGE
G	PB2	019167	092677	H	RM	D22	R	U			HPCI OIL SYST CONT VAL LEAKING OIL	DIAPHRAGM LEAKING
G	PB2	020724	022478	K	UV	D14	R	T			EXTERNAL LEAKAGE MD-2-2-65A (RECIRC. SYS. LP. X-CONN.)	FAILED PACKING ON VLV CAUSED LEAKAGE
G	PB2	021554*	060978	K	XV	D14	R	T	02		HEAD VENT MAN VAL, VAL MD-2-2-65B LEAKING EXTERNALY	VALVE PACKING FAILURES
G	PB2	022707	101978	W	MV	B23	R	U			MAIN STM LINE DRAIN ISO VAL MD-2-74 FAIL TO CLOSE	TORQUE SWITCH ON ISO VALVE DEFECTIVE
G	PB3	014054	010976	N	CV	E25	R	T			INST. NITRO. OUTBOARD CK. VLV B-EXCESSIVE LEAKAGE	POOR MATING BETWEEN THE VLV FLAPPER SEAT
G	PB3	014213	011076	D	UV	C10	R	T			CORE SPRAY ACCUM. VENT VLV SV-5224B-UNACCEP. LEAKAGE	SEAT WAS DAMAGED BY FOREIGN MATERIAL

RECURRING

<u>VEN</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON MUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	PB3	014471	030176	L	RM	B12	R	D			B RHR OUTBOARD INJECTION VLV MD-154B FAIL TO CLOSE	VLV DISC SEPARATED FROM VLV STEM
G	PB3	015153	071276	M	RV	B27	R	T			71B MAIN STEAM RELIEF VALVE FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G	PB3	015228	072076	M	RV	B27	R	T			MAIN STEAM RELIEF VLV 71G FAILED OPEN	FAILURE DUE TO PILOT VLV SEAT LEAKAGE
G	PB3	015852	090776	C	SV	C10	R	T			TORUS ATMOS. SAMP. INBD. ISO. VLV LEAKED THROUGH	VALVE SEAT NEEDED CLEANING
G	PB3	016389	111076	Q	RM	B00	R	U			RCIC INBD. STM. SUP. ISO. (MD-3-13-15) FAILED TO CLOSE	CAUSED OF FAILURE NOT GIVEN
G	PB3	018372	071377	Q	MV	B12	R	D			RCIC OUTER ISO. VLV (MD-16) FAILED TO CLOSE	OPER. HAD STRIPPED THREADS ON STEM NUT
G	PB3	018525	080977	Q	MV	F. 3	R	D			RCIC OUTER ISO. VLV (MD-16) FOUND INOPERABLE	BROKEN LUG ON TORQUE SWITCH TERMINAL
G	PB3	019556	102677	H	RM	D22	R	D			OIL LEAK FOUND ON HPCI OIL PRESSURE CONTROL VALVE	OIL LEAK WAS CAUSED BY A SPLIT DIAPHRAGM
G	PB3	020723	030578	K	MV	D14	R	T			RECIRC PUMP DISCHARGE VALVE, MD-2-53B LEAK EXTERNAL	FAILURE OF DISCHARGE VALVE PACKING
G	P11	018325	062077	L	MV	B12	R	D			VALVE MD-1001-36A FAILED TO CLOSE, RHR PUMP OPERAT	KEY WHICH PREVENTS STEM ROTATION SHEARED
G	P11	019859	111577	M	RV	C27	R	T			RELIEF VALVE 203-3B DETERMINED TO BE LEAKING	FIRST+SECOND STAGE OF PILOT VALVE LEAKING
G	P11	019756	111777	M	RV	C27	R	T			RELIEF VALVE 203-3D DETERMINED TO BE LEAKING	FIRST STAGE OF PILOT VLV SEAT LEAKING
G	P11	022757	100978	M	RV	B27	R	T			RV-203-3C FAILED TO RESET AT PROPER PRESSURE	EXCESSIVE PILOT SEAT LEAKAGE
G	QC1	014058*	011076	U	CV	E25	R	T	G3		3 FEED WATER CV THAT FAILED EARLIER FAILED AGAIN	VITON O-RINGS (SEAT SURFACES) DETERIORATED
G	QC1	014057	011476	L	MV	C23	R	T			VALVE MD-1-1001-37A FAILED LEAKRATE TEST	TORQUE SW CUT OF ADJUSTMENT/LIMITORQUE
G	QC1	014056	012676	N	MV	C23	R	D			VALVE 1-1201-2 FAILED LEAKRATE TEST	TORQUE SW MALFUNCTION/REPLACED/LIMITORQUE
G	QC1	020636	020678	A	RV	A12	R	D			ELECTROMATIC RELIEF 1-203-3E FAILED TO OPEN / TEST	WORN INTERNAL PARTS/VALVE WAS REPLACED
G	QC2	020533	032377	A	RV	A12	R	D			ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	LOOSE INTERNAL PARTS BOUND/EXCESS VIBRAT
G	QC2	019223	092377	A	RV	A12	R	D			ELECTROMATIC RELIEF FAILED TO OPEN DURING TESTING	RINGS CUT GROOVES IN DISC GUIDE/STEAM CUT
G	VY1	020485	120977	M	AV	B27	R	T			MSIV-86C FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INOPERABLE/DIRT

RECURRING

<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY S</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G VY1	020468	020478	M	AV	B27	R	D				MSIV-8GA FAILED TO CLOSE DURING TESTING	PNEUMATIC SPOOL VALVE INOPERABLE
W BV1	016358	102476	H	UV	C00	R	U				PRI.SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W BV1	016705	122876	H	UV	C00	R	U				PRI.SYS.WTR VLV INTER.LEAKAGE DILUTED BORON INJ.TK	CAUSE OF VLV.INTER.LEAK.NOT STATED
W BV1	017554	032877	S	AV	G22	R	U				1B RCP COOL.WTR.SUP.CONT.ISO.VLV FAILED SHUT	FAILED DIAPHRAGM IN VLV. OPERATOR
W BV1	018831	072277	U	RM	F12	R	D				1A FEED REGULATING VLV WAS OPERATING IMPROPERLY	VLV STEM LOCK PLATE CAME LOOSE;BOLT FAIL.
W BV1	018728	080177	U	RM	F02	R	D				1B FEEDWATER REG. VLV.OPERATING IMPROPERLY	LOOSE LOCK PLATE DUE TO OVER TORQ.OF BOLT
W BV1	019611	102777	K	XV	D14	R	T				20 GPM LEAK. FROM 1A LCCP FILL VLV PACKING	PACKING DEGRADATION
W BV1	020439	011478	J	AV	G22	R	U				1A RCP COOLING WATER INLET ISO. VLV FAILED SHUT	RUPTURED VLV OPER. DIAPHRAGM CAUSED FAIL.
W BV1	020757	012978	K	XV	D14	R	T				LEAKAGE IN EXC. OF 10GPM OBS.THRO B LP.FILL VLV PK	LEAKAGE DUE TO DEGRADED PACKING IN VLV.
W BV1	021298	050978	N	RM	F00	R	U				SUMP DISCH VALVE STAYED OPEN ON HI PH CONDITION	UNKNOWN (SEE LER NO. 020650,POSS CONNECT)
W BV1	023039	082678	N	RM	F00	R	U				CHEM WASTE SUMP VALVE FAILED TO OPERATE PROPERLY	UNKNOWN(SEE LERS NO.020650 AND 021298)
W HN1	018778	073077	G	XV	D05	R	D				B CHARG PUMP BYPASS ISO VAL LEAKING EXTERNALLY	DEFECTIVE CASTING
W HN1	021387	050478	G	XV	D08	R	T				PINHOLE LEAK IN B CHG PUMP DISCH VALVE	SEVERE EROSION CAUSED BY THROTTLING VAL
W HN1	021335	050978	G	XV	D08	R	T				BODY TO BONNET LEAK B CHG.PMP BYPASS ISO VLV	ERROSION FROM HI VELOCITY WTR FLOW
W IP2	016467	120276	C	RM	I04	R	D	07			ELEC.CIRC.FOR 4CONT.ISO.VLV563CONT.REL.VLV.NOT ME-	-ET SING.FAIL.CRIT(1 SOURCE PWR)//DESIGN
W IP2	018788A	051377	K	RV	A00	R	U				RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT
W IP2	019281*	101977	C	RM	I04	R	D	02 V			AIR EJECT.LINE CONT.ISO.VLV.CIRCUITRY DID NOT MEE-	-T SINGLE FAIL.CRIT(1 SOURCE PWR)//DESIGN
W IP2	021028	031478	K	RV	H00	R	U				RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT
W IP3	016469*	121776	M	NV	B02	R	D	02			TWO-28IN MSIVS FAILED TO CLOSE	SHAFT BINDING DUE TO IMPROP ADJ OF GLAND
W IP3	022407	090378	H	UV	C12	R	D				BYPASS VAL FOR LOOP A ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED

RECURRING

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CN</u>	<u>PH</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	IP3	022405	091278	H	UV	C12	R	D				BYPASS VAL FOR LOOP B ACCUMULATOR LEAKING	BALL VALVE WAS TIGHTENED
W	KE1	020788	030278	H	MV	A00	R	U				CNTNMNT SUMP ISO VAL WOULD NOT FULLY OPEN	CAUSE UNKNOWN
W	BY1	021077	040478	H	MV	A14	R	T				CNTNMNT SUMP ISO VAL WOULD NOT FULLY OPEN	VAL PACKING AT END OF USEFULL LIFE
W	PR1	014601	012176	R	DV	F12	R	D				DAMPER FOUND IMPROPERLY POSITIONED	BINDING SHAFT BUSHING/POSS LUBRIC PROBLEM
W	PR1	014758	051376	L	MV	A23	R	T				MOV FAILED TO OPEN DURING TEST (MV-32065)	TORQUE SW PROBLEM/ADJUSTED IT(LIMITORQUE)
W	PR1	018859	070177	R	DV	F12	R	D				DAMPER FAILED TO OPERATE DURING TEST/COUPLING PROB	PINS SHEARED/RAMCON ACTUATOR TO DAMPER
W	PR1	018868	072677	R	DV	F12	R	D				DAMPER FAILED TO OPERATE/ACTUATOR FAILED(RAMCON)	REPLACED BOTH ACTUATORS(BINDING DAMPER)
W	PR1	021640	051678	R	DV	F12	R	T				DAMPER FAILED TO OPERATE AS REQUIRED	RAMCON NO. R-260 ACTUATOR FAILED/LUBRICNT?
W	PR2	016264	102576	H	MV	A23	R	D				MOV/BORIC ACID SUPPLY MV-32184 FAILED TO OPEN	TORQUE SW MALFUNCTIONED/WAS REPLACED
W	PT1	014949	061676	S	MV	A23	R	T				MOV-SW2869 FAILED TO OPEN ELECTRICALLY DURING TEST	TORQUE SW CORRODED FOLLOWING WETTING
W	PT1	018192	061577	S	MV	B23	R	T				MOV-2816 FAILED TO CLOSE DURING TEST SIGNAL	TORQUE SW READJUSTED/POSSIBLE OVER TORQUE
W	PT1	020662	122177	S	MV	A23	R	T				MOV-2967 FAILED TO OPEN DURING TESTING	TORQUE SW SETPOINT WRONG/ADJUSTED
W	PT2	014158	022076	C	AV	C10	R	T				LRI BETWEEN SURGE SUPPLY VAVES SHOWED INTERNL LEAK	DIRT IN VALVE/CLEANING STOPPED LEAKAGE
W	PT2	014389	030876	C	CV	E25	R	T				CV 2-755A IN CCM SYSTEM FAILED LEAKRATE TEST	DIRT ON SEATING SURFACES/LAPPED SURFACES
W	PT2	015186	070176	R	MV	A23	R	T				MOV-2MS-2019/STEAM TO AUX FEED PLPP FAILED TO OPEN	TORQUE SW SETPCINT CAUSED TIGHT CLOSING
W	PT2	017464	030977	C	CV	E25	R	T				4 IN CV IN CCM SYSTEM FAILED LEAKRATE TEST	SEAT/DISC PROBLEM/PROB DUE TO NORMAL WEAR
W	PT2	017606	042077	G	RV	C00	R	U				LEAKAGE THRU 3/4 INCH DISCHARGE RELIEF VALVE(PUMP)	UNKNOWN/DIMINISHED WITH OPERATION
W	PT2	017859	050377	G	RV	C00	R	U				LEAKAGE THRU 3/4 INCH RELIEF VALVE/PUMP DISCHARGE	UNKNOWN/VALVE WAS REPLACED
W	RO2	015570	081776	B	RM	A04	R	D				VALVE V2-16A FAILED TO OPEN	LIMITORCLE OPER FAILED TO OPEN VALVE
W	RO2	019343	061077	C	RM	C07	R	T				CV PURGE OUTLET INNER VALVE NOT OPERABLE	EXCESSIVE INTERNAL LEAKAGE THROUGH VALVE

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RECURRING

W	PLANT	CONT. NO.	EVENT DATE	S	C	FAIL CODE	T	C	CLASS	COM	KEY	FAILURE MODE	FAILURE MECHANISM
W	RD2	019344	061977	N	RM	F07	R	T				CV PURGE OUTLET INNER VALVE INOPERABLE	NORMAL WEAR TO RUBBER SEAT
W	RD2	019352	081777	B	MV	A20	R	D				VALVE V2-16A FAILED TO OPEN	LIMITORQUE VALVE OPERATOR FAILED
W	RD2	022626	122177	B	MV	A12	R	T				AUX FEED PUMP DISCH VALV V2-16A FAILED TO OPEN	EXCESS SEATING PRESS CAUSED BY OVERHEAT
W	RD2	021616*	050978	L	UV	C00	R	U	O2			INLET VALVES SI-867 A & B (BIT) LEAKING INTERNALLY	CAUSE NOT STATED
W	RD2	021748*	061378	L	UV	C00	R	U	O2			INLET VALVES SI-867 A & B (BIT) LEAK. INTERNALLY	CAUSE NOT STATED
W	SAL	021373*	041177	K	RM	A26	R	T	O2			SAMPLE ISO. VLV'S 1SS1076104 WOULD NOT OPEN	VLV. POSITION LIMIT SWTCHS. OUT OF ADJUST.
W	SAL	017785	051277	N	RM	C12	R	D				SPRAY VALVE (1PS3) LEAKED THRU/PRESS DECREASED	VALVE OPERATOR ADJUSTMENT PROBLEM
W	SAL	018248	070877	N	XV	D14	R	T				EXTERNAL LEAKAGE ON VALVE 1CV75	LEAKAGE PAST STEM PACKING
W	SAL	019800*	073177	N	RM	C12	R	D	O3			SPRAY VALVES (1PS1/2/3) LEAKED THRU	VALVE OPERATOR ADJUSTMENT PROBLEM
W	SU1	014870	032676	G	UV	C22	R	D				DV 1-CH-85 RUPTURES DIAPHRAGM/LEAKAGE THRU VLV	GRINNEL DIAPHRAGM FAILED/NORMAL WEAR
W	SU1	015959	082376	G	UV	C22	R	D				DIAPHRAGM VALVE (1-CH-125) LEAKED THRU EXCESSIVELY	RUPTURED DIAPHRAGM/GRINNEL/NORMAL WEAR
W	SU1	016882	111376	K	RV	A00	R	U				PRESS SAFETY VLV (SV1551B) OPENED AT HI PRESS	UNKNOWN/"SETPOINT DRIFT" UP
W	SU1	016882A	111376	K	RV	H00	R	U				PRESSURIZER SAFETY VLV (SV1551A) PREMATURE OPEN	UNKNOWN/"SETPOINT DRIFT" DOWN
W	SU1	017056*	012077	W	RV	A00	R	U	O2			SV-MS-101B AND 102B FAILED TO OPEN AT SETPOINT	UNKNOWN/"SETPOINT DRIFT"
W	SU1	017054*	012577	N	RM	B00	R	U	O2			TWO SAMPLE SAVES (TV-SS-106A/106B) FAILED TO CLOSE	UNKNOWN/COLD SHUTDOWN NEEDED FOR MAINTEN
W	SU1	017052*	012677	G	UV	C22	R	D	O2			TWO DIAPHRAGM VALVES (1-CH-83/95) LEAKING THRU	EXCESSIVE DIAPHRAGM WEAR/OVERTIGHTENING??
W	SU1	017217	021577	W	RV	H00	R	U				MS SAFETY VALVE (SV-MS-101A) PREMATURELY OPENED	UNKNOWN/SETPOINT DRIFT OF TORQUE LIMITOR
W	SU1	017218	022077	G	UV	C22	R	D				DIAPHRAGM VALVE (1-CH-98) LEAKING THRU	EXCESS DIAPHRAGM WEAR/PLSS OVERTIGHTENING
W	SU1	020815	030578	S	UV	G09	R	T				ISOLATION VALVE ON COOLER (1-SW-E-1B) PLUGGED	DISC SEPARATED FROM STEM/CORRODED STEM
W	SU1	021900*	070578	W	RV	A00	R	U	O2			RV'S (SV-MS-101A/105B) FAILED TO OPERATE +/- 3X	UNKNOWN/"SETPOINT DRIFT"

RECURRING

PLANT	CLIN. NO.	EVENT DATE	SYSTEM	COMP	FAIL CODE	TYPE	CLASS	CON NUM	KEY	FAILURE MODE	FAILURE MECHANISM
W SU2	017920	040976	N RM	B00	R U					SAMPLE VALVE (TV-SS-201A) FAILED TO CLOSE	UNKNOWN/TESTED SAT BEFORE MAINT DONE
W SU2	014843	041276	N MV	F20	R I					CONDENSER OUTLET MOV-CW-200A FAILED TO OPERATE	OPERATOR PROBLEM/IT CONTAINED WATER
W SU2	015525	061476	N MV	F00	R U					CONDENSER OUTLET MOV-CW-200B FAILED TO OPERATE	UNKNOWN
W SU2	017396	030977	N MV	B23	R D					CIRC H2O OUTLET MOV-CW-200D FAILED TO CLOSE	TORQUE SWITCH PROBLEM/JAMMED/ADJUSTED IT
W SU2	018676	081577	G UV	C22	R D					DIAPHRAGM VALVE (1-CM-144) LEAKING THRU	CRACKED DIAPHRAGM ON GRINNEL VALVE
W SU2	019109*	091077	W RV	A00	R U 05					SV-MS-201A,201B,201C,202B,202C FAILED TO OPERATE	UNKNOWN/DRIFTED >+OR- 3% FROM SETPOINTS
W SU2	019211*	091077	N RM	B12	R D 02					SAMPLING VALVES (TV-SS-206A/201B) FAILED TO CLOSE	OPERATOR LINKAGE NEED ADJUSTMENTS
W SU2	019212*	092077	K RV	H00	R U 03					3 PRESSURIZER SAFETY VALVES OPENED PREMATURELY	UNKNOWN/PROB WIDE VARYING TEMPEENVIRONMNT
W SU2	019566*	103177	G MV	C00	R U 02					MOV-2867C/D LEAKED THRU/BIT ISOLATION VALVES	UNKNOWN/RECURRING
W SU2	019743*	110977	G MV	C00	R U 02					MOV-2867C/D LEAKED THRU / BIT ISOLATION VLVS	UNKNOWN/RECURRING
W SU2	019752	111477	C RM	B04	R D					SAMPLING VALVE TV-SS-202A FAILED TO CLOSE	DESIGN DEFICIENCY/CLOSING SPRING TOO WEAK
W SU2	020158	010878	N MV	B20	R U					CIRC H2O OUTLET MOV-CS-200B FAILED TO CLOSE	ACTOR WAS GROUNDED
W SU2	020819	030578	S UV	G09	R T					SEAL COOLER 2-SW-E-1B ISOLATION VLV PLUGGED	GATE SEPARATED FROM STEM DUE TO CORROSION
W TU3	015006	061176	N UV	C00	R U					THRU LEAKAGE CAUSED DILUTION OF BORON INJECT TANK	UNKNOWN
W TU4	015009*	061276	N UV	C00	R U 02					TWICE, TWO VALVES LEAKED THRU DILUTING BORON TANK	UNKNOWN/TWO VALVES 6-11-76/SAME TWO 6-12-76
W YR1	018267*	062077	G UV	C00	R U 03					EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/VALVES REPAIRED
W YR1	018367*	062777	G UV	C00	R U 03					EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE EVENT/VALVES REPAIRED
W YR1	018420*	070477	G UV	C00	R U 03					EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/VALVES REPAIRED-AGAIN
W YR1	018484*	071177	G UV	C00	R U 03					EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/POOR PAST REPAIRS
W YR1	018480*	071477	G UV	C00	R U 05					DECIDED TO REPAIR THE 3 PUR VALVES/2 OTHERS ALSO	UNKNOWN PROBLEM/PAST REPAIRS INSUFFICIENT

RECURRING

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>C</u> <u>S</u> <u>T</u> <u>E</u> <u>M</u>	<u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>I</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>H</u> <u>U</u> <u>P</u> <u>H</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
W	Z11	013942	010776	C	AV	B08	R	D			NITROGEN GILL VLV (1S18880) FAILED TO CLOSE	GALLED VALVE INTERNALS
W	Z11	014920	051876	C	AV	B08	R	D			NITROGEN FILL VALVE(1S18880) FAILED TO CLOSE	GALLED VALVE INTERNALS/PROCEDURES REVISED
W	Z11	016044	092176	C	AV	C25	R	T			CONTAINMENT PURGE ADV-RV0002 LEAKED THRU	BULGE ON SEATING SURFACE OF BUTTERFLY VAL
W	Z11	017041	012377	C	SV	B10	R	T			CONTAIN INST AIR SOV (1FCV-1A01B) FAILED TO CLOSE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
W	Z11	019863	120377	W	HV	F27	R	U			MSIV 1B FAILED TO OPEN OR CLOSE IN REQUIRED TIME	3WAY SELECTOR(TELEDYNE)DC SOLENOID FAILED
W	Z11	020112*	120377	S	UV	F00	R	U	02	V	SERVICE WATER VALVES WERE INOPERABLE	UNKNOWN
W	Z11	020000	120877	C	AV	C25	R	T			VALVE 1A0V-RV0002 LEAKED THRU	SEAT CONTRACTION DUE TO LOW TEMPERATURE
W	Z11	020105*	120877	S	UV	F00	R	U	02	V	SERVICE WATER VALVES WERE INOPERABLE	UNKNOWN
W	Z11	021110	040178	W	HV	F27	R	T			MSIV FAILED TO OPERATE IN REQUIRED TIME	REXROTH 4WAY DIRECTIONAL CONTROL VAL FAIL
W	Z11	021446	050678	W	HV	B27	R	D			MSIV 1B FAILED TO CLOSE AFTER MAINT. ON VALVE	REXROTH 4WAY DIRECTIONAL VALVE JAMMED
W	Z11	022849	090478	X	XV	004	R	D			HANCOCK CD MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z11	022516	090878	X	XV	004	R	D			HANCOCK CD MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z11	022244	091478	X	XV	004	R	D			HANCOCK CD MANUAL ROOT VALVE LEAKING STEAM	DESIGN PROBLEM/VALVES PRESS RATING TO LOW
W	Z12	014043	010576	C	AV	B19	R	F			SAMPLE VALVE (2SS9355B) FAILED TO CLOSE	MECHANICALLY BOUND/NEEDED LUBRICATION
W	Z12	013951	010876	C	AV	B14	R	T			SAMPLE ISOL ADV (2SS9356A) FAILED TO CLOSE	STEM BINDING ON PACKING/LOOSENED PACKING
W	Z12	015103	031576	C	AV	C25	R	F			CONTAINMENT PURGE ISOLATION ADV LKAKED THRU	VALVE SEAT INADEQUATELY TORQUED/42" BUTFLY
W	Z12	015192	060376	W	HV	B27	R	V			PSIV B FAILED TO CLOSE DURING TESTING	PILOT FAILURE(TELEDYNE)DC SOLENOID FAILED
W	Z12	015191	061576	G	UV	C22	R	F			BOPIC ACID FILT BYPASS VLV (1VC8468) LEAKING THRU	FAILED DIAPHRAGM ON GRINNEL 2" MOD 2471
W	Z12	016342	081476	G	UV	C22	R	F			HELDUP TANK VALVE DVC8264 LEAKING EXTERNALLY	DIAPHRAGM FOUND RUPTURED
W	Z12	017708	040577	C	AV	C25	R	T			CONTAINMENT PURGE VALVE (2A0V-RV0002) LEAKED THRU	SEATS CONTRACTED/LOW TEMP/42" BUTTERFLY

RECURRING

V E N T	P L A N E	CONT. NO.	EV. NT DATE	S Y S	C O M P	F A I L C O D E	P R E P A R E D	C L A S S I F I C A T I O N	C O M M U N I C A T I O N	K E Y		FAILURE MODE	FAILURE MECHANISM
W	Z12	017862	052577	C	SV	B10	R	T				INST AIR ISOL VALVE (2FCV-1A01B) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS.
W	Z12	018259	061577	C	SV	B10	R	T				INST AIR ISOL VLV (2FCV-1A01B) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS
W	Z12	018570	071677	G	UV	C0W	R	U				LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN
W	Z12	018571	071677	G	UV	C00	R	U				LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN
W	Z12	018720	081177	G	MV	C12	R	D				VALVE 2MDV-VC8801B LEAKING THRU DILUTING BORON CON	DARLING 4" GATE VALVE REQUIRED ADJUSTMENT
W	Z12	019499	081177	G	UV	A22	R	D				DIAPHRAGM GATE VALVE (2VC8465) FAILED TO OPEN	DIAPHRAGM FAILED (GRINNEL CORP)
W	Z12	020262	010978	C	AV	C25	R	T				CONTAINMENT VLV (2ADV-RV0002) LEAKING THRU	SEAT SEPARATED FROM VALVE DISC/LOW TEMP
W	Z12	021451	050978	C	SV	B10	R	T				INST AIR ISOL VALVE 2FCV-1A01A FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/HEAT-VARNISH
W	Z12	021709A	060578	C	SV	F10	R	T				INST AIR ISOL VALVE 2FCV-1A01A FAILED TO OPERATE	OIL IN AIR SYS FAILED SOV/VARNISH BUILDUP
W	Z12	021928	070378	C	SV	B10	R	T				INST AIR ISOL VALVE 2FCV-1A01B FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/"RECURRING)"
W	Z12	022797	101578	W	HV	B27	R	T				MSIV 2D FAILED TO CLOSE / RECURRING EVENT	PROBLEMS WITH PILOT SOLENOID VALVES

COMMAND FAULT

<u>VEN</u>	<u>PLAN T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S-S</u>	<u>CUM P</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>C FA S</u>	<u>CON MUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
1	AR1	014837A	051276	N	RM	F16	S	D			VLV DID NOT OPERATE WHEN REQUIRED TO	DIRTY RELAY CONTACT
2	AR1	014837B	051276	N	RM	F16	S	D			VLV DID NOT OPERATE WHEN REQUIRED TO	LOOSE CONNECTION AT TERMINAL PLUG
B	AR1	015013	061276	G	UV	V01	S	D			INCORRECT VALVE LINE-UP/TANK OVERFLOWED	PERSONNEL ERROR
B	AR1	015207	061276	G	XV	V06	S	D			VALVE SF-22 WAS NOT CLOSED(A SPILL RESULTED)	PROCEDURES WERE INADEQUATE
B	AR1	016465	112276	N	RM	F24	S	D			DELUGE VALVE INADVERTENTLY TRIPPED OPEN	SEALING PRESS TO IT LEAKED OFF(COMMAPD)
B	AR1	018961	082677	Y	XV	V01	S	D			INCORRECT SEQUENCE OF VALVE OPERATION/H2O IN FILTR	PERSONNEL ERROR
B	AR1	020883*	030878	N	DV	A24	S	D	05		DAMPERS CV2102,2111-2113,62116 FAILED TO ACTUATE	PROBABLE CAUSE, STICKY AIR SUPPLY
B	AR1	020883A	030878	N	DV	F24	S	D			DAMPER CV2101 DID NOT OPERATE PROPERLY	CV2101 AIR SUPPLY INCORRECTLY ADJUSTED
B	AR1	022099	081778	N	DV	A24	S	D			DISCHARGE DAMPER CV7903 FAILED TO OPEN;SEC. FAULT	DEFEC. SCL.VLV IN AIR SUPPLY LINE(SV7807)
B	AR1	023181	112178	U	UV	V01	S	D			CONDENSATE VLV.CS-38 OPEN WHEN REQUIRED TO BE SHUT	PERSONNEL ERROR
B	CR3	017176	020777	K	RM	V06	S	D			PER.CYCLED BSV-36 ALLOWING NAOH INTO THE RCS SYSTEM	PROCEDURAL INADEQUACY
B	CR3	017322	030777	H	RM	V01	S	D			"B" LOOP OF HPI SYS. ISOL.CONT.TO T.S.FOR MAINTENC	PERSONNEL ERROR
B	CR3	017656A	041577	C	MV	B16	S	D			MUV-258 FAILED TO CLOSE;CONTAINMENT ISOLATION VLV.	INOPERABLE DUE TO DIRTY CONTROL CONTACTS
B	CR3	017655	041677	U	RM	B16	S	D			VALVE FMV-39640 FAILED TO CLOSE	GOC PRESS TRANSMITTER DIDNT SUPPLY SIGNAL
B	CR3	017658	042177	M	RM	V01	S	D			SUCT.VLVs CAV-38&46 FROM BORIC ACID STOR.TANK.SHUT	T.S.VIC./PERSONNEL ERROR/IMP.VLV LINEUP
B	CR3	018560	071577	C	RM	B16	S	D			CONT ISOL VALVE SMV-47 FAILED TO CLOSE	LOOSE WIRE/CONTROL PWR TO LIMIT SWITCH
B	CR3	019525	102877	C	AV	A24	S	D			VALVE MSV-130 WOULD NOT OPEN	FOREIGN PARTICLES IN ACTUATOR OF AIR SCL.VLV
B	CR3	019978*	121477	C	RM	F16	S	D	03		3 VALVES,BSV-17,CFV-15&MOV-94 FAILED TO OPERATED	ONE RELAY FAILED/INSUL BETW CONTACTS(CC)
B	CR3	020265	011178	X	MV	V01	S	D			BRKR.FOR HPI ISO.VLV MUV-25 OPEN&TAG. CONT. TO T.S	PERSONNEL ERROR
B	CR3	020478	020178	C	XV	V01	S	D			NITROGEN VLV NGV-81 WAS OPEN CONTRARY TO T.S.	PERSONNEL ERROR

COMMAND FAULT

<u>VE N</u>	<u>P L A N T</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S</u>	<u>C O M P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C O N M U P M</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	CR3	021166	040578	N	RM	A16	S	D			FSV-240 FAILED TO OPEN	CONTROL CKT BOARD SHORTED
B	CR3	022360*	082178	N	AV	G24	S	D	02		DAMPERS TO AHF-14B & D WENT CLOSEUPMENT WAS REVERS	SOVS IN AIR SUP. HAD DEFECTIVE CONT.VLVS*
B	CR3	023250	100178	Y	UV	V06	S	D			VALVE WDV-476 WAS LEFT OPEN AFTER SYS MODIFICATION	PROCEDURAL DISCREPANCY(PERSONNEL)
B	CR3	023095	100478	L	RM	F16	S	D			FLOW CONTROL VALVE DHV-110 FAILED TO CONTROL FLOW	NO SIGNAL FROM FLOW CONTROLLER
B	CR3	023095A	100478	L	XV	V03	S	D			ISOL VALVE TO FLOW CONTROLLER SHUT(SEE 023095)	PERSONNEL ERROR/VALVE REQUIRED TO BE OPEN
B	CR3	023237	103078	M	RM	V01	S	D			CONC.BORIC ACID TK.DISC.VLVS.CAV38643 CLOSED;TS VI	PERSONNEL ERROR;IMPROPER VALVE LINEUP
B	DB1	019377	101077	L	MV	I16	S	D			DECAY HEAT ISOL. VLV DH-12 MIGHT INADVERT. CLOSE	REQUIRED WIRING CHANGE TO FIX
B	DB1	019381	102077	B	UV	V01	S	D			BOTH AUX.FD.PMP.SUCTS.LINED UP TO DEAERATOR STR.TK	PERSONNEL ERROR;IMPROPER COOL.WTR.LINEUP
B	DB1	019548	111777	B	UV	V06	S	D			AUX.FDWTR.VLVS AF5996000 CLOSED;T.S.VIOLATION	PROCEDURAL DEFICIENCY;TEST PROCEDURE REVI
B	DB1	019939	121277	J	UV	V01	S	D			SER.WTR.OUT.ISO.VLV,COMP.COOL.WTR.LP1-2HTXCH.CLOSE	PERSONNEL ERROR;IMP.VLV LINEUP;T.S. VIOL.
B	DB1	019984	121677	B	UV	V03	S	D			AUX.FDWTR VLVS AF5996000 SHUT;MS107A,AF3871672BK.O	PERSONNEL ERROR;IMPROPER VLV LINEUP
B	DB1	020270	010578	N	DV	V00	S	D			INLET BAL.DAMPERS TO EVS FANS 1-161-2 FOUND CLOSED	EXACT CAUSE UNKNOWN/PROBABLY PERSONNEL ER
B	DB1	020275	011278	S	AV	F24	S	D			SW-1424 NOT OPER. PROP.;SOMETIMES STUCK OPEN,SHUT	SOLENOID VLV IN CONT SYS BURNED OUT
B	DB1	019549	032278	H	XV	V03	S	D			HI POINT VENT(HP-72)NOT VENTED AS REQUIRED	PERSONNEL ERROR(REMOVED FROM TEST LIST)
B	DB1	021213	042378	Y	XV	V02	S	D			DISCHARGE VALVE OF DILUTION BLOWER MISTAKENLY SHUT	PERSONNEL ERROR(WROTE 1-2 INSTEAD OF 1-1)
B	DB1	021176	043078	L	UV	V01	S	D			VLVS DH11612 WERE NOT OPENED WHEN REQ.DURING S/D	PERSONNEL ERROR & PROCEDURE INADEQUACY
B	DB1	021853*	062578	C	RM	F16	S	D	02		TWO CONT ISOL VALVES(CCI14078&CCI14118)FAIL TO OPER	BROKEN WIPES AT CONNECTORS(CLUMSINESS)
B	DB1	022690	091578	S	XV	V01	S	D			SERVICE WATER OUTLET VALVE NOT REOPENED	PERSONNEL ERROR AFTER FLOW BALANCE
B	DE1	019860	010477	N	MV	F16	S	D			DISCHG.VLV.1PR-19 ON PENET.RM.EXH.FAN INOPERABLE	DIRTY CONTACT ON MTR.CONT.CENTER
B	DE1	018292	062977	N	UV	V02	S	D			*B*TRAIN PENET.RM.VENT.SUCT.ISO.VLV.CLOSED WHEN R-	-REQUIRED TO BE OPEN//PERSONNEL ERROR

COMMAND FAULT

<u>VEN</u>	<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>CUMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CN</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
B	DE2	015537	070676	X	XV	V02	S	D				HIGH PRESS TRANS ROOT VAL CLOSED ON STARTUP	MAINT.PERS.LEFT VAL WITH IMPROPER LINE UP
B	DE2	015538	070676	C	XV	V01	S	D				VALVES 21A-90 AND 91 NOT IN PROPER LINE UP	PERSONNEL ERROR
B	DE2	015535	080976	L	UV	V01	S	D				LOW PRESS INJECT TRAIN A NOT ISO PROPERLY	PERSONNEL FAIL TO FOLLOW T.S.REQUIREMENTS
B	DE2	016201	101476	L	MV	A16	S	D				VLV LPSW-5 COULD NOT BE OPENED REMOTELY	DIRTY ELEC.CONTACT IN MOTOR CONTROL CENTR
B	DE2	019970	120877	F	XV	V01	S	D				ISO.VLV.TO CHAN.3 RB PRESS.TRANS.SHUT BY MISTAKE	PERSONNEL ERROR
B	DE2	021527	042878	N	XV	V06	S	D				VLV 2LPSW-241 FOUND THROTTLED WHEN REQ. OPEN	DEFECTIVE PROCEDURES
B	DE2	023070	110578	K	XV	V01	S	D				RC LOOP A1 HPI STOP CHECK VALVE FOUND CLOSED	PERSONNEL ERROR; VALVE WAS REQUIRED OPEN
B	DE3	015955	082276	U	AV	B24	S	D				VALVE 3FDW-108 FAILED TO CLOSE	SOLEN. & SPR. IN AIR SUPPLY TO VLV FAILED
B	DE3	016143	100976	N	AV	V06	S	D				DRAIN VALVE NOT IN PROPER LINEUP	ERROR IN PROCEDURES
B	DE3	016209	110176	H	CV	V01	S	D				IMP.LINEUP VALS 3HP-152 + 3HP-153 CLOSED S.B.OPEN	PERSONNEL ERROR
B	DE3	019884	112877	X	XV	V02	S	D				IMPROPER VLV LINEUP TO CHAN.A NARROW RANGE PRESS.-	-TRANSMITTER//PERSONNEL ERROR
B	DE3	020640	020878	S	UV	V00	S	D				LPSW PUMP SUCT VAL, CLSD DUR PUMP START UP	CAUSE UNKNOWN (PROBABLE PERSONNEL ERROR)
B	DE3	021047	032078	H	MV	A16	S	D				VALVE HP-24 FAILED TO OPEN	DIRT ON VAL OPER CONTACTS
B	DE3	021048	032278	S	XV	V01	S	D				VALVE 3LPSW-78 CLOSED WHEN REQ.OPEN	PERSONNEL ERROR (VLV OPENS CLOCKWISE)
B	RS1	019666	111177	H	MV	V04	S	D				VALVE LINE-UP INCORRECT//NEW VALVES WERE INSTALLED	--WITH OPEN/CLOSE INDICATION ATYPICAL
B	RS1	023502	121578	L	UV	V01	S	D				INCOMPLETE VALVE LINEUP CAUSED SEVERE H2O HAMMER	PERSONNEL ERROR
B	RS1	023484	122178	X	XV	V01	S	D				FLOW TRANSMITR INADVERTANTLY VALVED OUT(PX TRIP--	CKTS EFFECTED//PERSONNEL ERROR
B	T11	013970	010276	N	AV	C24	S	D				INADVERTANT RELEASE THRU ADV-MDL-V125	PERSONNEL/OPER FAILED TO BLEED OFF AIR
B	T11	013949	010176	Y	UV	V06	S	D				IMPROPER VLV. LINEUP TO RM-2A(COOL.LEAK DET.SYS.)	INADEQUATE PROCEDURES
B	T11	014220	010176	G	UV	V06	S	D				IMPROPER VLV LINEUP ON "A" MAKEUP AND PURIF. PUMP	PROCEDURE AND PERSONNEL ERROR

COMMAND FAULT

V E N	P L A N I	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N T R O L S Y S	K E Y	FAILURE MODE		FAILURE MECHANISM	
											FAILURE MODE	FAILURE MECHANISM		
B	TI1	015081	052676	N	RM	B16	S	D			LIQUID RELEASE VLV FAILED TO CLOSE ON AUTO SIGNAL	FAILED RELAY IN INTERLOCK CIRCUIT		
B	TI1	015180*	062276	Y	RM	B16	S	D	02		TWO VALVES FAILED TO CLOSE GIVEN HI RADIATION SIG	COMMAND FAULT/MAINT REMOVED RELAY		
B	TI1	016109	101276	N	UV	V01	S	D			INCORRECT VALVE LINEUP LEAD TO HI DISSOLVED SOLIDS	PERSONNEL ERROR/>700PPM DISCHARGED RIVER		
B	TI1	021954	060578	N	RM	F16	S	D			RB-V-7 DID NOT OPERATE(RX.BUILD.COOL.SYS.VLV.)	FAILED THYRECTOR CAUSED SHORT CIRCUIT		
B	TI2	022652	091378	N	DV	B24	S	D			AD VALVE (4092C) FAILED TO CLOSE/COMMAND FAULT	DESIGN ERROR IN AIR SUPPLY SYSTEM		
B	TI2	023429*	121378	C	RM	B16	S	D	04		FOUR CONT ISOL VALVES FAILED TO CLOSE ON TEST	RELAY FAILED TO PROVIDE LOGIC SIGNAL		
C	AR2	023481	122078	J	UV	A16	S	D			FLOW CONTROL VLV 2CV-1025-1 FAILED TO OPERATE	LOOSE MOTOR POWER CONNECTION		
C	CC1	014465	030576	H	MV	F16	S	D			HPSI LP.ISO.VLV 1-MOV-616 WOULD NOT OPER. REMOTELY	BLOWN CONTROL CIRCUIT FUSE CAUSED FAILURE		
C	CC1	014467	040576	N	UV	V01	S	D			#12 S/G BLOWDOWN DRG.BYPASS 1-80-121 POSIT.INCORR.	T.S.VIC./PERSONNEL ERROR(SHUT WRONG VLV)		
C	CC1	017925	051976	N	UV	V00	S	D			BORIC ACID STOR.TK.#11 DRAIN.BELOW MINIMUM LEVEL	CAUSE NOT DETERMINED/PROB. PERSON. ERROR		
C	CC1	018408	110476	S	XV	V01	S	D			DIESEL SERVICE WTR.SYS.LINED UP IMPROPERLY	PERSONNEL ERROR;OPERATED WRONG VALVES		
C	CC1	017476	031377	L	UV	V06	S	D			ISO.VLV ADD.TO AUX SPRAYLN DUR.PRIOR OUT.LEFT SHUT	VLV.NOT INCLUDED IN VLV LINEUP/PROCD.ERR		
C	CC1	018487	071377	E	XV	V01	S	D			ISO.VLV TO PRESS.SWTCHS.FOR #11DSL.SHUT/T.S.VIC.	PERSONNEL ERROR/IMPROPER VLV LINEUP		
C	CC1	021536	042578	N	RM	V06	S	D			#4 HALON SUBSYSTEM INADVERTENTLY DISCHARGED	INADEQUATE PROCD. RESULTED IN IMP.VLV.LU		
C	CC1	023262	121678	N	UV	V01	S	D			IMPROPER VLV. LINEUP ON MAKE-UP WATER DEMINERALIZ.	PERSONNEL ERROR		
C	CC2	020628	010477	N	RM	A24	S	D			VLV 2-CV-5291 IN CONT.ATM.SMPL.LN. COULD NOT BE OP	SOLENOID VLV IN SUPPLY LN FAILED		
C	CC2	018881	082577	F	RM	F16	S	D			#21 CONT.SPRAY SYS.HDR.ISO.VLV(2-SI-4150-CV) ODS	VLV PLACE.OUT OF SERV.DUE TO FAIL.RESIST.		
C	CC2	020157	010378	W	RM	G16	S	D			#21 MN.STH.ISO.VLV FAILED SHUT;VLV DECLARED INOPER	POSITIVE GROUND ON VLV5 CONTROL CIRCUIT		
C	CC2	022742	102378	W	HV	B24	S	D			#21 MSIV FAILED TO SHUT WITH ISOLATION SIGNAL	IMPROP.ACTU.SCL.VLV5.USED IN VLV ACTUATOR		
C	CC2	022915	111578	N	UV	V01	S	D			RWT LOCAL SAMPLE VLV.OPEN WHEN REQ. TO BE SHUT	PERSONNEL ERROR		

COMMAND FAULT

V E N	P L A N I	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	E P P T	S W A L C	C M U N I C A T I O N	K E Y	FAILURE MODE	FAILURE MECHANISM
C	FC1	014561	041476	H	RM	816	S	D			HCV-383-4 FAILED TO CLOSE ON TEST	BINDING CONTACT IN BREAKER TO VALVE
C	FC1	014589	050676	N	UV	V01	S	D			VALVE HCV-2508 WAS CLOSED, SHOULD BE OPEN	IMPROPER VALVE LINEUP / PERSONNEL ERROR
C	FC1	022469	092178	B	RM	A24	S	D			VAL YCV-1045 FAILED TO OPEN(AUX.FD.PMP.STM.INL.)	INSTRUMENT AIR SUPPLY TO VAL CLOSED
C	FC1	023139	112478	L	RM	F16	S	D			PC-1058 WAS NOT OPERATING	VALVE CLOSING RELAY NOT REWIRED AFT MAINT
C	FC1	023171	122078	K	RV	V06	S	D			TWO PRESS OP RELIEF VALVES OPENED WHEN REQ CLOSED	TECH PULLED FUSES, DEFECTIVE PROCEDURES
C	M12	014461	030976	B	RM	A16	S	D			AUX.FEEDPMP.STM.INLET VLV.CYCLED;WOULD NOT REOPEN	FAILURE OF VALVE OPERATING CIRCUIT
C	M12	016721	121976	G	RM	V01	S	D			VLV 2-CH-514 WAS NOT RECLOSED FOLLOW. AN SIAS ACTU	PERSONNEL ERROR(VALVE NOT CLOSE PROP.TIM)
C	M12	017837	051577	E	XV	V01	S	D			BOTH D/G FUEL SUP.VLVs SHUT WHEN REQUIRED TO BE O-	-PEN//PERSONNEL ERROR
C	M12	019931	101477	C	RM	816	S	D			CONT.ISO.VLV 2-RC-002 FAILED TO SHUT ON COMMAND	CONDUCTORS FOR VLV OPERATOR WERE SHORTED
C	M12	021332	041478	M	XV	V01	S	D			PRI MAKEUP VAL IN PART.OPEN POSIT,SHOULD BE CLOSED	PERSONNEL ERROR
C	M12	022134	072578	C	RM	V06	S	D			CNTMNT PURGE VALVES OPERATED IN IMPROPER MODE	INADEQUATE CNTMNT PURGE PROCEDURES
C	M12	023565	122778	C	AV	B24	S	D			ISOL VALVE 2-SW-3.2A FAILED TO CLOSE	SOV IN AIR LINE TO VALVE REPLACED
C	MY1	015731	091676	C	XV	V02	S	D			INCORRECT VLV LINEUP CNTMNT ISO SYSTEM PV-15	PERSONNEL ERROR/FAILED TO CLOSE
C	MY1	020758	020277	H	RM	F16	S	D			WIRES DISCONNECTED FROM VALVE SL-P-3,SIAS FUNCT.	CAUSE UNKNOWN
C	MY1	019261	102077	L	UV	V01	S	D			IMPROPER VALVE LINEUP LPSI PUMPS	PERSONNEL ERROR
C	MY1	022398	090778	G	UV	V01	S	D			VLV.LINEUP ERROR ALLOWED RCS WTR.AT 1250 PPM BORO-	-N TO DISCH.BACK TO RWST//PERSONNEL ERROR
C	PA1	016527	040876	Y	UV	V01	S	D			DRAIN LINEUP PERFORMED ON WRONG WST.GAS DECAY TK.	PERSONNEL ERROR
C	PA1	018274	061577	H	MV	A16	S	D			MOV-3011 FAILED TO OPEN	CONTACT FOR "SEAL-IN" CKT ON RELAY FAILED
C	PA1	020236	122377	H	MV	G16	S	D			MOV-3011(HPCI ISO.VLV) FAILED TO REMAIN OPEN	BAD SWITCH CAUSED CLOSING CONT.TO STICK
C	PA1	020231	010878	L	AV	A24	S	D			VALVE CV-3025 FAILED IN CLOSED POSITION	WATER IN AIR LINE TO VALVE OPERATOR

COMMAND FAULT

VE N	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N M U P M	K E Y	FAILURE MODE	FAILURE MECHANISM
C	PA1	021322	042178	C	XV	V01	S	D			CNTNMNT SERV AIR VAL OPENED IN VIOL OF T.S.	PERSONNEL ERROR
C	PA1	022229	080778	N	UV	V01	S	D			INCORRECT HANDJACK OPER FOR CV-0437A, CV-04373	PERSONNEL ERROR
C	PA1	022228	082878	C	RM	V02	S	D			CNTNMNT PURGE & ISO. VALVES OPEN IN VIOL. OF T.S.	IMPROPER TAGOUT OF VALVES/PERSONNEL ERROR
C	PA1	023621	112878	Y	XV	V01	S	D			VCT SITEGLASS DRAIN VALVE OPEN WHEN REQ CLOSED	PERSONNEL ERROR
C	SL1	015504	070576	M	UV	V01	S	D			IMPROPER VLV.LINEUP TO RMT (TANK OVERFLOWED)	PERSONNEL ERROR
C	SL1	018060	052777	U	RM	B16	S	D			"A" TRAIN FEEDWATER REG.VLV FAILED OPEN	BLOWN FUSES
C	SL1	022227	073178	C	AV	A24	S	D			ADV (FC-25-B) FAILED CLOSED/AIR TO VALVE SECURED	SGV DIAPHRAGM LEAKED/COMMAND FAULT
C	SL1	022908	110378	L	UV	V02	S	D			ISOL VALVES INADVERT OPENED BETW SPRAY&SHUTDOWN --	--COOLING SYSTEMS//PERSONNEL ERROR
G	BF1	014665	041176	Q	RM	F16	S	D			RCIC PUMP DISCHARGE VALVE FAILED TO OPERATE	TRANSFER SW(SBM-205A0774DD)BAD DESIGN
G	BF1	016053	092376	D	XV	V02	S	D			VALVE FOUND CLOSED TO PRESSURE SWITCH	PERSONNEL ERROR
G	BF2	015392	061976	M	XV	V02	S	D			VALVES 2-85-612 AND 2-85-615 FOUND IN CLOSED POST	PERSONNEL ERROR
G	BF2	016199	100776	H	XV	V03	S	D			EQUALIZER VALVE ON FLOW INSTRUMENT FOUND OPEN	PERSONNEL ERROR
G	BF2	019134	091877	N	RM	B24	S	D			VLV FCV 77-15B INOPERABLE IN OPEN POSITION	COMMAND / SV FSV-77-15B FAILED
G	BF2	023352	121978	N	AV	B24	S	D			DRYWELL AIR COMP.SUC.VLV FCV-32-62 FAILED TO CLOSE	ELECTROPNEUMATIC CONTROL VLV FAILURE
G	BF3	018945	090777	N	AV	A24	S	D			PRI.ISO.VLV 3-FCV-24 WOULD NOT OPERATE	FAIL.OF SOL.FSV-77-3A IN AIR SUP.LINE
G	BF3	022087	070878	Q	MV	F16	S	D			RCICS DISCHARGE VALVE INOPERABLE	SHORT IN IND LITE ASS CAUSED FUSES TO BLO
G	BR1	016402	111976	L	MV	F16	S	D			RHR INJECTION VALVE(E11-F015A) FAILED TO OPERATE	UNDERSIZED BKR/DESIGN PROBLEM(ROOT)
G	BR1	016860	112576	C	MV	B16	S	D			MIN.FLOW VLV.(E41-F012)DID NOT CLOSE FULLY	VLV MTR CKT PRESS-SWITCH OUT OF CALIBRATOR
G	BR1	016858	120376	Q	MV	A16	S	D			E51-F007(RCIC STEAM ISO.VLV) FAILED TO OPEN	LOOSE WIRE ON VLV MOTOR OPEN CONTACTOR
G	BR1	017600	021077	D	MV	A16	S	D			CORE SPRAY VALVE FAILED TO OPEN AT REQUIRED PRESS	SETPOINT ON CONTROLLING INST DRIFTED HI

COMMAND FAULT

<u>V</u>	<u>P</u>	<u>CONT.NO.</u>	<u>EVENT</u>	<u>S</u>	<u>C</u>	<u>FAIL</u>	<u>T</u>	<u>C</u>	<u>C</u>	<u>K</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
<u>NT</u>	<u>L</u>		<u>DATE</u>	<u>YS</u>	<u>OMP</u>	<u>CODE</u>	<u>YPE</u>	<u>ASS</u>	<u>UM</u>	<u>EY</u>		
G BR1	019394	101877	Y RM A16	S D							VLV NP-CV-2713,NITROGEN INLET TO LOOP A WLDN'T OPN CIRCUIT BRKR CONT.VLV FOUND IN OFF POSITN	
G BR1	019842	111077	Q XV V01	S D							IMPROPER VLV LINEUP;ST.SUP.LN.CD.DR.POT.ISD.CLOSE. PERSONNEL ERROR	
G BR1	023632	020578	K MV A16	S D							VALVE B32-F031A FAILED IN CLOSED POSITION	FUSES BLCWN IN CONTROL CKT(DESIGN-ROOT)
G BR1	020837	031478	C RM F16	S D							VALVE B32-F042B WOULD NOT OPERATE DURING TEST	DEFECTIVE SWITCH ON CONTROL BOARD
G BR1	020919	040178	N UV V01	S D							INCORRECT VALVE LINEUP CAUSED RESIN DAMAGE	PERSONNEL ERROR
G BR2	014128	011976	N UV V01	S D							OFF GAS RADIAT.MON.SAMP.VLV WAS FOUND SHUT/TS VIO.	PERSONNEL ERROR
G BR2	014111A	020276	N UV V01	S D							Z-CAC-V50 WAS OPENED WITH A LCO EXISTING/T.S. VIO.	PERSONNEL ERROR
G BR2	014647	020576	L XV V03	S D							PRESS SW FOUND ISOLATED AFTER TESTING	PERSONNEL ERROR
G BR2	014650	020676	Q MV V02	S D							VALVE E11-F004B FOUND LINED UP CLOSED/REQ OPEN	PERSONNEL ERROR IN VALVE LINEUP
G BR2	014633	021176	N AV V02	S D							INLET VALVE TO CONT RADIATION MONITOR FOUND CLOSED	PERSONNEL ERROR AFTER FILTER CHANGE
G BR2	014645*	021476	N AV A24	S D 02							TWO VALVES FOUND CLOSED(2-CAC-PV-344163442)	INST AIR LINES TO VALVES CLOGGED W WATER
G BR2	014627	031076	K AV F24	S D							RECIRC.SYS.WTR.SAMP.VLV 2-B32-F019 CLOSED TOO SLOW	OPEN.AIR PRESS.TO VLV OPER. DRIFTED HIGH
G BR2	014615*	031976	Q RM B16	S D 02							TWO RCIC VALVES(E51-F007&F008)FAILED TO CLOSE/TEST	TWO RELAYS CONTROLLING VALVES FAILED
G BR2	014616	031976	Q MV B16	S D							SPRAY LINE VALVE(2-E11-F022)FAILED TO SHUT/TEST	NO POWER/AUX CONTACTS FOR INTERLOCK STUCK
G BR2	014916	052576	W HV F24	S D							OUTBOARD MSIV-B21-F028C STROKED TOO FAST/2.2 SECS.	NIT.PRESS.EHYDR.FL.LOW/LEAK. VENT PLUG&CKV
G BR2	015416	070376	Q MV V01	S D							RHR VLV 2-E11-F003A SHUT WHILE MTR REMOV.;GIV. LCO	PERSONNEL ERROR/VLV COULDN'T BE OP. REMOT
G BR2	015427	071176	K UV V02	S D							BONNET VENT VLS 2-B32-F046&F047B INADV.LEFT OPEN	PERSONNEL ERROR/NOT CLOSE.AFTER MAINTENAN
G BR2	016198	100976	Q RM G16	S D							RCIC STM.SUP.VLV E51-F007 CLOSED ON SPURIOUS SIGNAL	FAILURE IN RCIC ISOLATION CIRCUITRY
G BR2	016260	110276	Q CV V01	S D							RCIC TURB.EXH.STP-CHK E51-F001 CLOSED WHEN REQ.OPN	PERSONNEL ERROR/VLV NOT OPEN.AFTER TEST
G BR2	018176	060977	N XV V01	S D							DRAIN VALVE LEFT OPEN (RX WATER CLEANUP)	PERSONNEL ERROR(ROOT CAUSE)

COMMAND FAULT

VEN	PLANT	CONT.NO.	EVENT DATE	SYSS	COMP	FAIL CODE	TYPE	CLASS	CONMUM	GRK	FAILURE MODE	FAILURE MECHANISM
G	BR2	018697	071577	W	RV	B16	S	D			SAFETY REL.VLV B21-F0138 STUCK OPEN;AFTER MAN.OPEN	GRND. ON SOLENOID ASS. FOR REMOTE ACTUATR
G	BR2	020972	032778	C	RM	V01	S	D			RX.INSTR.PENET.VLV CAC-PV-3439 FOUND CLOSED/TS VIO	PERSONNEL ERRCR/VLV SHUT BY MISTAKE
G	BR2	023034	111278	L	RM	A16	S	D			RHR VLV E11-F008 WOULD NOT OPEN AT REQ. SETPOINT	FAIL. OF RX.STM.DOME HIGH PRESS.SWITCH
G	CO1	014358	020776	Y	DV	V01	S	D			INCORRECT VALVE LINEUP ON RX BLOG VENT DAMPER	PERSONNEL ERRCR
G	CO1	016004	091076	L	XV	V01	S	D			EQUALIZING VALVE ON DP PRESS INDICATING SW OPEN	PERSONNEL ERROR
G	CO1	016253	100976	G	RM	F16	S	D			A SLC INJECTION WAS FOUND INCOPERATIVE	BLOWN FUSE DUE TO IMPROPER SIZE WIRING
G	CO1	016658	102876	L	RM	A16	S	D			VALVE RHR MD-17 FAILED TO OPEN	BROKEN RELAY COIL KEEPER LODGED IN CONT.
G	CO1	016713	111676	K	XV	V03	S	D			ISOLATION VALVES TO PRESS. SWITCH LEFT CLOSED	PERSONNEL ERKOR AFTER SURVEILLANCE
G	CO1	018003	041777	C	AV	B24	S	D			CONTAINMENT VALVE H+V-296AV WOULD NOT CLOSE	SOLENOID VALVE LEAKING AT CYLINDER PORT
G	CO1	018900	081177	S	MV	B16	S	D			SERVICE H2O VALVE,SW-MD-89A FAILED TO CLOSE	RELAY CONTACTS SUPPLYING PWR FAILED
G	CO1	020343	011378	L	MV	B16	S	D			RHR INJ BLOCK VALVE FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON RELAYWIRING ERROR
G	CO1	020800	011778	J	MV	A16	S	D			COOLING VALVE REC-711MV DID NOT OPEN	FAILURE OF VALVE ELECT-INTERLOCK SWITCH
G	CO1	023378	121278	N	UV	V01	S	D			FLUSH.VLV.OF THE RADWASTE EFF.MONIT.INADV.LEFT OP-	-EN//PERSONNEL ERROR
G	DA1	014340	032476	C	AV	F24	S	D			VENT VALVE CV4301 NOT CLOSING WITHIN T.S. TIME LIM	DIRTY PILOT SOLENOID VALVE IN AIR SUPPLY
G	DA1	014730	052076	W	RM	A16	S	D			MSIV 8403D FAILED TO CYCLE OPEN DURING TEST	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
G	DA1	014731*	052076	W	RM	F16	S	D	O2		MSIV 8402A & D (LEAK.CONT.SYS.IN.)INADVERT.CYCLED	LOGIC RELAY NOT FIRMLY SEATED IN SOCKET
G	DA1	014733	052876	C	RM	V01	S	D			HPCI AND RCIC INJECTION VALVES LINED UP WRONG	PERSONNEL ERRCR,LCM-LOW LEVEL RESET WRONG
G	DA1	015750	082776	W	XV	V06	S	D			ROOT VALVE TO LOW PRESS SW PS-1017 IN CLOSED POSIT	VALVE NOT ON PRESTARTUP CHECKLIST
G	DA1	016075	102176	W	MV	F16	S	D			MCV 8402D INOPERABLE DUE TO TRIPPED OVERLOAD RELAY	TRIP SETPOINT INCREASED SLIGHTLY
G	DA1	016529*	102176	W	MV	F16	S	D	O2		MCV-8401B AND 8403D WOULDNT OPERATE	CONTROL RELAYS NOT MAKING ELEC CONTACT

COMMAND FAULT

PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CONTR	KEY	FAILURE MODE	FAILURE MECHANISM
G DA1	018281	052777	U	XV	V01	S	D			MANUAL FEEDH2O BLOCK VALVES NOT OPERATED PROPERLY	PERSONNEL ERROR, SCRAM DUE TO COLD H2O
G DA1	020147	011178	X	XV	V03	S	D			ISO VLVS FOR P34312C & P34315C IN CLOSED POSITION	ERROR OF PERSONNEL PERFORM. TESTING
G DA1	020674	030178	N	UV	V01	S	D			COOLING TOWER BLOWDOWN DISCHARGE VALVE OPENED WITH	--OUT APPROVAL//PERSONNEL ERROR
G DA1	021123A	040678	C	MV	B16	S	D			VALVE MOV 84C2B FAILED TO FULLY CLOSE	MOTOR STARTER CONTACTOR COIL FAILED
G DA1	021862*	061778	M	RM	F16	S	D	02	V	BACK UP SCRAM VALVES OPEN WHEN REQUIRED SHUT	LOOSE AUX SW SCREWS CAUSED FALSE SIGNAL
G DR2	014623	010276	X	XV	V01	S	D			RACK ISO VAL FOR PRESS SW263-518 IMPROPER LINEUP	PERSONNEL ERROR
G DR2	014330	031376	H	RM	A16	S	D			HPCI STEAM SUPPLY VALVE 2-2301-4 FAILED TO OPEN	DIRTY CONTACTS IN BREAKER SUPPLYING VALVE
G DR2	014889	051976	G	UV	V06	S	D			INCORRECT VLV L/U/SBLC SYSTEM-BORON TANK	DISCREPENCY IN PROCEDURES
G DR2	014748	052676	N	UV	V02	S	D			SAMPLE VALVE ON SUCTION SIDE OF PUMP IN CLOSED POS	PERSONNEL ERROR FAILURE TO OPEN VALVE
G DR2	016171	100376	Y	UV	V01	S	D			STACK GAS SAMPLE PUMP LOW FLOW/IMP. VLV LINE UP	PERSONNEL ERROR
G DR2	023335	100376	Y	XV	V01	S	D			STACK GAS PUMP FLOW LOW, VALVE LINEUP WRONG	PERSONNEL ERROR
G DR2	020170	010578	G	UV	V01	S	D			SUCTION VALVE 2-1101-4 CLOSED CONTRARY TO T.S.	OPERATING PERSONNEL ERROR
G DR2	020601	022578	N	AV	B24	S	D			ISOLATION VALVE 9207B FAILED TO CLOSE	PILOT VALVE ASSY LEAKING (AIR SUPPLY)
G DR2	021158	042878	L	XV	V01	S	D			VALVES ONA LPCI & CORE SPRAY IMPROPER LINEUP	OPERATING PERSONNEL ERROR
G DR2	022942	090778	C	AV	F24	S	D			VALVE 2-1601-24 FAILED TO OPERATE IN TIME LIMIT	FOREIGN MATTER LODGED IN AIR SUP. SOLEN.
G DR2	022590	092678	W	XV	V02	S	D			VALVE TO ISOLATE FLOW SWITCH FOUND VALVED OUT	PERSONNEL ERROR
G DR2	022778	093078	C	AV	F24	S	D			VACUUM RELIEF VALVE AD-1601-20B FAILED OPEN	AIR OPERATOR SOLENOID VALVE SHORTED
G DR2	022777	101278	N	XV	V03	S	D			DIFF PRESS SW ISOLATION VALVE FOUND VALVED OUT	PERSONNEL ERROR
G DR2	022969	110878	C	AV	B24	S	D			AD-2-1601-24 FAILED TO CLOSE REMOTELY	AIR OPER. SOL. VLV. STUCK IN THE OPEN POSIT.
G DR3	014440	032476	J	RM	B16	S	D			RAIN VALVE 2-4999-74 BLOCK OPEN, DISCON. ELECTRIC.	FUNCTIONAL TESTING NOT IDEN IN PROCEDURES

COMMAND FAULT

V	P L A N I	CONI.NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N T R O L M O D E	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DR3	014750	051076	D	MV	B16	S	D			MO 3-1402-25B TRIPPED WHILE BEING CLOSED	WRONG SIZE OVERLOAD HEATER
G	DR3	C16695	101276	L	MV	A16	S	D			VALVE 3-1501-27A FAILED TO OPEN ELECTRICALLY	LOOSE TERMINAL IN VALVE CONTROL CIRCUIT
G	DR3	016474	111976	H	MV	F16	S	D			HPCI LOGIC DESIGN WIRING CAUSING VALVES TO CYCLE	DESIGN ERROR
G	DR3	022561	092278	L	MV	B16	S	D			LPCI VALVE 3-1501-20A FAILED TO CLOSE ON TESTING	STUCK CONTACTOR IN MCC
G	DR3	022772	101278	N	XV	V03	S	D			DIFF PRESS SW FOUND VALVED OUT	PERSONNEL ERROR
G	EN1	014140	010976	S	RM	V04	S	D			TWO SERVICE WATER VALVES ISOLATED WHEN REQ OPEN	FROZEN FLOW SWITCHES(HEAT TAPE NEEDED)
G	EN1	014780	030476	M	XV	V03	S	D			MN STEAM INST FLOW RACK NOT VALVED IN AFTER TEST	PERSONNEL ERROR
G	EN1	015564	072076	L	RM	G16	S	D			RHR FLOW VALVE E11-F007B FAILED TO STAY OPEN	DEFECTIVE SWITCH SUPPLYING SIGNAL TO VALV
G	EN1	017096	071777	L	XV	V03	S	D			PRESS SW FOUND VALVED OUT WHEN REQUIRED OPEN	PERSONNEL ERROR
G	EN1	020029	082977	S	RM	V03	S	D			OPERATION OF CNT.VAL CAUSED VIOL OF CONTNMENT INTEG	TEST CONNECTION PLUG REMOV. FROM VLV/TEST
G	EN1	020028*	090977	N	RM	B16	S	D	02	V	RVCU PUMP SUCTION VALVES FAILED TO ISOLATE SYSTEM	JUMPER WIRE LEFT IN CONTROL PANEL
G	EN1	020191	120877	E	XV	V01	S	D			IMPROPER LINEUP>FUEL OIL TRANS PUMPS DISCH VALVES	PERSONNEL ERROR
G	EN1	020687	022678	M	V	V02	S	D			ISC.VLVS TO SWITCHS.C11-NO1366F IN CLOSED POSITION	PERSONNEL ERROR*UNCLEAR PROCEDURES
G	EN1	021083	040678	K	XV	V01	S	D			DRAIN VALVE LEFT OPEN*FOUND ON LLRT	PERSONNEL ERROR
G	EN1	022113	070278	L	MV	A16	S	D			RHR MOV E11-F024A FAILED TO OPEN	DIRT IN INTERLOCK ON BREAKER CAUSED BIND
G	EN1	022733	092878	M	XV	V03	S	D			VALVES ON D/P CELL WERE VALVED IN WRONG	PERSONNEL ERROR(RUINED D/P CELL)
G	EN2	022024*	071778	L	MV	F16	S	D	02	V	RHR VALVES HAD POWER LOST TO THEM	BREAKER TRIPPED DUE TO BLOWN FUSES
G	EN2	022211	081078	C	RM	V05	S	D			VAC RELEIF VALVE F310 FOUND OPEN WHEN REQ CLOSED	PERSONNEL ERROR(INVERTED SIGNAL)
G	EN2	022207*	081778	C	RM	A16	S	D	02	V	PURIF CONTAINMENT VALVES FAILED TO OPEN	INCORRECT WIRING FROM SWITCH CONNECTIONS
G	EN2	022753*	110678	H	RM	F16	S	D	02	V	HPCI CONTROL VALVES FAILED TO OPERATE	WIRE LEFT OFF BY MAINT PERSONNEL

COMMAND FAULT

V E N T	P L A N I	CONT. NO.	EVENT DATE	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N T R O L P M	K E Y	COMMAND FAULT	
											FAILURE MODE	FAILURE MECHANISM
G	FP1	015065	062976	Y	SV	V01	S	D			SDV-135A AND B FOUND CLOSED WHEN REQUIRED OPEN	PERSONNEL ERROR (PANEL MARKED POORLY)
G	FP1	015272	073076	Y	XV	V06	S	D			OFF-GAS SAMPLE VALVE FOUND CLOSED, REQUIRED OPEN	PROCEDURAL ERROR
G	FP1	017659	022477	H	UV	V03	S	D			VALVES ON HPCI ROUTE FROM COND TK TO TORUS L/U IMP	OPERATOR ERROR/ TESTING PERSONNEL
G	FP1	019768	113077	N	UV	V02	S	D			VALVE ON MAIN STM COLLECT SYST INADVERTENTLY OPEN	MAINTAINENCE PERSONNEL ERROR
G	FP1	020517	021078	Q	HV	F16	S	D			RCIC TURBINE STEAM INLET VALVE FAILED TO OPERATE	COMMAND/SUPPLY BREAKER RELAY OVERLOADED
G	FP1	021022	040678	L	MV	A16	S	D			RHR ISOLATION VALVE 10MOV18 INOPERABLE (CLOSED)	CONTROLLER AUXILIARY CONTACT FAILURE
G	FP1	021712	062978	H	MV	B16	S	D			HPCI VALVE 23-MOV-15 FAILED TO CLOSE	DEFECTIVE TEMP SWITCH (NO SIGNAL TO CLOSE)
G	FP1	022223	081678	K	MV	F16	S	D			LOSS OF POWER TO BYPASS VALVE 02-MOV-54B	UNIT BLOW FUSES CAUSE UNKNOWN
G	FP1	022225	081778	N	AV	B24	S	D			ISOLATION VALVE 20-AOV-95 WOULD NOT CLOSE	SOLENOID AIR ADMISSION VALVE FAILED
G	M11	014290	021276	U	AV	F24	S	D			1 OF 2 FEEDWTR. REG. VLVS LOCK. IN THE AS IS POSITION	FAILURE IN 3 WAY PRESSURE REGULATOR
G	M11	017001	012577	C	AV	B24	S	D			VALVE 1-AC-9 FAILED TO CLOSE	DIRT IN AIR LINE
G	M11	018414	071377	U	AV	F24	S	D			"B" FEEDWTR. REG. VLV EXPERIENCED CONTROL PROBLEMS	FAILURE CAUSED BY DIA. FAIL. IN SUP. SYS. VLV
G	M11	018625*	080677	U	AV	F24	S	D	02	V	FEEDWTR. REG. VLVS. LOCKED UP "AS IS"	LOSS OF INSTRUMENT AIR PRESS. CAUSED FAIL.
G	M11	019962	112977	A	RV	H16	S	D			A TARGET ROCK SAFETY/RELIEF VLV ACTUATED PREMATURE	CABLE FAULT CAUSED ACTUATION SOL. TO ENERG
G	M11	022749	101978	Q	RM	F16	S	D			THE ISO. COND. ISO. VLV 1-IC-3 SPURIOUSLY OPENED	FAILURE OF SWITCHES IN LOGIC CHANNEL
G	M01	015100	061476	K	RV	A24	S	D			SAFETY RELIEF VLV 2-71A FAILED TO ACTUATE	AIR LEAK IN AIR SUPPLY SYSTEM
G	M01	015755	082576	C	RM	F16	S	D			S/D COOL. ISO. VLV. EXPERIENCED LOSS OF POWER	FAILURE OF RELAY COIL IN CONT. CIRCUIT
G	M01	017373	032177	N	UV	V01	S	D			AIR EJECT. SAMP. SYS. SUP. VLV SHUT WHEN REQ. OPEN	PERSONNEL ERROR
G	M01	018242	062777	Y	UV	V06	S	D			VAL ON AIR EJECT MONIT SYST POSITIONED IMPROPER	VAL WAS IMPROPERLY TAGGED
G	M01	022869	100178	C	UV	V01	S	D			2 VLVS NOT CLOSED WHEN REQUIRED TO BE	PERSONNEL ERROR

COMMAND FAULT

<u>VEN</u>	<u>PLAN</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY S</u>	<u>CUM P</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON MP</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	MO1	023369	112178	L	MV	F16	S	D			MO-2014 LPCI A ADMISSION VALVE INOPERABLE	BLOWN FUSE IN CONTROL POWER CIRCUIT
G	NM1	017401*	030977	A	RV	A16	S	D	03		3 OUT OF 6 ADS RELIEF VLVS WOULD NOT HAVE OPERATE-	-D IF NEEDED//RESET SWITCH FAILURE
G	NM1	018299	063077	H	RM	F16	S	D			NO.12 INLET INSIDE IV-8(40-01)FAIL TO OPERATE	FAILURE OF ELECT CONTACTOR (CLOSING)
G	NM1	019404	102677	M	UV	V01	S	D			CHG.WTR.VLV TO SCRAM ACCUMULATOR IN IMPROPER LINE-	-UP//PERSONNEL ERROR
G	NM1	020764	030778	E	CV	V01	S	D			FOOT VALVE OPENED AT IMPROPER TIME	PERSONNEL ERROR
G	OC1	014413	040176	F	MV	A16	S	D			TORUS SPRAY VLV V-21-15 FAILED TO OPEN ON AUTO.SIG	MOTOR CONT.INTR. BRKR. FAILED TO OPERATE
G	OC1	015375	082076	F	MV	A16	S	D			VLV V-21-18 FAILED TO OPEN ON AUTO START SIGNAL	DEFECT.SWITCH IN VLV.MOTOR CONTROL
G	OC1	016479	120176	D	MV	A16	S	D			CORE SPRAY ISO.VLV V-20-15 FAILED TO OPEN ON SIGNL	INTERMIT.GRND.SHRT.IN VLV.MTR.OPER.PWR.FD
G	OC1	017172	032377	D	MV	B16	S	D			CORE SPRAY ISO.VLV V-20-15 INOPERABLE IN OPEN POS.	VLV.MTR. OPERATOR BREAKER TRIPPED
G	OC1	017543	042377	M	AV	B24	S	D			MSIV NS04A FAILED TO CLOSE//CONT.SYS FAILURE:	DEFORMED GASKET BLOCKED AIR VENT FOR SOL.
G	OC1	018623*	072777	D	MV	A16	S	D	02		CORE SPRAY ISO.VLVS V-20-40 & V-20-15 FAILED TO F-	-ULLY OPEN//IMP.CKT.BRKR.OVERLOAD SETTING
G	OC1	019080	090877	D	MV	B16	S	D			CORE SPRAY ISO.VLV. V-20-15 FAILED TO CLOSE	DEFECTIVE CKT.BRKR. TO MOTOR
G	OC1	019430A	101177	T	AV	F16	S	D			VAL ON STBY GAS TREAT SYST NO1 FAIL TO OPER PROP	FLOW SENSING PROBE DISPL (VLV V-29-26)
G	OC1	019430B	101177	T	AV	F24	S	D			VAL ON STBY GAS TREAT SYST NO1 FAIL TO OPER PROP	FLO CONT PLUNG ON PILOT SV DETERIORATED
G	OC1	022970	101778	N	AV	A24	S	D			GAS SYSTEM 11 DISCHARGE VALVE FAILED TO OPEN	STUCK SOLENOID IN AIR SUPPLY TO OPERATOR
G	OC1	023117	112978	C	RM	B16	S	D			MN STEAM DRAIN VALVE V-1-106 FAILED TO CLOSE	NO POWER TO VALVE>DEFORMED FUSE HOLDER
G	OC1	023144	120478	F	MV	A16	S	D			CONT SPRAY VALVE V-21-78 FAILED TO OPEN ON TESTING	BREAKER TO VALVE NOT RACKED IN PROPERLY
G	PB2	014154	020676	N	RM	B16	S	D			LIG.RADWASTE DISCH.VLV AD-20-308 FAILED TO ISC.FLV	FLOW-INDIC.MTR.DID NOT OPERATE PROPERLY
G	PB2	014925	051976	K	MV	B16	S	D			RECIRC PUMP DISCH VLV MO-2-02-53A WOULD NOT CLOSE	BROKEN WIRE>CLOSING CONTROL CIRCUIT
G	PB2	015140	062076	C	MV	F16	S	D			ISO VAL MO-2-14-71 FAILED TO STROKE	GROUNDING WIRE AT MTR CONT CENTER

COMMAND FAULT

V N	P L A N T	CONT. NO.	EVENT DATE	S I S	C O M P	F A I L C O D E	T Y P E	C L A S S	C O M M P H	K E Y		FAILURE MODE	FAILURE MECHANISM
G	P82	015711	091376	N	UV	V01	S	D				IMPROPER VAL LINEUP TO SETTLING BASIN	PERSONNEL ERROR
G	P82	0165688	120176	C	AV	B24	S	D				ISO VALVE AD-2-2-40 FAILED TO CLOSE	STUCK SOLENOID IN SUPPLY SYSTEM
G	P82	019097	091077	N	RM	A16	S	D				STDBY. GAS TREATMENT "A" FILTER TRAIN INL. VLV. AD--	-20475-1 DID NOT OPEN//CONTACT PROBLEM
G	P82	019694	091377	H	MV	F16	S	D				HPCI TURB EXHAUST VAL MTR DAMAGED	SHORT IN VAL CONTROL CIRCUIT
G	P82	020481	020678	N	RM	B16	S	D				RADWASTE DISCHARGE VALVE FAILED TO CLOSE/TESTING	COMMAND/RELAY FAILED IN CONTROL CIRCUIT
G	P82	020610	021678	C	XV	V01	S	D				INLET VLV FOR THE MANOMETER WAS OPEN INSTEAD OF CL	PERSONNEL ERROR/FAILED TO FOLLOW PROCEDUR
G	P82	020667	022378	N	XV	V01	S	D				DISCHG VLV ON DIESEL F.O.PMP LEFT OPEN VICE SHUT	PERSONNEL ERROR
G	P83	014632	010576	D	MV	A16	S	D				MO-3-14-12818 CORE SPR. LP. INJ. VLV) FAILED TO OPEN	PROBLEM WITH MAGNET. TRIP DEVICE MTR. BRKR
G	P83	014475	021776	L	MV	A16	S	D				RHR INJ. VLV. MO-10-25A FAILED TO FULLY OPEN	BROKEN WIRE TO OPENING TORQUE SWITCH
G	P83	016215	102176	N	AV	B24	S	D				DRYWELL FL. DRN. INBD. ISO. (AD-3-20-82) FAIL. TO CLOSE.	SOLENOID IN AIR SUPPLY FAILED
G	P83	018160	061677	Q	RM	V06	S	D				BOTH RCIC ISO. VLVs. FOUND CLOSED WHEN REQUIRE. OPEN	DEFECTIVE TEST PROCEDURE
G	P83	018473	072277	W	AV	B24	S	D				INBD. MSIV 80 D FAILED TO CLOSE ON REMOTE SIGNAL	FAILURE OF SOLENOID IN AIR SUPPLY LINE
G	P83	019091	092577	M	UV	V01	S	D				CHARGING WATER VLVs. TO SCRAM SYS. IN IMPROPER LIN-	-EUP//PERSONNEL ERROR
G	P83	020492	021078	C	AV	B24	S	D				NITROGEN COMP SUCTION VAL. AD-5235, FAILED TO CLOSE	SOLENOID VALVE STICKING IN AIR SUPPLY
G	P83	020845	031078	T	U	V02	S	D				RECOMBINER-COMP INLET-SUMP DRAIN VLV IMPROPER L/U	MAINTENANCE PERSONNEL ERROR
G	P83	021657	060778	A	XV	V03	S	D				SHUT-OFF VALVE ON PS-10-1000 CLOSED, VIOL OF T.S.	VALVE CLOSED DURING INST TEST, NOT REOPEN
G	P11	017674	051077	W	RV	A24	S	D				RV 203-3C DID NOT OPEN FROM REMOTE CONTROL SWITCH	DETERI OF THE REMOTE AIR ACTUATOR DIAPH
G	P11	018497	080277	N	UV	V01	S	D				VALVE IN TRUCK LOCK, OPENED IN VIOLATION OF T.S.	OPERATIONS PERSONNEL ERROR
G	P11	019736	111477	W	RV	A24	S	D				RELIEF/SAFETY VALVE 203-3B COULD NOT BE MAN OPENED	FAIL OF 3-WAY SOLENOID VAL TO PORT PROPER
G	P11	019668	120277	M	RM	V06	S	D				STANDBY LIQUID CONTROL VALVE 1101-23 CLSD T.S. VIOL	INADEQUATE PROCEDURES COVERING VALVE POS

COMMAND FAULT

VEN	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CUM	KEY		FAILURE MODE	FAILURE MECHANISM
G	P11	021963*	071078	X	RM	F24	S	D	C2			SCRAM VALVES FOR CRD 38-47 SLOW ACTUATING	STICKY ASCO SCLENOID VLV IN SUPLY SYS
G	P11	023500	102878	N	UV	V01	S	D				BLOCK VALVE TO FCV-118 SHUT WHEN REQUIRED TO BE OPEN//PERSONNEL ERROR	
G	QC1	015706	080976	N	MV	F16	S	D				REACTOR WTR-CLEANUP SYS.ISO.VLV.MD-1-1201-2 INOPER VALVE LINE-UP INCORRECT/RADWASTE DISCHARGE	RELAY SHORTED & BURNED UP CONTROL TRANSF. PERSONNEL ERROR
G	QC1	017357	011977	N	AV	V01	S	D				DRAIN VALVE FAILED TO CLOSE/COMMAND FAULT	AIR SUPPLY SV FAILED/AIR WOULDNT VENT OFF
G	QC1	018106	041277	F	AV	B24	S	D				CONT.ISO.VLV.S. MD 1-1001-566 63 FAILED TO CLOSE	FAILURE OF THE 595-118 RELAY
G	QC1	018459	061177	H	RM	G24	S	D				HPCI PUMP INLET VALVE WOULD NOT STAY OPEN/TESTING	HALF FUNCTION IN LOCAL VALVE CONT STAT CIRC
G	QC1	020425	121177	A	RV	A24	S	D				RELIEF VALVE 1-203-38 FAILED TO OPEN ON DEMAND	COMMAND/WIRE TIE IN ELECT CONTACTOR
G	QC1	023585*	121978	N	AV	B24	S	D	02			TWO VENT DAMPERS FAILED TO CLOSE(1-5741A6B) TEST	SOV SUPPLYING AIR TO OPERATOR FAILED
G	QC2	015381	071276	C	AV	B24	S	D				AD 2-1601-56 FAILED TO CLOSE / COMMAND FAILURE	SCV FAILED IN AIR SUPPLY TO PURGE PILOT
G	QC2	020300	051977	O	MV	B16	S	D				RCIC INBOARD STM.ISO.VLV.MD-2-1301-16 WOULDNT CLOSE//FAIL.OF VLV.BRKR.AUX.CLOSING CONT.	
G	QC2	018575	071977	L	UV	V01	S	D				VALVE FOUND CLOSED BETWEEN A & B LCOPL/LOSS OF LPCI	PERSONNEL ERROR/INADVERTANT CLOSURE
G	QC2	019450	092977	C	XV	V01	S	D				STOP VALVE TO TORUS LEVEL TRANSMITTER FOUND CLOSED	PERSONNEL ERROR
G	QC2	020544	011878	N	AV	B16	S	D				ADV AD 2-5408 FAILED TO CLOSE / COMMAND FAULT	PERSONNEL HOOKED UP ELECTRICAL WRONG
G	QC2	020595*	012478	S	AV	B24	S	D	02			TWO ADV FAILED TO CLOSE/COMMAND FAULT/NO AIR	SOV SUPPLYING AIR FAILED/HI TEMPEHUMIDITY
G	QC2	021561	052178	D	RM	V01	S	D				2A CORE SPRAY SUC.VLV. MD 2-1402-3A CLOSED WHEN REQUIRED TO BE OPEN//PERSONNEL ERROR	
G	QC2	022815	092978	W	RV	A24	S	D				RV 2-203-3A FAILED TO OPEN(MANUAL) / COMMAND	AIRLINE TO MANUAL AIR OPERATOR BROKE
G	VY1	014739	051276	H	UV	V01	S	D				IMPROPER VLV.LINEUP ON HPCI GLAND SEAL CONDENSER	PERSONNEL ERROR
G	VY1	016997	011877	L	RM	V03	S	D				"B" RHR PHP DISCH.VLV.S. SHUT WHEN REQ. TO BE OPEN	PERSONNEL ERROR
G	VY1	022252	081478	W	XV	V01	S	D				VLVS.LINED UP IMPROPERLY TO HI.MN.STM. N.FLOW SWT.	PERSONNEL ERROR

COMMAND FAULT

<u>V</u> <u>E</u> <u>N</u>	<u>F</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>D</u> <u>E</u> <u>S</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>T</u> <u>E</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>M</u> <u>M</u> <u>P</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
W	BV1	015915	083076	Y	RM	B16	S	D			CONTAINMENT VALVE FAILED TO CLOSE/CONT VAC DROPPED	WIRING ERROR DURING FABRICATION
W	BV1	015909	091076	F	AV	G24	S	D			COOL WATER CONT ISOLATION VALVE WENT CLOSED	AIR PRESS TO VAL DROPPED/AIR SYS(DESIGN)
W	BV1	018090	101476	S	MV	A16	S	D			*B*HDR.DISC.VLV TO RIVER WTR.PMP. DID NOT OPEN	DIRTY ELEC.CONT.ON.OPER.LINE STARTER
W	BV1	016279	102276	H	MV	B16	S	D			VCT DISCH VALVE FAILED TO SHUT ON SI SIGNAL	NO PWR/ALLIS CHALMER LINESTARTER FAILED
W	BV1	016356	102576	H	MV	B16	S	D			DRAIN VALVE ON ACCUMULATOR IC FAILED TO SHUT	NO PWR/THERMAL OVERLOAD OF LINESTARTER
W	BV1	016746	010577	U	MV	F16	S	D			DYNAMIC INSTABILITY OF FEEDWATER REG VALVE	NEW TRIM CIRCUIT NEEDED
W	BV1	017697*	042077	W	AV	G24	S	D	02		1A & 1B MN STM ISO. VLVs WENT PARTIALLY CLOSED	LOW AIR PRESS TO TH MSIVs VLV POSITIONER
W	BV1	017829	051077	U	MV	V02	S	D			FEEDWATER BYPASS OPENED WHEN REQ TO BE CLOSED	MAINT T/CH FAILED TO DISCONT PWR SUPPLY
W	BV1	018835	072577	N	UV	V01	S	D			IMP.VLV LINEUP#68 PRI GRADE WTR STOR TANK OVERFLW.	PERSONNEL ERROR
W	BV1	020496	012178	L	UV	6	S	D			THE RWST WAS DRAINED TOO LOW DUE TO INCOR.VLV L/U	PROCEDURAL DISCREPENCY
W	BV1	020650	020178	N	RM	F16	S	D			SUMP CAUSTIC VALVE OPENED DUE TO ERRONEOUS SIGNAL	DETECTOR FILLED WITH RESIN BEADS
W	BV1	022139	070978	H	AV	B24	S	D			BORON INJECTION TANK RECIRC.VLV.WOULD NOT CLOSE	WORN INTERNALS IN SOLENOID SUPPLYING AIR
W	DC1	014549*	050576	C	AV	F24	S	D	02		VALVES CCR-4606462 FAILED TO CLOSE IN REQUIRED TIME	WRONG SIZE TUBING(VENT)FROM VALVE(DESIGN)
W	DC1	015082*	061776	P	RM	F16	S	D	05	Z	ALL VALVE ON CONT CENTER 1-AZV-A WERE WITHOUT POWR	BREAKER TRIPPED(SHORT DUE TO PERSON ERROR
W	DC1	016648	121776	F	MV	V01	S	D			CONTAINMENT SPRAY PUMP SUCTION VALVE FOUND CLOSED	PERSONNEL LEFT VALVE SHUT AFTER A TEST
W	DC1	017279	030577	Y	XV	V01	S	D			DRAIN TRAPS WD-20&WD-21 LEFT OPEN	PERSONNEL ERROR
W	DC1	017370*	030577	K	RM	F16	S	D	02		VALVES QCM-250 AND 1M0-53 LOST PWR TO THEM	BREAKER OPENED DUE TO RELAY FAILURE
W	DC1	019569	111877	F	UV	V01	S	D			TWO CONTAINMENT SPRAY VALVES FOUND CLOSED	PERSONNEL ERROR/CLOSED UNIT1 INSTEAD OF 2
W	DC1	020694	020878	B	MV	B16	S	D			AUX FEED MOV FAILED TO CLOSE	COMMAND/LOOSE ELEC CONNECTION/CONTROL
W	DC1	021011*	032278	H	MV	F16	S	D	03		POWER FOUND OFF TO 3 ECCS VALVES	3 BREAKERS FOUND TRIPPED ON MCC

COMMAND FAULT

<u>PLANT</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SYM</u>	<u>CDM P</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W DC1	021220	042078	C RM	V01	S D					CONT PURGE SUPPLY&EXHAUST VALVES NOT CLOSED AS R--	--EQUIRED/PERSONNEL ERROR
W DC1	022281	060278	H UV	V01	S D					BORON INJECTION THROTTLE VALVES OUT OF ADJUSTMENT	PERSONNEL ERROR/INCORRECT TEST CRITERIA
W DC1	023114	112878	B MV	B16	S D					AFB THROTTLE VLV. WOULD NOT CLOSE ELECTRICALLY	BROKEN LEAD ON MTR OPERATOR
W DC2	021079	041678	L XV	V01	S D					HANDWHEEL CAME OFF RHR VALVE POSITIONING IT WRONG	PERSONNEL FAILED TO REPOSITION THE VALVE
W DC2	021393	052078	C RM	V06	S D					CONT. PURGE VALVES OPENED PRIOR TO ALLOWABLE CONDS	PROCEDURES DIFFER BETWEEN UNITS 1 & 2
W DC2	021634	061578	N RM	V01	S D					STARTING AIR PILOT VALVES TAGGED OUT FOR WRONG D/G	PERSONNEL ERROR
W DC2	022064	072678	N XV	V02	S D					TWO MANUAL VALVES WERE OPENED IN VIOLATION OF T.S.	PERSONNEL ERROR
W DC2	022350	090378	N UV	V01	S D					CONDENSATE VALVE CLOSED WHEN REQ TO BE OPEN	PERSONNEL ERROR
W DC2	022581	092278	K KV	V01	S D					PRESSURIZER RV OPENED WHEN REQUIRED TO BE CLOSED	PERSONNEL ERROR
W DC2	022838	101078	B XV	V01	S D					AUX FEED VALVE FOUND UNLOCKED & OPEN/WRONG LINE-UP	PERSONNEL ERROR
W HN1	014007A	012278	W SV	B24	S D					MSIV NO 2 FAILED TO CLOSE IN REQUIRED TIME	SOLENOID IN AIR OPERATOR FROZE
W HN1	022167	080478	K RM	B16	S D					PRESS SPRAY VLV. STUCK IN INTERMEDIATE POSITION	FAILED TRANSISTOR IN WORTHINGTON SIGNAL-CN
W HN1	023582*	122978	N AV	G24	S D	04				4 S/G BLOWDOWN LINE VALVES CLOSED WHEN REQ OPEN	AIR SUPPLY TO VALVES TRIPPED(COM CAUSE)
W IP2	015920	080578	H UV	V03	S D					SI PMPs COMMON SUC. VLV(846) IN IMPROPER POSITION	PERSONNEL ERROR/DID NOT OPEN VLV AS REQR.
W IP2	015732	091278	K SV	F24	S D					INST AIR PRESS LOST BY MALFUNCT OF 4-MAY VALVE	CAUSE UNKNOWN
W IP3	014664	042978	F RM	V03	S D					INCR. VLV LINUP FOR TEST, CMT MNT SPRY ACCID. TURN ON	PERSONNEL ERROR
W IP3	015576	081078	N DV	F24	S D					CONT. ROOM DAMPER "C" DID NOT TRANSFER ON SIGNAL	MALFUNCTIONING RELAY IN SUPPLY LINE
W IP3	015923	093078	K UV	V01	S D					INADVERTENT CLOSURE OF RHR ISO VALVE	PERSONNEL ERROR
W JF1	021186	032078	W RM	D24	S D					MSIV V002 FITTING ON AIR SUPPLY LEAKING	SOLDERED CONNECTION LOOSE
W JF1	020993	032578	B UV	V02	S D					MDAFP & TDAFP RECIRC BYPASS ISO VLVS OPEN	PERSONNEL ERROR

COMMAND FAULT

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CONTR</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	JF1	021975	071278	M	UV	V01	S	D			TWO BORIC ACID TK SUPPLY VALS IN CLOSED POSITION	PERSONNEL ERROR
W	JF1	022633*	090978	B	RM	F24	S	D	03		CONTROL WAS LOST ON FLOW CONT. VALVS 3228A, B, & C	DEFECTIVE RELAY IN TDAFP CONTROL CIRCUIT.
W	JF1	022629	091878	X	RM	V06	S	D			RHR PUMP SUCTION VLV 8701A CLOSED WHEN REQ. OPEN	INADEQUATE PROCEDURES
W	KE1	014387*	031276	N	UV	B24	S	D	02		DAMPERS ASV-50665 FAIL TO CLOSE ON S-I. SIGNAL	STICKY SOLENOID PILOT VALVES
W	KE1	015295	081376	N	UV	V01	S	D			WASTE NEUT. DRN. VLV LEFT OPEN, ALLOW. RAD. RELEASE	PERSONNEL ERROR
W	KE1	015967*	092376	U	RM	F16	S	D	02	Z	FEEDWATER ISOLATION VALVES FAILED TO OPERATE	COMMAND/FAILED BF RELAY/NO SIGNAL
W	KE1	016789	011977	C	RM	V01	S	D			CNTNMNT ISO-VALS LEFT OPEN	PERSONNEL ERROR, IMP. VAL. LINEUP
W	KE1	017824	052277	J	UV	V01	S	D			VAL ON B PUMP DISCH IN CLOSED POSITION	PERSONNEL ERROR / IMPROPER VLV LINE UP
W	KE1	019064	071677	N	UV	V01	S	D			PART. OPEN VALS IN DISCH PATH FROM WASTE NEUTR. TK.	PERSONNEL ERROR / IMPROPER VLV LINE UP
W	KE1	021012	032978	N	UV	V01	S	D			SAMPLE VALS FOR MONITOR R-19 IN CLOSED POSITION	IMPROPER VLV LIN UP / PERSONNEL ERROR
W	KE1	021365	052378	L	UV	V06	S	D			RHR VENT VLV. OPEN, WHEN IT SHOULD HAVE BEEN CLOSED	DEFECTIVE PROCEDURES
W	NA1	021152	041278	W	RM	B16	S	D			TV-MS-101C FAILED TO CLOSE REMOTELY	RELAY SOLENOID FOR VLV HAD AN OPEN COIL
W	NA1	021506	051478	B	AV	V06	S	D			AUX FEEDWATER VALS PCV-F2-159A, -159B IMP. LINEUP	CHECKOFF SHEET DOES NOT LIST NORM VAL POS
W	NA1	022569*	092778	C	AV	B24	S	D	02		CNTNMNT ISO VALVES TV-CC-102D, 102F FAILED TO CLOSE	FAILURE OF SOLENOID SUPPLY VALVES
W	NA1	022565	100478	B	UV	V01	S	D			IMPROPER VALVE LINEUP, AUX FEED PUMP TO A, B, C STGMN	OPERATING PERSONNEL ERROR
W	PR1	015919	091076	F	XV	V02	S	D			CONTAIN.-TO-ANNULUS DIFFER. PRESS. SWTCH. VLVED OUT-	-BY MISTAKE//PERSONNEL ERROR
W	PR1	016285	102476	N	UV	V01	S	D			INCORRECT VLV LINEUP MADE ON SPENT FUEL PIT	PERSONNEL ERROR
W	PR1	020123	120977	C	RM	A16	S	D			#11 CONT. VAC. BRKR. ISO. VLV. FAILED TO OPEN ON DEMND	FAILURE OF BARTON DIFFER. PRESS. SWITCH
W	PR1	020735	020478	C	XV	V01	S	D			PUMP SUCTION VALVE FOUND NEARLY CLOSED	PERSONNEL/VALVE LINEUP IMPORTANCE STRESSD
W	PR1	021704	062278	E	XV	V01	S	D			ROOT VALVE ON D/G DIESEL OIL TANK LEVEL INST CLOSE	PERSONNEL/ LOCKWIRED OPEN FROM NOW ON

COMMAND FAULT

PLANT	CONT. NO.	EVENT DATE	S	COMP	FAIL CODE	TYPE	CLASS	CONTR	KEY	FAILURE MODE	FAILURE MECHANISM
W PR2	014463	033176	S	XV	V01	S	D			MANUAL VALVE SECURED WHICH VIOLATED LOOP AVAILABLE	PERSONNEL ERROR/TECH SPECS INCONSISTENT
W PR2	017889	051977	B	XV	V06	S	D			PUMP INLET VALVE FOUND NEARLY SHUT/AUX FEED INLET POSITION	REQUIREMENT WILL GO ON CHECKLIST
W PR2	020125	122377	B	MV	A16	S	D			#22 TURB. DR. IN AFM PUMP STM. SUP. VLV. FAILED TO OP-	-EN//MOTOR LEAD GROUNDED TO JUNCTION BOX
W PT1	019498	103177	S	UV	V01	S	D			VALVE LINE-UP NOT PROPERLY MADE/RADWASTE DUMP MADE	PERSONNEL/OPERATOR FAILED TO CLOSE VALVE
W PT1	021627	061478	Y	UV	V01	S	D			IMPROPER VALVE LINE-UP DISCOVERED/POSS RAD RELEASE	PERSONNEL ERROR
W PT2	017035	012777	F	MV	F16	S	D			CONT. SPRAY PMP. DISCHG. VLV. 2-8608 INOPERABLE	VALVE OPERATOR BREAKER WAS OPEN
W PT2	018572	072877	H	MV	V04	S	D			MOV FOUND IN INTERMEDIATE POSITION/SINCE PREV TEST	PERSONNEL FAILED TO ASSURE FULLY OPEN
W PT2	019446	101777	X	XV	V01	S	D			ISOLATION VALVE FOR PRESS TRANSMITTER FOUND SHUT	PERSONNEL/ALSO NOT ON ANY CHECK-LIST
W PT2	022842	092878	K	AV	B24	S	D			PZR. SPRAY VLV. 431B WOULD NOT SHUT FULLY	FAILURE OF ELECTRO-PNEUMATIC TRANSDUCER
W PT2	023123	120978	X	XV	V02	S	D			LOOP A TEMP DETECTOR MANIFOLD VALVED OUT	PERSONNEL ERROR(TOOK OUT SAFETY CHANNELS)
W RG1	014168	020776	C	AV	B16	S	D			SUMP A DISCHG. ADV FOR CONT. ISO. WOULD NOT CLOSE	FAILURE OF MG-6 RELAYS IN "A" SAFEGUARDS.
W RG1	021334	041978	G	UV	V01	S	D			OPERATOR OPENED WRONG VALVE/DECREASE BORON CONCENT	PERSONNEL ERROR/PROCEDURE CHANGED
W RG2	016936	012577	G	UV	V02	S	D			IMPROPER VLV LINEUP (BORIC ACID STORAGE TANK)	PERSONNEL ERROR
W R02	022627	042277	N	UV	V01	S	D			COMPRESSED AIR ISO VAL CLOSED, S.B. OPEN	PERSONNEL ERROR
W R02	020053	120377	L	MV	A16	S	D			RHR VALVE 7440 FAILED TO OPEN	CIRCUIT THERMAL OVERLOAD DEVICE TRIPPED
W R02	021414	051178	S	MV	B16	S	D			VALVE V6-12D FAILED IN OPEN POSITION	BLOWN FUSE ON MTR OPERATOR CONTROL PWR
W R02	023053	110978	N	XV	V06	S	D			AIR SUPPLY VALVE FOUND OPEN WHEN REQUIRED SHUT	DEFICIENT OPERATING PROCEDURE
W SA1	017199A	021077	W	RM	G24	S	D			MSIV FAILED TO OPERATE(IT DRIFTED SHUT)COMMAND	EXCESS DIFF PRESS ON PISTON OF MSIV
W SA1	017198	021177	W	AV	V02	S	D			#12 S/G MSIV WAS CLOSED WHEN IT WAS REQUIRED TO R-	-EMAIN OPEN//PERSONNEL ERROR(MAINTENANCE)
W SA1	017699*	042977	N	RM	F24	S	D	02		TWO VALVES FAILED TO OPERATE(IN REQUIRED TIME)	SOV BLEED-OFF UNDERSIZED/DESIGN PROBLEM

COMMAND FAULT

<u>VE</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	SA1	019606	102777	L	UV	V01	S	D				IMPROPER VLV LINEUP ON COMP.COOL.WTR-TO RHR PLMP	PERSONNEL ERROR
W	SA1	022720	092478	C	MV	B16	S	D				MOV(1CC131) FAILED TO CLOSE / TEST/COMMAND FAULT	CONTACTS FAILED IN CONTROL POWER CIRCUIT
W	SA1	022873*	110678	F	RM	G16	S	D	G2	V		SERVICE H2O VALVES FOUND TRIPPED	INADVERTANT TRIP SIGNAL, DESIGN PROBLEM DT
W	SO1	022336	081878	B	HV	F16	S	D				VALVE OPENED ACCIDENTLY DURING CIRCUIT MAINTENANCE	SIGNAL TO VALVE/COMMAND FAULT/MAINTFN
W	SO1	023179	120578	N	UV	V01	S	D				RECIRC VALVE ON HYDRAZINE PUMP LEFT OPEN INADVERT	PERSONNEL ERROR
W	SU1	014871	031876	B	MV	A16	S	D				AUX.FEEDWTR.PUMP DISC.VLV.MOV-FW-151A FAILED TO O-	-PEN//TIMING RELAY FAILURE
W	SU1	017928	101876	J	MV	B16	S	D				MOV-CW-100A FAILED TO CLOSE ON AUTO SIGNAL	LCLOSE TERMINAL SCREW AT BREAKER
W	SU1	016254*	102676	N	DV	B16	S	D	O2			TWO CONTROL RM DAMPERS FAILED TO CLOSE DURING TEST	COMMAND/RELAY STUCK IN ENERGIZED POSIT
W	SU1	021294	042378	S	MV	B16	S	D				CONDENSER OUTLET MOV (CW-100A) FAILED TO CLOSE	COMMAND FAULT/WIRE DISCONNECTED/PERSONEL
W	SU1	022954	111778	N	XV	V02	S	D				3 VALVES CLOSED WHEN REQ OPEN(CLOSED TO STOP LEAK-	-RAD MONITORING LOST)//PERSONNEL ERROR
W	SU1	023136	112978	G	XV	V01	S	D				VALVE MISALIGNMENT ON BORIC ACID TRANSFER	PERSONNEL ERROR
W	SU2	015962	082076	H	UV	V01	S	D				OUTSIDE ISOLATION VALVE FOUND OPEN/NORMALLY CLOSED	PERSONNEL/FAILED TO FOLLOW ADMIN CONTROLS
W	SU2	019478A	101177	S	XV	V01	S	D				TWO DRAIN VALVES LEFT OPEN AT END OF MAINTENANCE	PERSONNEL ERROR/CAUSED FLOODED PIT ABOVE
W	TR1	014504	022176	L	MV	G16	S	D				RHR VLV CLOSED WHEN IT WAS REQUIRED TO REMAIN OPEN	VOLT.FLUC.ON INSTRUMENT AC BUS
W	TR1	014570	022976	U	HV	B24	S	D				HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/AIR IN HYDRAULIC LINE
W	TR1	014568	032876	U	HV	B24	S	D				HYDRAULIC OPERATED FEED H2O VALVE FAILED TO CLOSE	COMMAND FAULT/OIL LEAKED INTO SOV
W	TR1	016251	101676	U	HV	B24	S	D				FEEDWATER BYPASS VALVE (MO-2973D) FAILED TO CLOSE	COMMAND FAULT/LOCAL CONTROL VLV FAILED
W	TR1	016250	102876	H	MV	A16	S	D				WAST SUCTION VALVE (MO-112D) FAILED TO OPEN/DEMAND	BREAKER SUPPLYING POWER FAILED/COMMAND
W	TR1	016442	111276	U	HV	B24	S	D				FEEDWATER ISOLATION VLV (MO-2971G) FAILED TO CLOSE	HYDRAULIC SELECTOR VALVE FAILED/RIVETT CO
W	TR1	018588	050277	R	MV	F16	S	D				AIR COOLER BYPASS VALVE FAILED TO OPERATE/TESTING	COMMAND/PERSONNEL INCORRECTLY WIRED CIR

COMMAND FAULT

<u>VEN</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CONTR</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W TR1	118579	070677	U HV 824	S D							HYDRAULIC FEEDWATER VLV (MO-2971D) FAILED TO CLOSE	SOLENOID IMPROPERLY ASSEMBLED/MANUFACTUR
W TR1	018992	082177	U HV 824	S D							HYDRAULIC FEEDWATER VLV (MO-2973B) FAILED TO CLOSE	SOLENOID VALVE BECAME WET/STEAM LEAK
W TR1	019580	101677	L XV V01	S D							RHR DISCHARGE VLV (8728B) FOUND LOCKED CLOSED	PERSONNEL ERROR/IMPROPER VALVE LINEUP
W TR1	020154	012878	C MV 81	S D							CONTAINMENT ISOL MOV-5660 FAILED TO CLOSE	COMMAND/LOOSE ELECTRICAL CONNECTION
W TR1	020501	022178	W AV 824	S D							RAIN STEAM ISOLATION VALVE CV-2216 FAILED TO CLOSE	ACTUATING SOLENOIDS RUSTED/COMMAND FAIL
W TR1	021068*	032078	L MV 616	S D	02	V					DEENERGIZING PROTECTION SYS CAUSED RHR VALVES TO--	--CLOSE//PROCEDURAL DEFICIENCY
W TR1	021419	042578	L UV V01	S D							DRAIN VALVE LEFT OPEN/LEAD TO LOSS OF FLOW	PERSONNEL ERROR
W TR1	022005A	070778	U UV V01	S D							IMPROPER VLV.LINEUP ON CONDENSATE STORAGE TANK	PERSONNEL ERROR
W TU3	021916	070678	W AV 824	S D							MSIV-38 FAILED TO CLOSE / COMMAND FAULT	SOLENOID SUPPLYING AIR, FAILED TO OPERATE
W TU4	019421	091377	L RM V01	S D							TWO VALVES INADVERTANTLY OPENED/RHST LEVEL DECREAS	PERSONNEL ERROR/POSSIBLE PROCEDURE PROBLM
W TU4	022585*	092078	W AV F24	S D	03						3 MSIVS HAD DEFECTIVE SOLENOID COILS/PREV MAINT.	COMMAND FAULT/SOLENOIDS CONTROL AIR
W YR1	019477	101977	N MV 816	S D							MCV FAILED TOO CLOSE / COMMAND FAULT	AN OPEN OVERLOAD HEATER IN CONTACTOR
W YR1	023164	113078	M UV V02	S D							VALVE CLOSED WHEN REQ OPEN TO ISOL ANOTHER VALVE--	--FOR CLEANING//PERSONNEL ERROR(MANAGEMENT)
W Z11	014399	010876	W RV H24	S D							RELIEF VLV ON 1A S/G OPENED PREMATURELY	STM.PRESS.XMITTER.1PT-516 DRIFT.TD MAX OP
W Z11	016043	100476	G UV V01	S D							VALVE LINE-UP PROBLEM/BORON CONCENTRATION DILUTED	PERSONNEL ERROR
W Z11	017255	021877	L UV V01	S D							IMPROPER VALVE LINEUP/UNIT-1 VAL CLOSED INSTEAD-2	PERSONNEL ERROR/NEITHER VAL TAGGED FOR 10
W Z11	019175	072177	Y DV V01	S D							OPERATIONS TAGGED WRONG DAMPER OUT OF SERVICE	PERSONNEL ERROR
W Z11	019410	100777	W HV F24	S D							WHILE RECHARGING HYDRAULICS/MSIV OPENED PARTIALLY	COMMAND FAULT/PRESSURE*COMMAND*IT OPN
W Z11	021552	051878	U RM 816	S D							FEEDWATER ISOLATION VALVE FAILED TO CLOSE/TESTING	COMMAND/DIRTY CONTACTS ON CONTROL RELAY
W Z11	022897	101878	Y XV V01	S D							IMPROPER VALVE LINE-UP CAUSED TRIP OF BLOWER	PERSONNEL ERROR

COMMAND FAULT

<u>VEN</u>	<u>PLAN</u>	<u>CONT. NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MU</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W	Z11	022997	110678	N	XV	V01	S	D				RAD MONITOR NOT VALVED IN WHEN REQUIRED	PERSONNEL ERROR
W	Z12	014215	012176	W	RV	A24	S	D				MAIN STEAM RV(2 MOV-MS0017) WOULD NOT OPERATE /AIR	COMMAND/RELAYS FAILED IN CONTROLLER AMP
W	Z12	014219	021376	G	MV	B16	S	D				CHRG PUMP VALVE 2 MOV-VC8106 FAILED TO CLOSE/TEST	COMMAND/STUCK CONTACTS IN MCC BREAKER
W	Z12	017037*	012877	H	DV	F16	S	D	02			TWO AIR COND DV(DFCV-AV42A/B) FAILED TO OPERATE	COMMAND/STICKING RELAY
W	Z12	017407	031077	C	UV	V01	S	D				VLVS. 2IN015460155 OPEN WHEN REQ. TO BE CLOSED	PERSONNEL ERROR
W	Z12	018212	060477	L	MV	A16	S	D				RHR VALVE(2MOV-RH87008) FAILED TO OPEN DURING TEST	COMMAND/AUX CONTACTS STUCK IN MCC
W	Z12	019137	083177	H	UV	V01	S	D				DRAIN VLV OPENED TO 2D ACCUM. INSTEAD OF 2C ACCUM.	PERSONNEL ERROR

RECURRING COMMAND FAULT

PLANT	CONT. NO.	EVENT DATE	SW	COMP	FAIL CODE	TYPE	CLASS	CONTR	KEY	FAILURE MODE	FAILURE MECHANISM
B AR1	017363	021877	J	SV	F24	T	D			VALVE CV6202 WOULD NOT REMAIN CLOSED	TWO AIR SUPPLY BLOCK VALVES FAILED
B AR1	017521	031077	N	RM	F16	T	D			VALVE CV-2123 WAS FOUND TO BE INOPERATIVE	CIRCUIT BREAKER OVERLOAD HEATERS FAILED
B CR3	017946	042477	R	UV	V06	T	D			VLV.SMV-151 WAS IN SHUT POSI.;GIVING CONT.TEMP.ALA	PROCEDURAL INADEQUACY
B CR3	018843	081077	R	UV	V06	T	D			VLV SMV-151 WAS CLOSED WHEN REQUIRED TO BE OPEN	PROCEDURAL INADEQUACY
B CR3	019800	112977	R	UV	V06	T	D			SMV-151(IND.COMM.MTR.SUP.VLV)SHUT WHEN REQ.TO OPEN	PROCEDURAL INADEQUACY;THIRD OCCURENCE
B CR3	022361	081970	L	RM	G16	T	D			DHV-3 WENT CLOSED WHEN REQUIRED TO REMAIN OPEN	LOSS OF 120 VOLT AC VITAL BUS(INVERTER)
B DE1	015530	081076	C	AV	F24	T	D			VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
B DE1	017473	032677	C	AV	F24	T	D			VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
C CC1	019206	100377	S	AV	F24	T	D			SERVICE H2O CONT VALVE OPERATED ERRATICALLY IN AUT	PROBLEM WITH PNEUMATIC CONTROLLER TO VALV
C CC1	019203	100477	S	AV	F24	T	D			SERVICE H2O CONT VALVE OPERATED ERATICALLY IN AUTO	PNEUMATIC CONTROLLER NEEDED CALIBRATION
C CC2	019783	112577	S	AV	F24	T	D			SERVICE H2O CONT VALVE MALFUNCTIONED IN AUTO MODE	CONT AIR & FEEDBACK TUBING INSTAL'D WRONG
C FC1	016666	112076	N	AV	A24	T	D			RAW WATER VALVE HCV-401E WOULD NOT OPEN ON TEST	ELECTRIC TO PNEUMATIC CONVERTER FAILED
C FC1	016958	011177	N	AV	B24	T	D			VALVE HCV-345 OPENED PARTIALLY WHEN REQ CLOSED	ELECTRIC TO PNEUMATIC CONVERTER FAILED
C SL1	015002	052176	B	MV	A16	T	D			MO AUX FEED PUMP STEAM SUPPLY VALVE FAILED TO OPEN	NO SIGNAL TO VALVE/COMMAND FAULT/ELECT
C SL1	015567	070976	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/POOR DES
C SL1	016880	120876	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/DESIGN
G BF3	021460	051378	M	HV	F24	T	D			MSIV 1-38 CLOSED IN 1 SEC.;EXCEED. T.S. REQUIREMNT	DASHPOT WAS LOW ON OIL
G BF3	021781	062678	M	HV	F24	T	D			CUTBOARD MSIV FCV 3-1-78 CLOSED FASTER THAN T.S. AL	VLV'S DASHPOT ASS. WAS LOW ON FLUID
G BR1	019084	091577	K	RM	F24	T	D			PRESS.CONT.VLV LO-PCV-1739 DRIFTED OPEN;MOT-GEN TR	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT
G BR1	019493	102577	K	RM	F24	T	D			PRESS.CONT.VLV LO-PCV-1739 DRIFT.OPEN;MTR-GEN TRIP	CONTROLLER FOR VALVE REQUIRED ADJUSTMENT

RECURRING COMMAND FAULT

<u>EVENT</u>	<u>PLANET</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYST</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G BR1	C22092	072878	L MV A16	T D							VALVE F0688 FAILED TO OPEN	BLOWN FUSE
G BR1	022092A	080278	L MV A16	T D							VALVE F0688 FAILED TO OPEN	BLOWN FUSE/FOUND GRND WIRE IN LOGIC CKT
G BR2	014624	030976	C RM A16	T D							PENET VALVE X70F FAILED TO OPEN DURING TEST	REMOTE SWITCH STUCK/NO POWER TO VALVE
G BR2	015423*	070976	C RM A16	T D	C2						TWO CONT VALVES(PENETS X5706X 2E)FAILED TO OPEN	TWO PUSHBUTTON SWITCHES STUCK ON TESTING
G BR2	015939	081376	C RM A16	T D							CONT VALVE FOR PENETRATION X76C FAILED TO OPEN	PUSHBUTTON SW FAULTY DURING TEST
G C01	016387	110176	N UV V01	T D							FLUSHING VALVE OF RADWASTE MONITOR LEFT OPEN	PERSONNEL ERROR
G C01	019119	081677	X XV V03	T D							VALVE TO LEVEL SWITCH LEFT CLOSED AFTER TEST	PERSONNEL ERROR
G C01	020806	020778	H RM B16	T D							HPCI VALVE FAILED TO CLOSE DURING TEST	NO SIGNAL FROM OP SWITCH
G C01	020806A	020778	H XV V03	T D							ISOLATION VALVE TO DPIS-76 FOUND CLOSED(SEE020806)	PERSONNEL ERROR
G DR2	023338	121778	C AV B24	T D							AO 2-9207A FAILED TO CLOSE	ASCO SOV FOUND STICKING
G DR3	019987	121677	Q XV V01	T D							PRESS SWITCH FOUND VALVED OUT	PERSONNEL ERROR
G EN1	014790	051076	N XV V02	T D							DISCHARGE VALVE DEMIN H2O TO RIVER LEFT OPEN	PERSONNEL ERROR
G EN1	014798	052476	N XV V01	T D							DEMIN DRAIN VALVE LEFT OPEN(WATER DUMPED TO RIVER)	PERSONNEL ERROR
G M01	018094	053077	L MV A16	T D							"B" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G M01	018955	082877	L MV A16	T D							"B" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G PB3	014380	032176	K MV B16	T D							3B RECIRC.PMP.DISCHG.VLV(MO3-53B)FAILED TO CLOSE	2 CONT.CKT.WIRES TO VLV OPER.WERE BROKEN
G PB3	014741	050476	K MV B16	T D							3B RECIRC.PMP.DISCHG.VLV(MO-3-2-53B)FAIL.TO CLOSE	SEVERAL BROKEN WIRES AT TERMINAL CONNECT.
G PB3	014655	050776	K MV A16	T D							RECIRC.PMP.DISCHG.VLV MO-53B FAILED TO OPEN	GROUNDING CABLE AT MTR CSING,DUE TO VIBRAT
G PB3	015854	092776	C AV B24	T D							ISO.VLV AO-5235(DRYWELL TO NITRO.COMP)FAIL.TO CLOSE	SOLENOID VLV IN AIR SUPPLY LINE FAILED
G PB3	016488	113076	C AV B24	T D							ISO.VLV AO-5235(DRYWL.TO NITRO.COMP)FAIL.TO CLOSE	SOLENOID VLV IN AIR SUPPLY LINE FAILED

RECURRING COMMAND FAULT

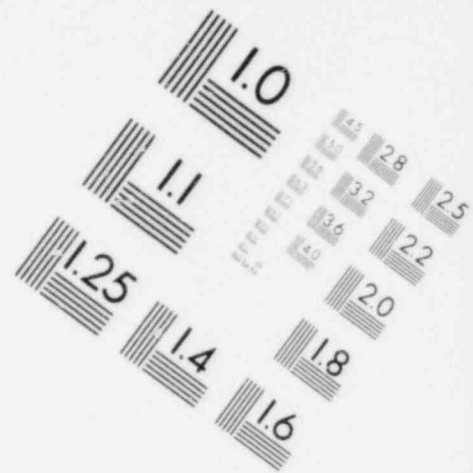
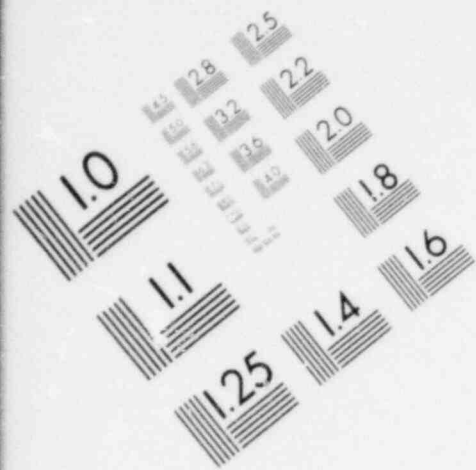
V E N	P L A N I	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O M M P H	K E Y	FAILURE MODE		FAILURE MECHANISM	
G	PB3	021716	062678	X	XV	V03	T	D			SHUTOFF VAL ON PRESS SW PS-3-5-120 CLOSED, T.S. VIOL	TEST PERS CLOSED VLV DUR TEST, NOT REPEND		
G	QC2	023383	111678	C	AV	A24	T	D			RX CONT VALVE 2-1601-20A FAILED TO OPEN ON TEST	SOV(2-1601-50A) FAILED; NO AIR TO AIR-OP VL		
G	QC2	023400	112578	C	AV	A24	T	D			DRYWELL VENT AG 2-1601-23 FAILED TO OPEN	SOV(SO 2-1601-52A) FAILED TO SUPPLY AIR		
W	BV1	015073	061276	C	UV	V01	T	D			VLVS HCV-CV-151, 151-1 WERE OPENED IN VID. OF T.S.	OPER. ERROR, USED IT.S. WHICH VID. ANOTH. T.S		
W	BV1	020754	021778	N	DV	V01	T	D			AIR FLOW CALCUL. OF CONT. ROOM FANS OUT OF T.S.--	DAMPERS WERE POSIT. INCOR. // PERSONNL ERROR		
W	BV1	020792	022378	N	DV	V01	T	D			AIR FLOW CALCUL. OF SLCRS FLTR BANKS OUT OF T.S.--	DAMPERS WERE POSIT. INCOR. // PERSONNL ERROR		
W	JF1	019845	120277	K	RM	B24	T	D			PRZ. SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT		
W	JF1	020287	011778	K	RM	B24	T	D			PRZ. SPRAY VLV. WOULD NOT CLOSE PROPERLY	VALVE CONTROLLER WAS OUT OF ADJUSTMENT		
W	KE1	015262	071576	Y	XV	V01	T	D			MANUAL ISO. VLVS TO MONITORS R-11612 SHUT WHEN REQ-	-UIRED TO BE OPEN // PERSONNEL ERROR		
W	KE1	018652	072977	Y	XV	V01	T	D			MANUAL ISO. VLVS TO MONITORS R-11612 SHUT WHEN REQ-	-UIRED TO BE OPEN // PERSONNEL ERROR		
W	NA1	022270	061878	N	DV	V01	T	D			IMPROPER VLV LINEUP ON UNIT #2 CHILLED WTR. CHILLER	PERSONNEL ERROR		
W	PT1	017805	043077	N	DV	F24	T	D			CONTROL RM VENT VALVE (DAMPER) FAILED TO OPERATE	FOREIGN MATTER IN AIR REGULATOR		
W	PT1	017864	052877	N	DV	F24	T	D			CONTROL RM VENT VALVE (DAMPER) FAILED TO OPERATE	FOREIGN MATTER IN AIR REGULATOR		
W	PT2	020355	050877	C	AV	B24	T	D			ISOL VALVE FAILED TO CLOSE / COMMAND FAILURE	3/4 SOLEN VAL FAILED DUE TO WEAK SPRING		
W	SA1	016738	122976	W	HV	A24	T	D			MSIV (12MS167) FAILED TO OPEN / COMMAND	OIL LINE TO OPERATOR FRACTURED		
W	SA1	016940*	011677	W	HV	F24	T	D	02		TWO HYDRAULIC MSIV WOULDNT OPERATE / COMMAND FAULT	HYDRAULIC LINES TO VALVES RUPTURE / FITTING		
W	Z11	015842	081176	C	AV	B24	T	D			VENT ISOLATION VALVE (1FCV-VN028) FAILED TO CLOSE	COMMAND FAULT / SOV FAILED / CONTROLL AIR		
W	Z11	015843	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-W017A) FAILED TO CLOSE / TEST	COMMAND FAULT / SOV FAILED / CONTROLL AIR		
W	Z11	015844	081176	C	AV	B24	T	D			CONTAINMENT ADV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT / SOV CONTROLLING AIR FAILED		
W	Z11	016181	093076	C	AV	F24	T	D			CONTAINMENT VALVE (1FCVIA01B) FAILED TO OPERATE	OIL IN AIR SUPPLY GOT ON SCLENDIO PLUNGER		

RECURRING COMMAND FAULT

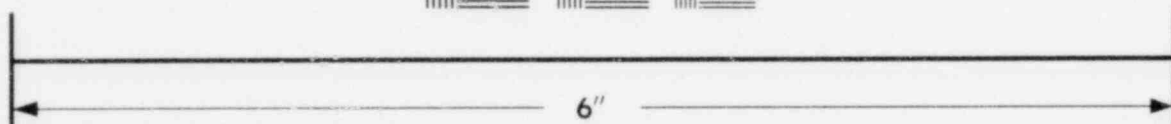
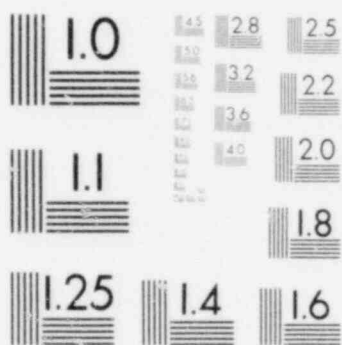
VEN	PLAN T	CONT. NO.	EVENT DATE	SY S	COM P	FAIL CODE	T Y P E	C L A S S	C O N T R O L	K E Y	FAILURE MODE	FAILURE MECHANISM
W	Z11	017040	012677	H	MV	A16	T	D			VALVE 1MOV-SI8808A FAILED TO OPEN	COMMAND/AUX CONTACTS IN CONTL CKT STUCK
W	Z11	017223	012877	H	MV	A16	T	D			VALVE 1MOV-SI8808B FAILED TO OPEN	COMMAND/AUX CONTACTS, CONTROL CKT, STUCK
W	Z11	017251	012877	H	MV	A16	T	D			VALVE 1MOV-SI8800C FAILED TO OPEN/COMMAND	AUX CONTACTS IN CONTROL CIRCUIT STUCK
W	Z11	017727	042577	C	AV	B24	T	D			SAMPLE ISOLATION VLV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	018568	072377	C	AV	B24	T	D			BLOWDOWN SAMPLE VLV (1FCV-SS02) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	018569	072377	C	AV	B24	T	D			S/G BLOWDOWN VLV (1FCV-B017) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
L	Z11	020565	012578	C	AV	B24	T	D			CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021138	040878	C	AV	B24	T	D			S/G BLOWDOWN VALVE 1FCV-SS02 FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021140	040878	C	AV	B24	T	D			CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	021973	070778	C	AV	B24	T	D			CONTAINMENT VALVE (1FCV-PR24B) FAILED TO CLOSE	COMMAND/RECURRING SOV FAIL/OIL IN AIR
W	Z11	022514*	083078	C	AV	B24	T	D	03		VALVES 1FCV-W017A/-PR20A/-PR24B FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	022848*	091478	C	AV	B24	T	D	02		VALVES 1 FCV-PR24B/-W017A FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	023125*	112078	C	AV	B24	T	D	02		VALVES 1FCV-PR24B/1FCV-W017A FAILED TO CLOSE	ASCO SOV FAILED IN AIR SYS(OIL IN SYS)
W	Z12	014253	021376	H	MV	A16	T	D			28 SI PHP. SUC. VLV 2MOV-SI8929B FAILED TO OPEN	DIRTY CONT. ON CKT. BRKR. TO HTR. OPERATOR
W	Z12	014523	041176	C	XV	V01	T	D			PRESS REGULATOR VALVE SET FOR TOO HI PRESSURE	PERSONNEL ERROR
W	Z12	021709*	060578	C	AV	F24	T	D	02		TWO AIR OPERATED CONTAINMENT VALVES FAILED TO OPER	COMMAND/OIL IN AIR SYS FAILED SOVS

APPENDIX R

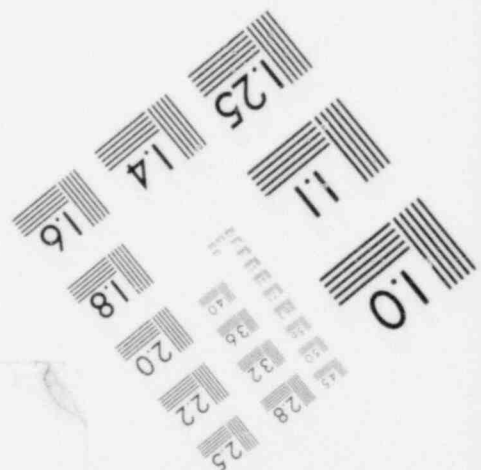
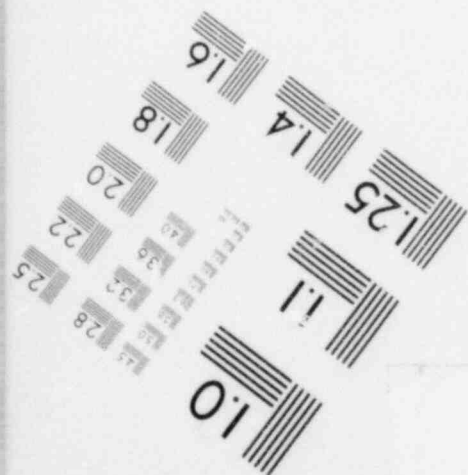
VALVE REPORTS OF ADDITIONAL SAFETY SYSTEMS

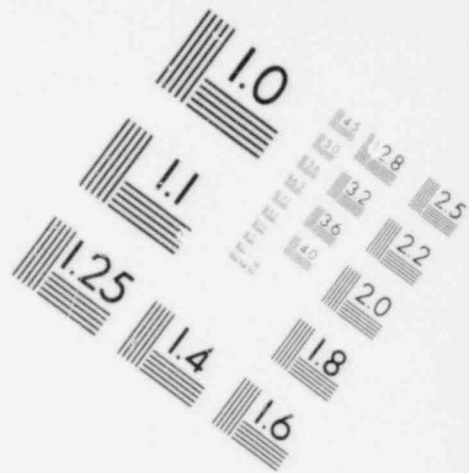
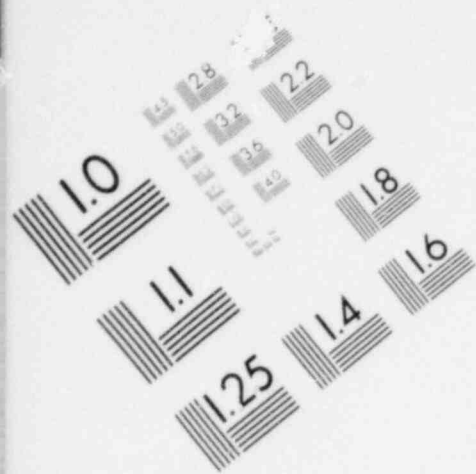


**IMAGE EVALUATION
TEST TARGET (MT-3)**

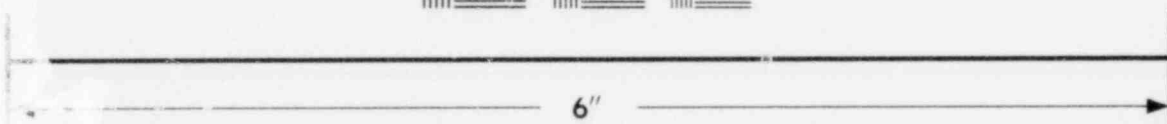
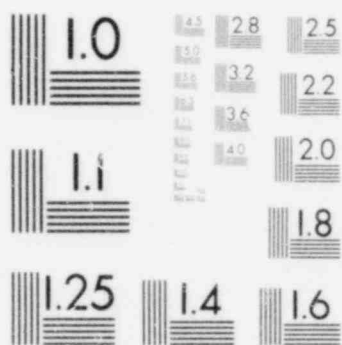


MICROCOPY RESOLUTION TEST CHART

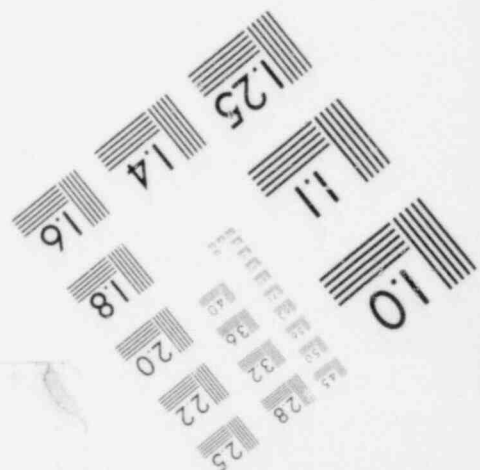
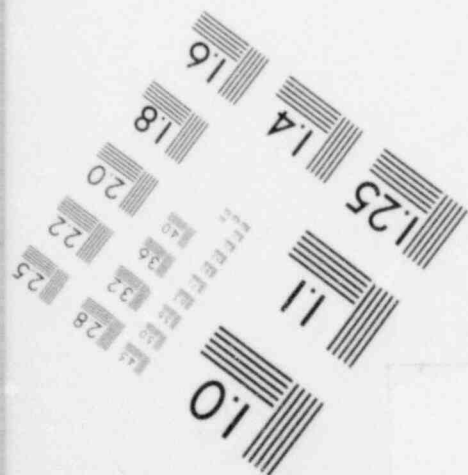




**IMAGE EVALUATION
TEST TARGET (MT-3)**



MICROCOPY RESOLUTION TEST CHART



CONTENTS

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CODES USED IN LER ONE-LINE DESCRIPTIONS

<u>CODE</u>	<u>DESCRIPTION</u>
A	FAILED TO OPEN
B	FAILED TO CLOSE
C	INTERNAL LEAKAGE
D	EXTERNAL LEAKAGE
E	CRACK
F	FRAGMENTATION (VALVES)
G	PLUGGING
H	PLUGGING (CHECK VALVES)
I	PLUGGING (MAIN DRIVEN)
J	PLUGGING (PLACEMENT VALVES)
K	PLUGGING (PLACEMENT VIOLATION)
L	PLUGGING (VALVE CONFIGURATION)

COMPONENT

<u>CODE</u>	<u>DESCRIPTION</u>
MV	MOTOR OPERATED VALVE (ELEC.)
AV	PNEUMATIC OPERATED VALVE
SV	SOLENOID OPERATED VALVE
HV	HYDRAULIC OPERATED VALVE
RV	REMOTE OPERATED VALVE
XV	MANUAL OPERATED VALVE
CV	CHECK VALVE
RV	RELIEF VALVE
DV	DAMPING VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED

TYPE OF EVENT

<u>CODE</u>	<u>DESCRIPTION</u>
B	RECURRING COMMON CAUSE
C	COMMON CAUSE
R	RECURRING
S	COMMAND FAULT
T	RECURRING COMMAND FAULT

<u>CODE</u>	<u>DESCRIPTION</u>
00	UNKNOWN
01	OPERATION
02	MAINTENANCE
03	TESTING
04	CONSTRUCTION/QUALITY CONTROL
05	DISCREPANCY
06	WEAR
07	MATERIAL CONTAMINATION
08	VIBRATION
09	CONTROLS/PARTS; FAILED/CUT OF ADJUST.
10	GASKET FAILURE/PROBLEM
11	PACKING FAILURE/PROBLEM
12	BOOT FAILURE/PROBLEM
13	ELECTRICAL INPUT FAILURE/PROBLEM
14	BEARING/BUSHING FAILURE/PROBLEM
15	WELD FAILURE
16	LUBRICATION
17	ELECTRIC MOTOR OPERATOR FAILURE/PROBLEM
18	ELECTRIC FAILURE/PROBLEM
19	TRIPPED DIAPHRAGM
20	ORQURE SWITCH FAILURE/PROBLEM
21	FAILURE OF COMPONENT SUPPLY SYSTEM
22	SC FAILURE/PROBLEM
23	SWITCH FAILURE/PROBLEM
24	PILOT VALVE FAILURE/PROBLEM

NUMERICAL KEY WORDS

<u>CODE</u>	<u>DESCRIPTION</u>
V	VALVES
A	SOME
VAR	VARIOUS
SEV	SEVERAL
OT	OTHER

EVENT CLASSIFICATION

<u>CODE</u>	<u>DESCRIPTION</u>
D	CHANGE STATE
T	AGE
U	UNKNOWN

ACTIVITY RESULTING IN DISCOVERY

<u>CODE</u>	<u>DESCRIPTION</u>
D	DEMAND ON COMPONENT
M	MAINTENANCE
N	NORMAL OPERATION
R	RECORDS REVIEW
T	TESTING
U	UNKNOWN

NSSS VENDOR

<u>CODE</u>	<u>DESCRIPTION</u>
B	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING
G	GENERAL ELECTRIC
W	WESTINGHOUSE

679

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

<u>CODE</u>	<u>PWR</u>	<u>CODE</u>	<u>BWR</u>
A	-	A	- AUTOMATIC DEPRESSURIZATION
B	- AUXILIARY FEED	BB	-
CC	- CONTAINMENT ISOLATION (INCL PENETRATIONS)	CC	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
EE	- ELECTRIC POWER	CE	- LOW PRESSURE CORE SPRAY
FF	- CONTAINMENT SPRAY INJECTION	EE	- ELECTRIC POWER
GG	- CHEMICAL VOLUME CONTROL (MAKE-UP)	FF	- CONTAINMENT SPRAY INJECTION
HH	- HIGH PRESSURE COOLANT INJECTION	GG	- STANDBY LIQUID CONTROL (BERGN)
II	- COMPONENT COOLING WATER	TT	- HIGH PRESSURE COOLANT INJECTION
J	- REACTOR COOLANT	II	- COMPONENT COOLING WATER
K	- LOW PRESSURE COOLANT INJECTION (RHR)	J	- REACTOR COOLANT RECIRC
L	- REACTOR PROTECTION (CONTROL RODS)	L	- LOW PRESSURE COOLANT INJECTION (RHR)
M	- NONSAFETY-RELATED	M	- CONTROL ROD DRIVE HYDRAULIC (SCRAM)
N	- SYSTEM UNKNOWN/NOT APPLICABLE	NN	- NONSAFETY-RELATED
PP	- CONTAINMENT FAN COOLING SYSTEM	P	- SYSTEM UNKNOWN/NOT APPLICABLE
SS	- SERVICE WATER	QQ	- REACTOR CORE ISOLATION CYCLING
UU	- CONDENSATE AND FEED	RS	-
VV	- MAIN STEAM	SS	- SERVICE WATER
XX	- REACTOR PROTECTION (PPS)	TY	- STANDBY GAS TREATMENT
YY	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.	UU	- CONDENSATE AND FEED
Z	- FAILED FUEL ELEMENT DETECTION	VV	- MAIN STEAM
		XX	- REACTOR PROTECTION (PPS)
		YY	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
		Z	- FAILED FUEL ELEMENT DETECTION

CONTAINMENT ISOLATION--PWR

EVENT	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CUMPH	KEY		FAILURE MODE	FAILURE MECHANISM
B	CR3	C19525	102877	C	AV	A24	S	D				VALVE MSV-130 WOULD NOT OPEN	FOREIGN PARTICLES IN ACTU.OF AIR SOL.VLV
C	SL1	C22227	073178	C	AV	A24	S	D				ACV (1FC-25-B) FAILED CLOSED/AIR TO VALVE SECURED	SCV DIAFFRAGM LEAKED/COMMAND FAULT
B	CR3	C19306	091477	C	AV	B23	T					CONT.ISO.VLV CAV-126 WOULD NOT CLOSE	SHIFT IN TORQUE SWITCH SETTING
E	Y11	018256	052477	C	AV	B27	T					AC VALVE RB-V7 FAILED TO CLOSE DURING TESTING	ASCO SOLENOID PILOT VALVE FAILED/DIRT
L	M14	C23565	122778	C	AV	B24	S	D				ISCL VALVE 2-SW-3.2A FAILED TO CLOSE	SOV IN AIR LINE TO VALVE REPLACED
W	NA1	C22569*	052778	C	AV	B24	S	D	02			CNTNMNT ISO VALVES TV-CC-1020,102F FAILED TO CLOSE	FAILURE OF SOLENOID SUPPLY VALVES
W	FT2	C20355	050877	C	AV	B24	T	D				ISCL VALVE FAILED TO CLOSE/COMMAND FAILURE	3/4 SOLEN VAL FAILED DUE TO WEAK SPRING
W	RG1	C14168	020778	C	AV	B16	S	D				SUMP A DISCHG. ADV FOR CONT.ISO.WOULD NOT CLOSE	FAILURE OF MG-6 RELAYS IN "A" SAFEGUARDS.
W	RC1	C17699	022876	C	AV	B12	D					AD BUTTERFLY VALVE FAILED TO CLOSE FULLY	SCORED PISTON SHAFT/EXCESSIVE FRICTION
W	Z11	C13942	010778	C	AV	B08	R	D				NITROGEN GILL VLV (1SI8880) FAILED TO CLOSE	GALLED VALVE INTERNALS
W	Z11	C14920	051876	C	AV	B08	R	D				NITROGEN FILL VALVE(1SI8880) FAILED TO CLOSE	GALLED VALVE INTERNALS/PROCEDURES REVISED
W	Z11	C15842	081176	C	AV	B24	T	D				VENT ISOLATION VALVE (1FCV-VN028) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/CONTROL AIR
W	Z11	C15843	081176	C	AV	B24	T	D				CONTAINMENT ADV (1FCV-WD17A) FAILED TO CLOSE/TEST	COMMAND FAULT/SOV FAILED/CONTROL AIR
W	Z11	C15844	081176	C	AV	B24	T	D				CONTAINMENT ADV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SOV CONTROLLING AIR FAILD
W	Z11	C17727	042577	C	AV	B24	T	D				SAMPLE ISOLATION VLV (1FCV-PR24A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	C18568	072377	C	AV	B24	T	D				BLOWDOWN SAMPLE VLV (1FCV-SS02) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	C18569	072377	C	AV	B24	T	D				S/G BLOWDOWN VLV (1FCV-BD17) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	C20565	012578	C	AV	B24	T	D				CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	C21138	040878	C	AV	B24	T	D				S/G BLOWDOWN VALVE 1FCV-SS02 FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV
W	Z11	C21140	040878	C	AV	B24	T	D				CONTAINMENT VALVE (1FCV-VN02A) FAILED TO CLOSE	COMMAND FAULT/SOV FAILED/NO AIR TO ADV

CONTAINMENT ISOLATION--PWR

SY	UNIT	CONT.NO.	EVENT DATE	SY	COMP	FAIL CODE	TYPE	CLASS	CLAS	KEY	FAILURE MODE	FAILURE MECHANISM
W	Z11	021973	070778	C	AV	B24	I	D			CONTAINMENT VALVE (1FCV-PR24B) FAILED TO CLOSE	COMMAND/RECURRING SOV FATI/OIL IN AIR
W	Z11	022514*	083078	C	AV	B24	T	D	G3		VALVES 1FCV-WD17A/-PR20A/-PR24B FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	022848*	091478	C	AV	B24	T	D	G2		VALVES 1 FCV-PR24B/-WD17A FAILED TO CLOSE	COMMAND/RECURRING/OIL IN AIR FAILS SOV
W	Z11	023125*	112078	C	AV	B24	T	D	G2		VALVES 1FCV-PR24B/1FCV-WD17A FAILED TO CLOSE	ASCG SOV FAILED IN AIR SYS(OIL IN SYS)
W	Z12	014043	010578	C	AV	B19	R	T			SAMPLE VALVE (2559359B) FAILED TO CLOSE	MECHANICALLY BOUND/NEEDED LUBRICATION
W	Z12	013951	010878	C	AV	B14	R	T			SAMPLE ISOL ADV (2559356A) FAILED TO CLOSE	STEM BINDING ON PACKING/LOOSENEED PACKING
W	Z12	010204*	082877	C	AV	B12	D	G2			ISOLATION VALVES (2ACV-559354A/B) FAILED TO CLOSE	WEAK CLOSING SPRING/STEM MISALIGNMENT
F	RS1	019535*	092177	C	AV	G25	L	T	G2		RB PURGE INLET & OUTLET VALVE LEAKED THRU ON LLRT	SEAT DEGRADATION ON 66 IN BUTTERFLY VALVE
C	PA1	014522	032878	C	AV	G25		T			ISO VAL CV-1101 LEAKING INTERNALLY	TEFLON VALVE SEATS WORN (NORMAL WEAR)
L	PA1	019406	081477	C	AV	G25		T			PURGE AIR EXHAUST ISC VLV LEAKING INTERNALLY CV-18	WORN RUBBER VAL DISK SEAT
C	PA1	019546*	101877	C	AV	G25	U	G2	V		CONTNMENT PURGE ISO VALVS LEAKING AFTER MODIFICATION	VALVES NOT SEATING PROPERLY
W	PT2	014158	022078	C	AV	G10	R	T			LRT BETWEEN PURGE SUPPLY WAVES SHOWED INTERNL LEAK	DIRT IN VALVE/CLEANING STOPPED LEAKAGE
W	RG1	013555*	011178	C	AV	G25	B	U	G2		CV PURGE SUPPLY/EXHAUST VALVE LEAKED THRU/TESTING	RUBBER SEAT SHOES REALIGNED/LOW TEMP PROB
W	RG1	018078*	020778	C	AV	G00	B	U	G2		CV PURGE EXH & SUP VALVES LEAKED THRU DURING TEST	UNKNOWN
W	Z11	016044	092178	C	AV	G25	R	T			CONTAINMENT PURGE ADV-RV002 LEAKED THRU	BULGE ON SEATING SURFACE OF BUTTERFLY VAL
W	Z11	016377*	110478	C	AV	G25	B	T	G2		VALVES 1A0VRV0002/1A0VRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	016609*	112278	C	AV	G25	B	T	G2		VALVES 2A0VR0002/2A0VR0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	017042*	011677	C	AV	G25	B	T	G2		VALVES 1A0VRV0002/1A0VRV0004 LEAKED THRU	SEATS SHRUNK AWAY FROM VALVE BODY/COLD
W	Z11	017254*	021377	C	AV	G10	B	T	G2		VALVES 1A0V-RV0002/RV0004 LEAKED THRU	EXTRANECLS MATERIALS CAUGHT IN THEIR SEAT
W	Z11	019185*	050177	C	AV	G25	B	D	G2		VALVES 1RV0001/1RV0003 LEAKED THRU	SEATS WERE OUT OF ADJUSTMENT

CONTAINMENT ISOLATION--PWR

Y E A R	PLANT	CUNIT.NO.	EVENT DATE	SYS	CUM P	FAIL CODE	T Y P E	C L A S S	C O N T R I B U T I O N	Y E A R	FAILURE MODE	FAILURE MECHANISM
W	Z11	020000	120877	C	AV	C25	R	T			VALVE 1A0V-RV0002 LEAKED THRU	SEAT CONTRACTION DUE TO LOW TEMPERATURE
W	Z12	015163	031576	C	AV	C25	R	T			CONTAINMENT PURGE ISOLATION ADV LEAKED THRU	VALVE SEAT INADEQUATELY TORQUED/42" BUTFLY
W	Z12	017728	040577	C	AV	C25	R	T			CONTAINMENT PURGE VALVE (2A0V-RV0002) LEAKED THRU	SEATS CONTRACTED/LOW TEMP/42" BUTTERFLY
W	Z12	020262	010978	C	AV	C25	R	T			CONTAINMENT VLV (2A0V-RV0002) LEAKING THRU	SEAT SEPARATED FROM VALVE DISC/LOW TEMP
B	DF1	015530	081076	C	AV	F24	T	D			VALVE FR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
D	UE1	017473	032677	C	AV	F24	T	D			VALVE PR-2 FAILED IN INTERMEDIATE POSITION	RUPTURED DIAPHRAGM, AIR SUP. SYS. EXH.
C	PA1	021493	080478	C	AV	F02		D			THE T-RING IN CY-1806 WAS NOT PRESSURIZED	INCORRECT REASSEMBLY OF AIR SUP TO CY1806
W	DC1	014549*	090576	C	AV	F24	S	D	02		VALVES CCR-460462 FAILED TO CLOSE IN REQUIRED TIME	WRONG SIZE TUBING(VENT)FROM VALVE(DESIGN)
W	Z11	016181	093076	C	AV	F24	T	D			CONTAINMENT VALVE (1FCV1A018) FAILED TO OPERATE	OIL IN AIR SUPPLY GOT LN SCLENCID PLUNGER
W	Z11	017252	020377	C	AV	F00		U			PENETRATION PRESSURIZATION VALVE FAILED TO OPERATE	FAILED REGISTER RELAY IN VALVE CONTROLLER
W	Z12	021709*	060578	C	AV	F24	T	D	02		TWO AIR OPERATED CONTAINMENT VALVES FAILED TO OPER	COMMAND/CIL IN AIR SYS FAILED SOVS
C	PA1	019405	091677	C	AV	104		D			CONTAINMENT PURGE ISO VLVS NEED REDUNDANT AIR SUPPLY	DESIGN ERROR IN ORIG SYST DESIGN
B	DB1	021579	050978	C	CV	DC5		D			CONT.VAC.RELIEF CV-5070 HAD EXCESSIVE LEAKAGE	DEF. INITIAL INSTAL. OF TEST CONN. PIPING
B	DB1	021578	051178	C	CV	DC5		D			CONT.VAC.RELIEF CV-5076 HAD EXCESSIVE LEAKAGE	VLV NOT PROPERLY SEATING AGAINST VLV LINE
D	DB1	021849*	060778	C	CV	E08		T	06		6 CONT.ISO.CK.VLVS SHOWED EXCESSIVE LEAKAGE	PART OF CRT OR WEARPIPING PREV. SEATING
C	SL1	021524*	042078	C	CV	E25		D	02		TWO VENT VALVES (V-25-20/FCV-25-3) LEAKED THRU	SEAT PROBLEMS/1-CLT, 2-SMALL DEPRESSION
W	DC1	017245*	022277	C	CV	E10	B	T	C2	V	CHECK VALVES FAILED LEAKRATE TEST	LAKE WATER DEPOSITS ON SEATING SURFACES
W	DC1	021769*	062178	C	CV	E10	B	T	C2	V	CHECK VALVES FAIL LEAKRATE TESTING	LEAKAGE PAST SEAT/PROBABLE FOREIGN MATER
W	HN1	019699	110377	C	CV	E25		T			VALVE CC-CV-721 DID NOT SEAT PROPERLY	FAILURE OF SEATING SURFACE
W	PR1	017488*	032477	C	CV	E10	C	T	06	Z	LEAKRATE TEST SHOWS 3 PENETRATIONS LEAKING THRU	FOREIGN MAT ON SEATING SURFACES

CONTAINMENT ISOLATION--PWR

EVENT	CONT.ND.	EVENT DATE	SY	COMP	FAIL CODE	TYPE	CLASS	CN	KEY	FAILURE MODE	FAILURE MECHANISM
W PR2	019604	111377	C	CV	E00	U				CONTAINMENT ISOL CHECK VALVE 2VC-8-5 LEAKING THRU	UNKNOWN/VALVE WAS REPLACED
W PT2	014369	030876	C	CV	E25	R	T			CV 2-755A IN CCW SYSTEM FAILED LEAKRATE TEST	DIRT ON SEATING SURFACES/LAPPED SURFACES
W PT2	017404	030977	C	CV	E25	R	T			4 IN CV IN CCW SYSTEM FAILED LEAKRATE TEST	SEAT/DISC PROBLEM/PROB DUE TO NORMAL WEAR
W RG1	018076B	020776	C	CV	E00	U				CHECK VALVE (1713) REVERSE LEAKAG / TESTING	UNKNOWN
W BV1	023214	101278	C	CV	F04	D				1A RCP SEAL INJEC.SPR.LOAD.CKVL OPEN.PRESS.TG HIGH	CHECK VLV. HAD IMPROPERLY DESIGN. SPRING
L LB1	022051	072478	C	CV	102	D				FLOOR DRAIN FLAPPER VLV REMOVED,MODE4 OPERJTS VIO.	PERSONNEL ERROR MAINTENANCE
B DE2	017225	011377	C	MV	A23	U				VALVE 2B5-2 FAILED TO OPEN	TORQUE & LIMIT SWITCHS OUT OF ADJUSTMENT
W SA1	017701	042977	C	MV	A01	D				RC CONT. ISOLATION VLV (1CV68) FAILED TO OPEN	PERSONNEL/VALVE HAD BEEN JAMMED SHUT
W SA1	022425	082278	C	MV	A20	U				PCV (1CC190) FAILED TO OPEN	MOTOR OPER FAILED / SERVICE H2O FLOGGED
B CR3	017656A	041577	C	MV	B16	S	D			MLV-258 FAILED TO CLOSE;CONTAINMENT ISOLATION VLV.	INOPERABLE DUE TO DIRTY CONTROL CONTACTS
B CR3	020752B	021078	C	MV	B23	D				VLV CAV-1 FAILED TO CLOSE; VIOLATED T.S. REG.	VLV HAD INCORRECT TORQUE SWITCH SETTING
B DE2	019686	041977	C	MV	B00	U				ISOL VAL 2CS-5 WOULD NOT CYCLE FROM OPEN TO CLOSE	CAUSE UNKNOWN / REQUIRED EXC.TORQUE
B JE3	020488	020278	C	MV	B23	U				VALVE 3PR-9 FAILED TO CLOSE	TORQUE SWITCH FAILURE
B TI1	016829	052076	C	MV	B23	D				CONTAINMENT ISOLATION MOV FAILED TO CLOSE(WDG-V3)	TORQUE SW PROBLEM(POSS TIGHT PACKING)
B TI1	016116	092276	C	MV	B20	D				CONTAINMENT ISOLATION MOV (CA-V4A) FAILED TO CLOSE	LOOSE LOCKNUT ON VALVE OPERATOR
B TI1	017343	030977	C	MV	B23	D				RC SPRAY PUMP SUCTION VALVE FAILED TO CLOSE/TEST	GREASE IN SPRING PREVENTED TORQUE SW OPER
C CL1	016406	102276	C	MV	B17	D				WHILE DRAIN.CONF.SUMP,MOV-5463 WOULD NOT SHUT	STEM BUSHING INTERNAL THREADS WERE STRIP.
C SL1	015000	052476	C	MV	B02	U				MOV(I-MV-15-1)FAILED TO CLOSE / PREOP TESTING	PERSONNEL MAINT PROBLEM/DIRTY TORQSW CGNT
W SA1	022720	092478	C	MV	B16	S	D			MOV(1CC131) FAILED TO CLOSE / TEST/COMMAND FAULT	CONTACTS FAILED IN CONTROL POWER CIRCUIT
W TR1	020554	012878	C	MV	B16	S	D			CONTAINMENT ISOL MOV-5660 FAILED TO CLOSE	COMMAND/LOOSE ELECTRICAL CONNECTION

CONTAINMENT ISOLATION--PWR

PLANT	CONT. NO.	EVENT DATE	SYSTEM	COMP	FAIL CODE	TYPE	CLASS	CUMULATIVE	MARK	FAILURE MODE	FAILURE MECHANISM
W RG1	018076A	020776	C MV	C00		U	02			TWO MOV (8136814) LEAKED THRU DURING LEAK TEST	UNKNOWN
U CC1	021700	060778	C MV	F26		D				CONT NCR SMP TSC (MOV-5463) DID NOT SHUT IN REG TIM	OPEN LMT. SWITCH WAS OUT OF ADJ. (PROCEDURE)
C SL1	010271	061077	C MV	F12		D				MOV (I-MV-15-1) FAILED TO OPERATE	FAILED ACTUATING NUT ON MOTOR DRIVE
W TK1	0106864*	120976	C MV	F20		C	D 02			CONTAINMENT VALVES (MO-5663/5671) FAILED TO OPERATE	FRICTION IN OPERATOR/INCREASED CLOSE TIME
W Z12	022518	090578	C MV	F20		D				VALVE 2MOV-VC0105 FAILED TO OPERATE DURING TEST	JAMMED MOTOR OPERATOR/LIMIT TORQUE SMO-00
E T12	022386	090778	C MV	IC2		D				DISCOVERED MOV THAT DIDNT HAVE CONT GRADE SWITCHES	--AND MOTOR (WCL-V-2711) // PERSONNEL ERROR
B T12	023076*	090878	C MV	IO2		D	02			MOV (MU-V2A/B) FOUND WITH CONNECTIONS NOT TAPED	PERSONNEL ERROR/INSTALLED SHRINK TUBING
U PA1	021962	062776	C RM	A00		U				CONT. PURGE SUP. VLV (CV-1808) FAILED TO OPEN	NO APPARENT REASON FOUND FOR FAILURE
W PF1	020123	120977	C RM	A16		S	D			#11 CONT. VAC. BRKR. ISO. VLV. FAILED TO OPEN ON DEMND	FAILURE OF BARTON DIFFER. PRESS. SWITCH
B CK3	017656B	041577	C RM	B04		W	D			VLV. CAV-2 FAIL. TO CLOSE; CONTAINMENT ISOLATION VLV	CLOSURE SPRING NOT STRONG ENOUGH
B CR3	018560	071577	C RM	B16		S	D			CONT ISOL VALVE SWV-47 FAILED TO CLOSE	LOOSE WIRE/CONTROL PWR TO LIMIT SWITCH
B CK3	022359	090778	C RM	B23		U				CORE FLOOD VALVE CFV-15 FAILED TO CLOSE ON TEST	FAULTY TORQUE SWITCH
B DE3	017061	012677	C RM	B10		T				CONTNMENT ISO VAL BRC-7 FAILED TO CLOSE	PAINT ON VLV STEM PREVENT. PROP. FUNCT.
F DE3	017451	032277	C RM	B14		I				FEEDWATER CONTNMENT ISO VAL BFCW-106 FAIL TO CLOSE	HARDENING OF VALVE PACKING
B T11	014988	052176	C RM	B14		T				CONTAINMENT ISOLATION VALVE MU-V28 FAILED TO CLOSE	BINDING OF PACKING AND/OR STEM (ROCKWELL)
E T12	021611	041978	C RM	B23		D				CONT. ISO. VLV CA-V3 FAILED TO FULLY CLOSE ON AUTO	--SIGNAL//INCORRECT TORQ. SWITCH SETTING
B TT2	022385	090878	C RM	B00		U				CONTAINMENT ISOL VALVE (WDL-V1125) FAILED TO CLOSE	UNKNOWN/COULD NOT BE REPEATED
U T12	023429*	121378	C RM	B16		S	D 04			FOUR CONT ISOL VALVES FAILED TO CLOSE ON TEST	RELAY FAILED TO PROVIDE LOGIC SIGNAL
C MI2	019931	101477	C RM	B16		S	D			CONT. ISO. VLV 2-RC-002 FAILED TO SHUT ON COMMAND	CONDUCTORS FOR VLV OPERATOR WERE SHORTED
C MY1	020762	021678	C RM	B10		T				VALVE DR-A-6 FAILED TO FULLY CLOSE	PARTICLE LOGGED IN VALVE SEAT

CONTAINMENT ISOLATION--PWR

VEN	PLAN Y	CCN1.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CHN	KEY	FAILURE MODE	FAILURE MECHANISM
W	DC1	0166C7	120776	C	RM	B12	U				S/G SAMPLE ISOLATION VALVE FAILED TO CLOSE	LOOSE BLOCK BETWEEN STEM AND ACTUATOR
W	Kc1	016975	011777	C	RM	B14	T				VALVE BT-3A FAILED TO CLOSE (BLOWDOWN ISO VLV)	OVERTIGHT PACKING
W	PR1	017467	031677	C	RM	B22	T				VACUUM BREAKER ISOLATION VALVE FAILED TO CLOSE	DIAPHRAGM DETERIORATED IN VALVE
W	SL2	019752	111477	C	RM	B04	R	D			SAMPLING VALVE TV-SS-202A FAILED TO CLOSE	DESIGN DEFICIENCY/CLOSING SPRING TOO WEAK
W	YR1	018204	061177	C	RM	B02	D				DRAIN VALVE (TV-209) FAILED TO CLOSE / TESTING	PERSONNEL MAINTENANCE/PACKING TOO TIGHT
U	AR1	018854*	072677	C	RM	C10	C	T	02	V	ISOLATION VALVES LEAKED THRU DURING CONT LEAK TEST	FOREIGN MATERIAL PROBABLY CAUSED LEAKAGE
B	T11	01683C*	051076	C	RM	C07	T	G3	A		SOME VLVS LEAKED THRU ON CONTAINMENT LEAKRATE TEST	NORMAL WEAR
B	T11	01683CA	051076	C	RM	C04	D				VALVE LEAKED THRU DURING CONTAINMENT LEAKRATE TEST	DESIGN IMPROPER
B	T11	01683CB	051076	C	RM	C05	C	D	02		2 VALVES LEAKED THRU ON CONTAINMENT LEAKRATE TEST	FAB ERROR/SEAT RINGS WELDED IMPROPERLY
C	FC1	019621*	112777	C	RM	C00	U	02	V		POSSIBLE INTERNAL LEAK OF CNTMNT PURGE VALVES	CAUSE OF LEAKAGE NOT GIVEN
U	FC1	023140*	120578	C	RM	C25	U	02	V		CENT PURGE VALVES LEAKING THRU	MODIFICATIONS DONE DURING REFUEL OUTAGE
C	RY1	022144	072178	C	RM	C10	T				CNTMNT ISO VALVE PG-A-122 LEAKING INTERNALLY	PLASTIC ELECT TIE-WRAP LODGED
*	BV1	023318*	122078	C	RM	C12	C	D	02	V	CONT. AIR EJECTOR PENET. ISO. VLVS. LEAKING	RUBBER VLV. SEAT WARPED & UNABLE TO SEAL
W	CC1	014736*	050276	C	RM	C25	C	T	G3	B	VALVES LEAKED THRU DURING CONTAINMENT ISOL TESTING	SEAT PROBLEMS/DEPOSIT BUILDUP AND WEAR
W	CC1	017445A	022277	C	RM	C12	B	U	G3	S	SEVERAL CONTAINMENT ISOLATION VALVES LEAKING THRU	LOOSE ACTUATORS WERE PRIMARY CAUSE
W	DC1	021765A	062178	C	RM	C12	B	D	02	V	CONTAINMENT PURGE VALVES LEAKING THRU ON TESTING	ADJUSTMENT OF BUTTERFLY VALVE/DESIGN PROB
W	IP2	0142C9	012376	C	RM	C25	T				INTERNAL LEAKAGE THROUGH VLV FCL 171	DISK DID NOT SEAT PROPERLY
W	KE1	016586*	020377	C	RM	C25	T	04			EXCESS LEAKAGE THROUGH CNTMNT ISO VLVS (FOUR)	FAILURE OF RUBBER VALVE SEATS
W	KE1	018C46A	032177	C	RM	C12	D	G3			EXCESS LEAKAGE THROUGH CNTMNT ISO VALS (THREE)	VALVE STROKE ADJUSTED
W	KE1	018C46B	032177	C	RM	C25	T				EXCESS LEAKAGE (INTERNAL) CNTMNT ISO VLV	VALVE SEAT CLEANED

CONTAINMENT ISOLATION--PWR

V E N T	P L A N T	C E N T. N O.	E V E N T D A T E	S Y S	C O M P	F A I L C O D E	T Y P E	C L A S S	C N M U M	K E Y	F A I L U R E M O D E	F A I L U R E M E C H A N I S M
W	KE1	G18046C	032177	C	RM	C12	D				EXCESS INTERNAL LEAKAGE CNTNMPNT ISC VLV	VAL INTERNALS CUT OF ADJ
W	PR1	G17468A	032477	C	RM	C25	C	T	02	V	PURGE SUPPLY VALVES(BUTTERFLY)/LEAKED THRU	SEAT FRIELEM/REPLACED SEATS
W	PR2	015335	060676	C	RM	C25	T				NITROGEN SUPPLY VALVE CV-31554/EXCESSIVE LEAKAGE	NEW SEAT AND GASKETS WERE INSTALLED
W	PR2	016354*	112276	C	RM	C12	D	03			VALVES IN 3 PN SHOWED EXCESSIVE LEAKAGE/TESTING	1REPLACE STEM/SEAT2JAMPED NUT3MALADJUSTED
W	PR2	016547	011177	C	RM	C25	D				CONTAINMENT ISOLATION VALVE CV-31349 LEAKING THRU	GALLED CAGE AND PLUG STEM/REPLACED SAME
W	PR2	023222*	112878	C	RM	C25	B	U	02		OUTER CONT. EXH & SUPPLYS(25A&25B) LEAKING THRU	SEATS NOT ADJUSTED PROPERLY(RECURRING)
A	PT1	014057*	010876	C	RM	C12	D	09			NINE VALVE FAILURES/INTERNAL/EXTERNAL LEAK/TESTING	LGOSE BODY TO BONNET/IMPROPER SEATING
W	PT2	014451	042376	C	RM	C10	T				CONTAINMENT SUPPLY VALVE 2CV-3245 LEAKED / TEST	DIRT ON PATING SURFACES OF BUTTERFLY VALV
W	RD2	G19343	061077	C	RM	CC7	R	T			CV PURGE OUTLET INNER VALVE NOT OPERABLE	EXCESSIVE INTERNAL LEAKAGE THROUGH VALVE
W	RD2	C22681	100378	C	RM	C25	T				42IN BUTTERFLY VAL LEAKING PAST SEAT	NORM WEAR OF NORDOL RUBBER SEAT
W	YR1	C18872	081777	C	RM	Q25	D				EXCESSIVE LEAKAGE THRU (TV-211) CONTAINMENT VLV	WORN SEAT AND DISC
W	YR1	G18872A	081777	C	RM	C22	T				EXCESSIVE LEAKAGE THRU (TV-408) CONTAINMENT VLV	DETERIORATED DIAPHRAGM
W	YR1	023146	120578	C	RM	C10	T				TRIP VALVE TV-207 (CONTAINMENT ISOLATION)LEAK THRU	SUSPECTED FOREIGN MATERIAL UNDER SEAT
C	FC1	021528	051478	C	RM	C14	T				VALVE PCV-742D LEAKING EXTERNALLY	VALVE PACKING TIGHTENED
C	PA1	C15438	062376	C	RM	C14	T				VALVE CV 1868 LEAKING IN EXCESS OF T.S.	VALVE PACKING FAILURE
B	CF3	G18559	071577	C	RM	F26	T				CONT ISOL VALVE WCV-94 FAILED TO OPERATE	DIRTY LIMIT SWITCH CONTACTS
F	CF3	G19578*	121477	C	RM	F16	S	D	03		3 VALVES,B5V-17,CFV-156WCV-94 FAILED TO OPERATED	ONE RELAY FAILED/INSUL BETW CONTACTS(CC)
B	CB1	021853*	062578	C	RM	F16	S	D	02		TWO CONT ISOL VALVES(C14078&CC14118)FAIL TO OPER	BROKEN WIRES AT CONNECTORS(CLLMSINESS)
S	EE2	016210	100776	C	RM	F12	D				VALVE 2LWD-1 INOPERABLE	COMPRESSION FCOTROLL PIN BROKEN
B	DE3	016500	112176	C	RM	F00	U				CNTNMNT FEED WATER ISO VAL INOPERABLE	CAUSE UNKNOWN (PROBABLE INTERNAL PROBLEM)

CONTAINMENT ISOLATION--PWR

EVENT	PLANT	COUNT.NO.	EVENT DATE	SYM S	FAIL CODE	TYPE	CLASS S	CLASS PH	KEY	FAILURE MODE	FAILURE MECHANISM
V	JF1	022588	100978	C RM	F22	D				INST AIR PRESSURE CONTROL VALVE FAILED OPEN	DIAPHRAGM FAILED
W	Z11	021231	041478	C RM	F12	D				PRESSURE CONTROL VALVE (PCV-PP04) FAILED TO OPER.	VALVE WAS OUT OF ADJUSTMENT
W	Z12	018392	062877	C RM	F12	D				LCW FLOW REG VLV (2PCV-MT03) FAILED TO OPERATE	BINDING BETWEEN PLUG AND SEAT
W	IP2	016467*	120276	C RM	I04	R D	C7			ELEC.CIRC.FDR 4CONT.ISO.VLV543CONT.REL.VLV.NGT ME-	-ET SING.FAIL.CRIT(1 SOURCE PWR)//DESIGN
W	IP2	019281*	101977	C RM	I04	R D	02 V			AIR EJECT.LINE CONT.ISO.VLV.CIRCUITRY DID NOT MEE-	-T SINGLE FAIL.CRIT(1 SOURCE PWR)//DESIGN
C	H12	022134	072578	C RM	V06	S D				CONTNMT PURGE VALVES OPERATED IN IMPROPER MODE	INADAQUATE CNTNMT PLRGE PROCEDRES
C	FA1	022226	082878	C RM	V02	S D				CNTNMT PURGE & ISO. VALVES OPEN IN VIOL. CFT.S.	IMPROPER TAGOUT OF VALVES/PERSONNEL ERROR
W	CC1	021220	042078	C RM	V01	S D				CONT PURGE SUPPLY&EXHAUST VALVES NOT CLOSED AS R--	--EQUIREC/PERSONNEL ERROR
W	DC2	021393	052078	C RM	V06	S U				CCNT. PURGE VALVES OPENED PRIOR TO ALLOWABLE CONDS	PROCEDURES DIFFER BETWEEN UNITS 1 & 2
W	KE1	016789	011977	C RM	V01	S D				CNTNMT ISO-VALS LEFT OPEN	PERSONNEL ERROR,IMP.VAL.LINEUP
U	CR3	020752A	021078	C SV	B00	R U				VLV CAV-2 FAILED TO CLOSE;VIOLATED T.S. REQ.	CAUSE OF FAILURE NOT GIVEN
W	Z11	017041	012377	C SV	B10	R T				CONTAIN INST AIR SOV (1FCV-1A01B) FAILED TO CLOSE	OIL IN AIR SUPPLY GOT ON SOLENOID PLUNGER
W	Z12	017882	052577	C SV	B10	R T				INST AIR ISOL VALVE (2FCV-1A01B) FAILED TO CLCSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS.
W	Z12	016255	061577	C SV	B10	R T				INST AIR ISOL VLV (2FCV-1A01B) FAILED TO CLOSE	SOV FAILED DUE TO IMPURITIES IN AIR SYS
W	Z12	021451	050978	C SV	B10	R T				INST AIR ISOL VALVE 2FCV-1A01A FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/HEAT-VARNISH
W	Z12	021928	070378	C SV	B10	R T				INST AIR ISOL VALVE 2FCV-1A01B FAILED TO CLOSE	OIL IN AIR SYS FAILED SOV/RECURRING)
P	LE1	017226	022577	C SV	F21	U				HPI LETDOWN ISO.VLV.,IHP-5, FAILED(CONT.ISO.VLV.)	ELECTRICAL FAILURE OF THE SOLENOID COIL
W	Z12	021709A	066578	C SV	F10	R T				INST AIR ISOL VALVE 2FCV-1A01A FAILED TO OPERATE	OIL IN AIR SYS FAILED SOV/VARNISH BUILDUP
B	T11	017610*	032477	C DV	C07	K T	G3 S			LOCAL LEAKRATE TESTING IDENTIFIED SEVERAL VALVES--	--LEAKING THRL//NCRMAL WEAR
C	CC1	014700	041976	C LV	C10	U				DRAIN LINE ISOLATION VALVE LEAKING THRL ON TESTING	FOREIGN MATERIAL&FREQ USE,DAMAGED SEAT

CONTAINMENT ISOLATION--P. 2

VEN	PLANT	CONT. NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	CMPL	KEY	FAILURE MODE	FAILURE MECHANISM
W	EV1	023216*	110878	C	UV	CGO	U	12			12 VLVS FOUND LEAKING DURING CONT. PENET. LEAK TEST. NO CAUSE FOR LEAKAGE GIVEN	
W	NA1	021502	051078	C	UV	T02	D				TV-SS112A WAS NOT TIMED PRIOR TO RETURNING TO SERV MAINTAINANCE PERSONNEL ERROR	
W	RV1	015073	061276	C	UV	V01	T	D			VLVS HCV-CV-151, 151-1 WERE OPENED IN VIOL. OF T.S. OPER. ERROR, USED IT.S. WHICH VIOL. ANOTH. T.S.	
W	ZI2	017467	031077	C	UV	V01	S	D			VLVS. 21W01546019 OPEN WHEN REQ. TO BE CLOSED PERSONNEL ERROR	
C	CC2	019432	101177	C	XV	C12	D				CONT. ISO. VLV FOR PLANT SER. WTR. LEAKING BY SEAT BENT VLV. STM. PREVENTED VLV FROM SEATING	
W	NA1	022267	081078	C	XV	TC1	D				INSTRUMENT AIR VALVE NOT UNDER SURVAIL AS REQC OPERATIONS PERSONNEL ERROR	
B	CP3	020478	020178	C	XV	V01	S	D			NITROGEN VLV NGV-81 WAS OPEN CONTRARY TO T.S. PERSONNEL ERROR	
B	DE2	015538	070676	C	XV	V01	S	D			VALVES 21A-90 AND 91 NOT IN PROPER LINE UP PERSONNEL ERROR	
C	MY1	015731	091676	C	XV	VC2	S	D			INCORRECT VLV LINEUP CONTNMNT ISO SYSTEM PV-15 PERSONNEL ERROR/FAILED TO CLOSE	
C	PA1	021322	042178	C	XV	V01	S	D			CONTNMNT SERV AIR VAL OPENED IN VIOL OF T.S. PERSONNEL ERROR	
W	ZI2	014523	041176	C	XV	V01	T	D			PRESS REGULATOR VALVE SET FOR TOO HI PRESSURE PERSONNEL ERROR	

 CHEMICAL VOLUME CONTROL (MAKE-UP)--PWR

W N	P L A N T	C O N T. N O.	E V E N T D A T E	S Y S T E M	C O M P	F A I L C O D E	T Y P E	C L A S S	C O N T R O L N U M B E R	K E Y	F A I L U R E M O D E	F A I L U R E M E C H A N I S M
C	CC1	015124	052776	G	AV	A22	D				THE VCT MAKE-UP STOP FAILED TO OPEN	RUPTURE OF VLV CONTROL DIAPHRAGM
C	MY1	017862	060277	G	AV	F12	D				LETDOWN PRESS.CONT.VLV LD-F-16 OSCILLATING RAPID.	BELTS ON OPER. LOOSE / OPER. FELL OFF
C	FC1	017749A	042577	G	CV	E60	R	U	02		VALVES CH-284+HG-100 LEAKING INTERNALLY	UNDER INVESTIGATION
C	FL1	022468A	090878	G	CV	E60	R	U	02		CVS CH-284 + HG-100 LEAKING INTERNALLY	CAUSE UNKNOWN
W	SL2	015529*	081376	G	CV	E60	U		02		T&C CHECK VLVs (2-S1-149/147) LEAKING THRU	UNKNOWN
W	YR1	019641	110277	G	MV	A00	U				MOV (PL-MOV-547) FAILED TO OPEN DURING TESTING	UNKNOWN/SUSPECT DAMAGED MOTOR CABLE
W	ZI2	022519	090678	G	MV	A00	U				RWST OUTLET VALVE 2MOV-VC112E FAILED TO OPEN	UNKNOWN
B	CE2	017541	040577	G	MV	B12	D				VALVE 2LP-21 FAILED TO CLOSE	LOOSE SET SCREW ON PINION GEAR OF MTR SFT
W	CC1	016266	062477	G	MV	B10	T				CHARGING HEADER MD ISOLATION VALVE FAILED TO CLOSE	BERIC ACID CRYSTALS ON STEM
W	SU1	014868	042976	G	MV	B23	U				MOV (1381) FAILED TO CLOSE	TORQUE SW CONTACT PROBLEM
W	ZI1	017038	012877	G	MV	B19	T				CHARGING LINE VLV(1MOV-VC8106) VLV FAILED TO CLOSE	LACK OF STEM LUBRICATION CAUSED BINDING
W	ZI2	014219	021376	G	MV	B16	S	D			CHRG PUMP VALVE 2 MOV-VC8106 FAILED TO CLOSE/TEST	COMMAND/STUCK CONTACTS IN MCC BREAKER
W	ZI2	017811	052077	G	MV	B23	T				2MOV-VC8111 FAILED TO FULLY CLOSE	TORQUE SW SETTING OUT OF ADJUSTMENT
W	SL2	016664	123076	G	MV	C00	U				VALVE IN BORON SYSTEM LEAKING THRU REDUCING PPM	UNKNOWN
W	SL2	019566*	103177	G	MV	C00	R	U	02		MOV-2867C/D LEAKED THRU/BIT ISOLATION VALVES	UNKNOWN/RECURRING
W	SL2	019743*	110977	G	MV	C00	R	U	02		MOV-2867C/D LEAKED THRU / BIT ISOLATION VLVs	UNKNOWN/RECURRING
W	ZI2	018537*	072177	G	MV	C12	B	U	02		VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BORON	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
W	ZI2	018720	081177	G	MV	C12	R	D			VALVE 2MOV-VC8801B LEAKING THRU DILUTING BORON CON	DARLING 4" GATE VALVE REQUIRED ADJUSTMENT
W	ZI2	019500*	101277	G	MV	C12	B	T	02		VALVES 2MOV-SI8801A/B LEAKING THRU DILUTING BORON	DARLING 4" GATE VALVES REQUIRED ADJUSTMENT
C	MI2	017113	012077	G	MV	F12	D				VALVE 2-CH-514 WOULD NOT OPERATE	VALVE FAILED DUE TO INTERNAL BINDING

CHEMICAL VOLUME CONTROL (MAKE-UP)--PWR

EVENT	PLANT	CONT.NO.	EVENT DATE	STATUS	SPND	FAIL CODE	TYPE	SUSP	RECN	MARK	FAILURE MODE	FAILURE MECHANISM
W	SL1	G162C2	100576	G	MV	F20					CHEM ADDITION PDV (MGV-CS-102B) FAILED TO OPERATE	SHORTED MOTOR/CONTACTS CORRODED
W	SL1	G17260	021977	G	MV	F23					CHEM ADDITION PDV (GS-1024) FAILED TO OPERATE	TORQUE SW FAILED TO DEENERGIZE MOTOR
D	ARI	G22339	072078	G	RM	F23					SODIUM THIOSULFATE BLOCK VLV CV-2411 FAIL. TO OPER	TORQUE SETTING OUT OF ADJ; DRY PACKING
C	M12	G16721	121976	G	RM	VC1	S	D			VLV 2-CH-514 WAS NOT RECLOSED FOLLOW. AN SIAS ACTU	PERSONNEL ERROR (VALVE NOT CLOSE PRCP.TIM)
C	FC1	G17745B	042577	G	RV	CG0	R	U			LEAKAGE THROUGH RELIEF VALVE HG-105	UNDER INVESTIGATION
C	FC1	G2246	050878	G	RV	CG0	R	U			RV HG-105 LEAKING INTERNALLY	CAUSE UNKNOWN
C	SL1	G22649	100278	G	RV	CG0		U			1B CHARGING PMP HAD A LEAKING RELIEF VALVE	CAUSE OF LEAKAGE NOT GIVEN
W	PT2	G17806	042077	G	RV	CG0	R	U			LEAKAGE THRU 3/4 INCH DISCHARGE RELIEF VALVE (PLMP)	UNKNOWN/COMPLETED WITH OPERATION
W	PT2	G17859	050377	G	RV	CG0	M	U			LEAKAGE THRU 3/4 INCH RELIEF VALVE/PLMP DISCHARGE	UNKNOWN/VALVE WAS REPLACED
W	PT2	G22841*	091378	G	RV	CG0	C	U	Q2		2-CROSBY 3/4 INCH RELIEF VALVES LEAKED THRU	UNKNOWN/ VALVES WERE REPLACED WITH SPARES
C	CC1	G15271A	062776	G	RV	CG4	C	D			PIN-HOLE LEAK DISCOV. IN BORON #11 BOR. ACID PMP. RELIE	SUC. REL. MADE OF CARBON STEEL; DESIGN ERROR
C	FC1	G20365	011778	G	RV	D11	B	T			WELD ON 1-B CHG PLMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	G20585	021578	G	RV	D11	B	T			WELD ON CH-1A CHG PUMP DISCH RELIEF VALVE CRACKED	VIBRATION OF PIPING IN SERVICE
C	FC1	G21118	040878	G	RV	D11	B	T			WELD ON VALVE CH-219 CRACKED	VIBRATION OF PIPING IN SERVICE
C	PA1	G17981	052677	G	RV	CG2		D			RV-2255 LEAKING EXTERNAL/PART. UNSCREW. FROM COLLET	PERSONNEL ERROR/MAINTENANCE ~PROP. PERF.
C	SL1	G15563	062676	G	RV	D13		T			RELIEF VALVE ON BORON ACID SYSTEM/EXTERNAL LEAKAGE	GASKET FAILED ON INLET TL
W	IP2	G21250	020978	G	RV	H00		U			RV NO.264 RELIEVED BELOW DESIGN SETPOINT	CAUSE UNKNOWN
C	CC1	G15271B	062776	G	RV	104	C	D			#12 BORIC ACID PUMP SUC. RELIEF MADE OF WRONG MATER	DESIGN ERROR
W	ZI2	G19459	081177	G	LV	A22	R	D			DIAPHRAGM GATE VALVE (2VC8465) FAILED TO OPEN	DIAPHRAGM FAILED (GRINNEL CCRF)
B	DE1	G17497	031677	G	LV	B10		T			CAUSTIC DRAIN VLV FAILED TO FULLY CLOSE	CAUSTIC CRIED IN VLV SEAT PREVENTING CLOS

CHEMICAL VOLUME CONTROL (MAKE-UP)--P&R

PLANT	COUNT.NO.	EVENT DATE	SUSP	CUMP	FAIL CODE	TYPE	CLASS	CN	KEY	FAILURE MODE	FAILURE MECHANISM
C PL1	014500*	040876	G	LV	C00		U	C2	V	LEAKAGE BY ICM EXCHANGER CH-8A ISOLATION VALVES	VALVES TO BE INSPECTED/NO CAUSE GIVEN
C MI2	019257	092377	G	UV	C04		D			BORIC ACID LEAKING THROUGH DISCHARGE VALVE	VCT PRESS L.T. HEAD PRESS
W SU1	014670	032676	G	UV	C22	R	D			CV 1-CH-85 RUPTURES DIAPHRAGM/LEAKS THRU VLV	GRINNEL DIAPHRAGM FAILED/NORMAL WEAR
W SU1	015559	082376	G	UV	C22	R	D			DIAPHRAGM VALVE (1-CH-125) LEAKED THRU EXCESSIVELY	RUPTURED DIAPHRAGM/GRINNEL/NORMAL WEAR
W SU1	017052*	012677	G	UV	C22	R	D	02		TWO DIAPHRAGM VALVES (1-CH-83/95) LEAKING THRU	EXCESSIVE DIAPHRAGM WEAR/OVERTIGHTENING??
W SU1	017218	022077	G	UV	C22	R	D			DIAPHRAGM VALVE (1-CH-98) LEAKING THRU	EXCESS DIAPHRAGM WEAR/POSS OVERTIGHTENING
W SL2	018676	081577	G	UV	C22	R	D			DIAPHRAGM VALVE (1-CH-144) LEAKING THRU	CRACKED DIAPHRAGM ON GRINNEL VALVE
W YR1	018267*	062077	G	UV	C00	R	U	G3		EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/VALVES REPAIRED
W YR1	018367*	062777	G	UV	C00	R	U	G3		EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE EVENT/VALVES REPAIRED
W YR1	018420*	070477	G	UV	C00	R	U	G3		EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/VALVES REPAIRED-AGAIN
W YR1	018484*	071177	G	UV	C00	R	U	G3		EXCESSIVE LEAKAGE THRU THREE PURIFICATION VALVES	UNKNOWN/REPETITIVE/POOR PAST REPAIRS
W YR1	018480*	071477	G	UV	C00	R	U	G3		DECIDED TO REPAIR THE 3 PUR VALVES/2 OTHERS ALSO	UNKNOWN PROBLEM/PAST REPAIRS INSUFFICIENT
W Z11	014235	020376	G	UV	C22		T			BORIC ACID VALVE (1VC8446A) FOUND LEAKING THRU	DIAPHRAGM FAILED DUE TO TIME/TEMPERATURE
W Z12	015191	061576	G	UV	C22	R	T			BORIC ACID FILT BYPASS VLV (1VC8468) LEAKING THRU	FAILED DIAPHRAGM ON GRINNEL 2" MCD 2471
W Z12	016342	081476	G	UV	C22	R	T			HOLDUP TANK VALVE DVC8264 LEAKING EXTERNALLY	DIAPHRAGM FOUND RUPTURED
W Z12	017730*	033077	G	UV	C04	B	D	02	V	INJECTION LINE VALVES LEAKING THRU DILUTING BORON	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W Z12	017729*	040177	G	UV	C04	B	D	02	V	INJECTION LINE VALVES LEAKING THRU DILUTING BORON	DESIGN PROB/UNEQUAL PRESS ACROSS SEATS
W Z12	016570	071677	G	LV	C00	R	U			LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN
W Z12	016571	071677	G	UV	C00	R	U			LEAKAGE THRU AT LEAST ONE VALVE DILUTING BORON TK	UNKNOWN
C CC1	021057	041176	G	LV	D14		D			VLV CVC-397(LETDWN.ISO.VLV)HAD EXT.PACKING LEAK	VLV STP.PACKING WAS WORN

CHEMICAL VOLUME CONTROL (MAKE-UP)--PWR

VE N T	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O M P L E T E	K E Y	FAILURE MODE	FAILURE MECHANISM
C	CC1	023381	12C978	G	UV	D18	T	#11	RX.COOL.CHG.PUMP DISCHG.ISO.VLV.LEAK.EXTERNAL.		BODY TO BONNET SEAL WELD FAILURE	
C	CC2	019205	10C477	G	UV	D14	T	LETDOWN	CONT.VLV(2-CV-1100-(V)HAD EXT.LEAK ON PACK		PACKING FAILURE/VLV REPACKED,LEAKAGE STOP	
W	DC1	020324	011078	G	UV	C14	T	EXTERNAL LEAKAGE FROM PRESSURIZER AUX SPRAY VALVE		PACKING FAILURE		
W	SU1	021172	04C778	G	UV	D00	U	DIAPHRAGM VALVE 1-CH-93 DEVELOPED EXTERNAL LEAK		UNKNOWN/BODY TO BONNET LEAK		
W	ZT1	018056	032277	G	UV	C12	D	SENSING LINE VALVE (1VC8157) LEAKED EXTERNALLY		BROKEN PACKING GLAND STUD		
W	SU2	019565	102977	G	UV	G10	T	NO FLOW COULD BE ATTAINED THROUGH FCV-2113A		BORON CRYSTALIZATION ON VALVE SEAT		
W	BV1	021044	033178	G	UV	T03	D	TECH SPEC VIOLATION,VALVE POSITION NOT VERIFIED		PERSONNEL ERROR/FAILED TO SCHEDULE TEST		
B	AP1	015013	021276	G	UV	V01	J D	INCORRECT VALVE LINE-UP/TANK OVERFLOWED		PERSONNEL ERROR		
B	TI1	014220	022176	G	UV	V06	J D	IMPROPER VLV LINEUP ON "A" MAKEUP AND PURIF. PUMP		PROCEDURE AND PERSONNEL ERROR		
C	MY1	012358	090778	G	UV	V01	S D	VLV.LINEUP ERROR ALLOWED RCS WTR.AT 1250 PPM BORON-		-N TO DISCH.BACK TO RWST//PERSONNEL ERROR		
W	RC1	021334	041978	G	UV	V01	S D	OPERATOR OPENED WRONG VALVE/DECREASE BORON CONCENT		PERSONNEL ERROR/PROCEDURE CHANGED		
W	RO2	016936	012577	G	UV	V02	S D	IMPROPER VLV LINEUP (BORIC ACID STORAGE TANK)		PERSONNEL ERROR		
W	ZI1	016043	100476	G	UV	V01	S D	VALVE LINE-UP PROBLEM/BORON CONCENTRATION DILUTED		PERSONNEL ERROR		
W	BV1	018730	060277	G	XV	B12	D	HIGH PRI.LEAK.DUE TO 18 CHG.PMP.SUCT.VLV NOT CLCSE		JAMMED REACH RCD ON THE VALVE		
W	HN1	018778	073077	G	XV	L05	R D	B CHRG PUMP BYPASS ISO VAL LEAKING EXTERNALLY		DEFECTIVE CASTING		
W	HN1	021367	050478	G	XV	D08	R T	PINHOLE LEAK IN B CHG PUMP DISCH VALVE		SEVERE EROSION CAUSED BY THROTTLING VAL		
W	HN1	021335	050978	G	XV	D08	R T	BODY TO BONNET LEAK B CHG.PMP BYPASS ISO VLV		EROSION FROM HI VELOCITY WTR FLOW		
B	AR1	015207	021276	G	XV	V06	S D	VALVE SF-22 WAS NOT CLOSED(A SPILL RESULTED)		PROCEDURES WERE INADEQUATE		
W	PR1	020735	020478	G	XV	V01	J D	PLMP SUCTION VALVE FOUND NEARLY CLOSED		PERSONNEL/VALVE LINEUP IMPORTANCE STRESSO		
W	SU1	023136	112978	G	XV	V01	S D	VALVE MISALIGNMENT ON BORIC ACID TRANSFER		PERSONNEL ERROR		

CONTAINMENT ISOLATION--BWR

VE N T	P L A N	CONI.NO.	EVENT DATE	S T Y P	C O M P	FAIL CODE	T Y P E	C L A S S	C N M U M	K E Y	FAILURE MODE	FAILURE MECHANISM
G	BR1	020774	022678	C	AV	#22	D				RX.INSTR.PENE. VLV B21-X54-C FAILED CLOSED	VLV.CLOSED DUE TO SMALL LEAK IN DIAPHRAGM
G	CC2	023383	111678	C	AV	A24	T D				RX CONT VALVE 2-1601-20A FAILED TO OPEN ON TEST	SCV(2-1601-50A)FAILED;NO AIR TO AIR-OP VL
G	CC2	023400	112578	C	AV	A24	T D				DRYWELL VENT AG 2-1601-23 FAILED TO OPEN	SCV(SQ 2-1601-92A)FAILED TO SUPPLY AIR
G	BF1	016811	010377	C	AV	B12	D				DRYWELL SUP.VAC.BKR.VLV 64-28E REMAINED OPEN AF.TE	VLV.AIR ACT.CYL.PST.ROD BINDING WI.BUSHMG
G	BR2	020841	031378	C	AV	B12	T				RX.PENET.VLV CAC-FV-1209B DID NOT INDICATE SHUT	ACTUATOR SPRING DID NOT PROVIDE POS.SEAT.
G	CU1	018003	041777	C	AV	B24	S D				CONTAINMENT VALVE H+V-296AV WOULD NOT CLOSE	SCLENCID VALVE LEAKING AT CYLINDER PORT
G	CC1	023542	122778	C	AV	B04	D				DRYWELL CUTBD. VENT ISO.VLV.PC-246AV NOT SHUTTING-	-FULLY//DESIGN ERROR IN PNEUM.OPERATOR
G	CA1	021864	061778	C	AV	E00	U				TGRUS PURGE INLET VALVE CV4308- FAILED TO CLOSE	CAUSE UNKNOWN
C	DR2	020642	022478	C	AV	B12	D				TGRUS VACUUM BREAKER 2-1601-20B WOULD NOT CLOSE	OPERATOR MOUNTING BOLTS SHEARED
G	DR2	022569	110878	C	AV	B24	S D				AO-2-1601-24 FAILED TO CLOSE REMOTELY	AJR.OPER.SOL.VLV.STUCK IN THE OPEN POSIT.
G	DR2	023338	121778	C	AV	B24	T D				AC 2-9207A FAILED TO CLOSE	ASCC SOV FOUND STICKING
G	M11	014477	042276	C	AV	B12	D				VALVE 1-AC-9 FAILED TO CLOSE	INTERVAL VALVE BINDING
G	M11	017001	012577	C	AV	B24	S D				VALVE 1-AC-9 FAILED TO CLOSE	DIRT IN AIR LINE
G	M11	022584	091478	C	AV	B10	T				DRY WELL VENT BYPASS VAL 1-AC-9 FAILED TO CLOSE	DIRT AND SCALE IN AIR OPERATOR
G	MC1	015316	072578	C	AV	B00	U				VALVE AL-2381 FAILED TO CLOSE (TGRUS PURGE INLET)	CAUSE UNKNOWN
G	PH2	016568A	120176	C	AV	B00	U				ISO VALVE AO-2-2-39 FAILED TO CLOSE	CAUSE UNKNOWN
G	PH2	016568B	120176	C	AV	B24	S D				ISO VALVE AO-2-2-40 FAILED TO CLOSE	STUCK SCLENCID IN SUPPLY SYSTEM
G	PH3	015854	092176	C	AV	B24	T D				ISO.VLV AO-5235(DRYWELL TO NITRO.COMP)FAIL.TO CLOS	SCLENCID VLV IN AIR SUPPLY LINE FAILED
G	PH3	016488	113076	C	AV	B24	T D				ISO.VLV AO-5235(DRYWL.TO NITRO.COMP)FAIL.TO CLOSE	SCLENCID VLV IN AIR SUPPLY LINE FAILED
G	PH3	020452	021078	C	AV	B24	S D				NITROGEN COMP SUCTION VAL,AO-5235,FAILED TO CLOSE	SCLENCID VALVE STICKING IN AIR SUPPLY

CONTAINMENT ISOLATION--DWR

PLANT	CONT. NO.	EVENT DATE	SYSTEM	COMP	FAIL CODE	TYPE	CLASS	UNP	MARK	FAILURE MODE	FAILURE MECHANISM
G DC1	C18952	082977	C	CV	B04	R	D			TORUS TO DRYWELL VAC. BRK (V-26-5) FAIL. TO RECLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G CC1	C19158	092777	C	CV	B04	R	D			VAC BRK VAL V-26-9 FAILED TO CLOSE	DESIGN ERROR / IMPROPER BUSHING USED
G EN2	022212	081078	C	CV	D12		D			VACUUM BREAKER 2T48-F328A LEAKING EXTERNALLY	LOOSE MECHANICAL PARTS ON VALVE BODY
G EP3	C20760A	030478	C	CV	E12		I	02		FEEDWATER CHECK VALVES 3-220-58B, 62B LEAKING	WORN SEAT/DISK ASSEMBLY PINS
G DR3	C20760B	030478	C	CV	E12		U			CHECK VALVE 3-1601-21 LEAKING INTERNALLY	OFF-CENTER DISK IN VALVE
G EN2	022736*	101778	C	CV	E12		D	03	V	DRYWELL VACUUM BREAKERS LEAKING INTERNALLY	RETAINING MAGNETS EXTENDED TOO FAR
G MC1	C19467*	091377	C	CV	E10		R	T	07	VALVES AG-14-13A + AG-14-13B LEAKING INTERNALLY	SCALE ACCUM ON SEATING SURFACES
G MC1	C19468	091677	C	CV	E10		R	T		VALVE LEAKING IN EXCESS OF T.S.	DIRT ON SEATING SURFACES
G MU1	C19469	100477	C	CV	E12		D			RCIC-9 TURB EXT VAL LEAK IN EXCESS OF T.S.	DISK WASHER BENT
G MC1	C22808	102078	C	LV	E10		R	T		HPCI-9 TURB EXT LINE CHECK VALVE LEAKING INTERNALLY	ACCUMULATED DIRT ON SEATING SURFACES
G NP1	C17649*	042777	C	CV	E13		I	02		TWO DRY SYST CHECK VLVS LEAKING INTERNALLY	O-RING FAILURE
G DC1	C13956*	010678	C	CV	E00		U	02		VAC BRKS V-26-16, V-26-18 LEAK INT. IN EXCESS OF T.S.	CAUSE UNKNOWN/REPAIRS TO BE PERFORMED
G PB2	C14404*	032978	C	CV	F10		R	T	04	FEED WAT CV 28A, 28B, 96A, 96B LEAKING EXCESSIVELY	RUST SCALE ON VAL SEATING SURFACES
G PB3	014030	010978	C	CV	E10		T			FEEDWATER CHECK VLV 28A-UNACCEPTABLE LEAKAGE	RUST SCALE ON VLV SEAT AND FLAPPER
G PB3	C14116	010978	C	CV	E10		T			FEEDWTR OUTBOARD CHECK VLV 96B-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G PB3	C14117	010978	C	CV	E10		T			FEEDWTR OUTBOARD CHECK VLV 96A-UNACCEPTABLE LEAK.	RUST SCALE ON VALVE SEAT & FLAPPER
G PB3	014118	010978	C	CV	E10		T			FEEDWATER CHECK VALVE 28B-UNACCEPTABLE LEAKAGE	RUST SCALE ON VALVE SEAT & FLAPPER
G QC1	C20531A	032077	C	CV	E25		T			EXCESSIVE LEAKAGE THRU CV DURING TESTS	DETERIORATED O-RINGS
G VV1	022196*	081078	C	CV	E00		U	02		ISOLATION CHECK VLVS (V72-89B/C) LEAKED THRU/TEST	UNKNOWN/DRESSER ZIN TYPE 5580W CHECK VAL
G CC1	021620	042378	C	CV	F10		T			FLV-160 EXCESS FLOW CHECK VALVE MALFUNCTIONING	CRUD BUILDUP ON POPPET ASSEMBLY

CONTAINMENT ISOLATION--BWR

VEN	PLANT	CONT.NO.	EVENT DATE	SY S	CON P	FAIL CODE	TYPE	CLASS	CUM	MARK	FAILURE PCDE	FAILURE MECHANISM
G	DF2	G19808	121277	C	CV	F12	R	D			VACUUM BREAKER 2-1601-32B INOPERABLE	MECHANICAL BINDING OF VALVE PARTS
C	DF2	G21512*	051378	C	CV	F17	R	T	O2		VACUUM BREAKER; 2-1601-33E6F FOUND INOPERABLE	SWELLING OF TEFLON SHAFT BUSHINGS
G	MI1	G16690	121876	C	MV	A20		U			VALVE 1-CU-3 DID NOT OPEN	BURNED CLT MOTOR
G	BR1	016860	112576	C	MV	B16	S	D			PIN.FLOW VLV.(E41-F012)DID NOT CLOSE FULLY	VLV MTR CKT PRESS-SWITCH OUT OF CALIBRATION
G	BR1	021089A	041078	C	MV	B26	R	T			VLV E41-F003 FAILED TO ISOLATE DURING TESTING	DIRT.CCNT.ON LIMIT SWT.&POOR SEAT.MTR.BR.
G	BR1	021089B	041578	C	MV	B20	R	D			DURING AN ACT.HI.STMLN.FLOW,VLV E41-F003 FAIL.TC.S	DIRT.CCNT.ON LIMIT SWT.&POOR SEAT.MTR.BR.
G	CO1	017258	012577	C	MV	B26		T			DRYWELL PURGE VALVE WOULD NOT CLOSE FROM CONT SW	CORRODED LIMIT SWITCH CONTACTS
G	DA1	G16530*	112276	C	MV	B00		U	O2		MOV B401B AND B402B FAILED TO FULLY SEAL	CAUSE UNKNOWN
G	DA1	021123A	040678	C	MV	B16	S	D			VALVE MOV B402B FAILED TO FULLY CLOSE	MOTOR STARTER CONTACTOR COIL FAILED
G	DA1	021123B	040678	C	MV	B23		T			VALVE MOV B402C FAILED TO FULLY CLOSE	MOTOR OPERATOR TORQUE SWITCH CONT.DIRTY
G	MC1	C15026	060376	C	MV	B23		T			HPCI STM LINE ISO VAL FAILED TO CLOSE	TORQUE SW SETTING DRIFTED TOO LOW
G	MO1	C18093	053177	C	MV	E19	R	T			ISC VALVE MO-2076 FAILED TO CLOSE	DETERIORATED GREASE,MAIN+LIM SW GEAR TRAN
G	MC1	021243	042178	C	MV	B00		U			BX.WTR.CLEANUP OUTBD.ISO.VLV(MO-2398)FAIL.TO CLOSE	CAUSE UNKNOWN
G	OC1	018169*	041977	C	MV	B16	S	D	O2		CONT.ISO.VLVS. MO 1-1001-506 63 FAILED TO CLOSE	FAILURE OF THE 595-118 RELAY
G	BR2	C19023*	090677	C	MV	C00		U	O2		RHR TORUS COOL.RETRN.LN.ISOS.E11-F0248628B LEAKING	VLVS FAILED TO SEAT PROPERLY/UNKNOWN
G	MI1	C19466	091077	C	MV	C10	R	T			VALVE MO-2373 LEAKING INTERNALLY	FOREIGN PARTL ON VAL SEAT
G	MC1	G22806*	102278	C	MV	L14		T	O2		REACTOR CLEANUP ISO VALS MO-2397,-2398 LEAK EXTRNL	EXCESS PACKING GLAND LEAKAGE,IMP T.S.ADJ
G	OC1	020531	032077	C	MV	L23		T			LEAKTEST SHOWED EXCESSIVE LEAKAGE THRU DRAIN VALVE	TORQUE SW OUT OF ADJUSTMENT
G	OC1	G20531B	032077	C	MV	L25		T	O2	V	EXCESS LEAKAGE THRU SPRAY VALVES DURING TEST	IMPROPER SEATING OF VALVE
G	MI1	C18463	061677	C	MV	F06		U			TORQUE SW NOT ADJ PROP. OUTBD RCIC STM ISO VLV	WRA IMPROPERLY PROCESSED

CONTAINMENT ISOLATION--BWR

<u>V E N T</u>	<u>FL A N T</u>	<u>CUNT.NO.</u>	<u>EVENT DATE</u>	<u>S Y S T E M</u>	<u>C O M P</u>	<u>FAIL CODE</u>	<u>T Y P E</u>	<u>C L A S S</u>	<u>C L N P U M</u>	<u>K E Y</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	MC1	019050	090977	C	MV	F04	R	D			VALVE MD 2009 FAILED TO OPERATE PROPERLY	SET CLAPP SCREWS UNDERSIZED
G	MC1	010158	092377	C	MV	F12		D			VALVE MD-2008 FOUND FAILED DURING MAINTENANCE	SEAT RING THREADS STRIPPED
C	PR2	015140	062076	C	MV	F16	S	D			15C VAL MD-2-14-71 FAILED TO STRCKE	GROUNDWED WIRE AT MTR CONT CENTER
G	PI1	014476	041376	C	MV	I05		D			WELD ON MFCI SYSTEM VALVE MD 2301-4 CRACKING	ORIGINAL WELD FABRICATION VARIANCE
G	BR2	014624	030976	C	RM	A16	T	D			PENET VALVE X70F FAILED TO OPEN DURING TEST	REMOTE SWITCH STUCK/NO POWER TO VALVE
G	BR2	015423*	070976	C	RM	A16	T	D	02		TWO CONT VALVES(PENETS X970&X 2E)FAILED TO OPEN	TWO PUSHBUTTON SWITCHES STUCK ON TESTING
G	BR2	015939	081376	C	RM	A16	T	D			CONT VALVE FOR PENETRATION X76C FAILED TO OPEN	PUSHBUTTON SW FAULTY DURING TEST
G	EN1	018547	022677	C	RM	A27		U			VACUUM BREAKER 648-F328B FAILED TO OPEN	LIMIT SW REPLACED AND A SOLENOID VALVE
G	EN2	022207*	081776	C	RM	A16	S	D	G2	V	PURIF CONTAINMENT VALVES FAILED TO OPEN	INCORRECT WIRING FROM SWITCH CONNECTIONS
G	CC1	016659	111776	C	RM	B00	R	U			VALVE PC-238 AV FAILED TO CLOSE FULLY	CAUSE UNKNOWN,BELIEVED OPERATOR RELATED
G	EF2	019609	112477	C	RM	B00		U			ISOLATION VALVE AG2-1601-63 WOULD NOT CLOSE	CAUSE COULD NOT BE DETERMINED
G	FP1	017337	030377	C	RM	B01		D			FLOOR DRAIN ISOLATION VALVE FAILED TO CLOSE	VALVE OPERATOR IN OPEN OVERRIDE POSITION
G	FP1	017741	042577	C	RM	B00		U			FLOOR DRAIN LINE ISOLATION VALVE FAILED TO CLOSE	CAUSE UNKNOWN
G	DC1	023117	112976	C	RM	B16	S	D			PH STEAM DRAIN VALVE V-1-106 FAILED TO CLOSE	NO POWER TO VALVE,DEFORMED FUSE HOLDER
G	P83	018472	072877	C	RM	B26		T			DRYWELL VACUUM BREAKER FAILED TO FULLY CLOSE	LIMIT SWITCH WAS OUT OF ADJUSTMENT
C	VY1	019853	110177	C	RM	B09		T			VENTILATION SYSTEM VALVE (HVAC-10) FAILED TO CLOSE	CORROSION ON OPERATORS GUIDE RODS
G	EN1	014766*	032776	C	RM	C00		U	16		SIXTEEN VALVE BOUNDARIES LEAKING EXCESSIVELY	VARIOUS MODES OF FAILURE
G	EN1	021065*	041176	C	RM	C07		T	C3	B	VARIOUS CNTNMT ISOLATION VALVES LEAKING	NORMAL WEAR ON VALVE COMPONENTS
G	FP1	022465*	051476	C	RM	C13	C	U	C3		VAC BREAKER VALVES 27-VB-3&4&5 LEAKED EXCESSIVELY	REPLACED MCM RING SEALS
G	FP1	023106*	120176	C	RM	C00		U	C5	Z	CONT.ISOL VALVES LEAKING THRU	REPLACED OR REPAIRED

CONTAINMENT ISOLATION--BWR

VEH	PLANT	CONT. NO.	EVENT DATE	SY S	WORK	FAIL CODE	TYPE	CLASS	CN	PU	PK	FAILURE CODE	FAILURE MECHANISM
G	MC1	019470	101277	C	RM	C10	T					VALVE CV-7436 LEAKING INTERNALLY IN EXCESS OF T.S.	DIRT AND SCALE ON SEATING SURFACES
G	PI1	019694*	111377	C	RM	C25	T	18				18 PRI CNTMNT ISO VALVES LEAKING IN EXCESS OF T.S	NORMAL DETERIORATION OF DISK/SEATS
G	VY1	0152309	063076	C	RM	C00	U	C4				4 PRIMARY CONTAINMENT VALVES LEAKED THRU/TESTING	UNKNOWN
G	VY1	019105*	082077	C	RM	C00	U	07				SEVEN PRIMARY CONTAIN. ISOL VALVES LEAKED THRU---	--DURING TESTING/(UNKNOWN TO BE REPORTED)
G	VY1	021997*	071178	C	RM	C00	U	C5				FIVE CONTAINMENT ISOLATION VALVES LEAKED THRU/TEST	UNKNOWN/PROBABLE SEAT PROBLEMS
G	BF1	022255A	090378	C	RM	L00	D					VLV FCV-68-77 WAS LEAKING AT THE BONNET	NO CAUSE GIVEN FOR BONNET LEAKAGE
G	BF1	022255B	090378	C	RM	D14	T					VLV FCV-69-1 WAS LEAKING AT THE PACKING INTO DRYWEL	NORMAL PACKING LEAK;ADJ.PACK.,LEAK STOPPD
G	DB3	016014	091876	C	RM	D14	T					ISOLATION VALVE B-1601-23 LEAKING IN EXCESS OF T.S	FAILURE OF VALVE PACKING
G	EA1	018189E	051877	C	RM	D13	T	02				2 PURGE EXHAUST VALVES LEAKING EXCESSIVELY	FAILED C-RING GASKET
G	BR1	020837	031478	C	RM	F16	S	D				VALVE B32-F042B WOULD NOT OPERATE DURING TEST	DEFECTIVE SWITCH ON CONTROL BOARD
G	CC1	015351	061776	C	RM	F00	U					VALVE PC-238AV WOULD NOT CLOSE IN 15 SECONDS	CAUSE UNKNOWN / POSSIBLE LUB PROBLEM
G	LA1	014187*	011676	C	RM	F06	U	C3				PCIS CV 4300,4303,4309 NOT CLOSING IN PROPER TIME	CLOSING TIME TECH SPEC IN ERROR
G	MC1	015755	082576	C	RM	F16	S	D				S/D COIL ISO.VLV. EXPERIENCED LOSS OF POWER	FAILURE OF RELAY COIL IN CNT. CIRCUIT
G	EA2	023035	110978	C	RM	T01	D					VACUUM BREAKERS NOT TESTED AS REC BY TECH SPECS	PERSONNEL ERROR
G	BR2	020972	032778	C	RM	V01	S	D				RX.INSTR.PENET.VLV CAC-PV-3439 FOUND CLOSED/TS VIC	PERSONNEL ERROR/VLV SHUT BY MISTAKE
G	DA1	014733	052876	C	RM	V01	S	D				HPCI AND RCIC INJECTION VALVES LINED UP WRONG	PERSONNEL ERROR,LCW-LOW LEVEL RESET WRONG
G	EN2	022211	081078	C	RM	V05	S	D				VAC RELIEF VALVE F310 FOUND OPEN WHEN REQ CLOSED	PERSONNEL ERROR(INVERTED SIGNAL)
G	EN2	022485	092378	C	RV	B10	T					RELIEF VALVE 2E11-RV-F212A STUCK PARTIALLY OPEN	DIRT ON VALVE SEAT
G	FP1	022537	092078	C	RV	C00	U					SAFETY RELIEF VALVE WAS LEAKING PAST SEAT	CAUSE OF LEAKAGE NOT GIVEN
G	DR2	022974	111578	C	SV	A21	R	T				AG 1601-56 FAILED TO OPEN	SHORTED CUT COIL ON SOLENOID

CONTAINMENT ISOLATION--BWR

V P L A N T	CONT.NO.	EVENT DATE	S Y S	C L U M F	FAIL CODE	T Y P E	C L A S S	C L U M P M	K E Y	FAILURE MODE	FAILURE MECHANISM
G DR3	022075	072678	C	SV	B21	T				ISOLATION VALVE 3-2001-6 WOULD NOT CLOSE	DETERIORATED SEALS IN SOLENOID VALVE
G FP1	014667	042476	C	SV	B21	U				CONTAINMENT ISOLATION VALVE FAILED TO CLOSE/TEST	DEFECTIVE SOLENOID
G PB3	015852	090776	C	SV	C10	R T				TRUS ATMOS.SAPP.INBD.ISC.VLV LEAKED THROUGH	VALVE SEAT NEEDED CLEANING
G PB2	022819	103178	C	SV	F10	T				OXYGEN ANALYZER SYSTEM ISO VAL,SV-26716, FAILED	VALVE SEAT DIRTY, PLUNGER STICKING
G BR2	014390*	021076	C	UV	C04	C D C3				3 BUTTERFLY VALVES LEAKING THRU//DESIGN ERROR	AIR OPERATOR ADDED TO EACH VALVE
G DR2	019490*	110277	C	LV	C02	D C2				SAMPLE LINE ISOLATION VALVES 8501-1A,1B LEAKING	IMPROPER SEAT TO DISK CLEARANCE ADJ
G NM1	017724*	041677	C	UV	L00	U D2				DRYWELL AIR VENT + FILL VALVES LEAKING	CAUSE UNKNOWN
G BF2	021092B	042078	C	UV	D25	T D2 V				DRYWELL TO SUP.CHBR.VENT.SYS.ISC.VLVS.LEAK.BY SEAT	SEATING SURFS.DETERIOR.THROUGH NORM.OPER.
G MC1	022809	100178	C	UV	V01	S D				2 VLVS NOT CLOSED WHEN REQUIRED TO BE	PERSONNEL ERROR
G DR2	019319	102177	C	XV	C10	T				CONTNMENT AIR LOCK VENT VALVE LEAKING	VALVE SEATING SURFACES DIRTY
G DC1	022983*	112678	C	XV	C25	U D6				SIX VENT VALVES LEAKING THRU ON CONT LEAKRATE TEST	SEAT PROBLEMS,REPAIRED SOME,REPLACED REST
G UK3	02078CC	030478	C	XV	D14	T				MSIV 3-203-2C TEST CONNECTION VLV LEAKING EXTERNAL	PACKING FAILURE / VALVE REPACKED
G PE2	020610	021678	C	XV	V01	S D				INLET VLV FOR THE MANOMETER WAS OPEN INSTEAD OF CL	PERSONNEL ERROR/FAILED TO FOLLOW PROCEDURE
G GC2	019450	092977	C	XV	V01	S D				STOP VALVE TO 200LS LEVEL TRANSMITTER FOUND CLOSED	PERSONNEL ERROR

STANDBY LIQUID CONTROL (BORON)--BWR

<u>V</u> <u>L</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>C</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>Y</u> <u>S</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>Y</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>N</u> <u>O</u> <u>M</u> <u>P</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>P</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>U</u> <u>R</u> <u>E</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
G	PEE	G20373	011378	G	RM	B12		D			GAS CHARG VALVE TO 3A SBLC PUMP ACCUM FAILED OPEN	FAILURE DUE TO MECH BINDING OF VAL INTERN
G	CC1	C16253	100976	G	RM	F16	S	D			A SLC INJECTION WAS FOUND INCOPERATIVE	BLOWN FUSE DUE TO IMPRCPER SIZE WIRING
G	QC1	O18111*	042677	G	RV	A10	C	T	O2	V	RELIEF VALVES LIFTED AT MUCH HIGHER THAN SETPOINT	BORON PRECIPITATED IN VALVE
G	QC2	O20562	020178	G	RV	A00		U			SBLC RELIEF 2-1105B FAILED TO OPEN/AT SET PRESSURE	UNKNOWN/SETPOINT DRIFTED HIGH/1940 VS1490
G	VY1	O22130*	073178	G	RV	A06		D	O2		TWO RV'S(SR-39A/B) FAILED TO OPEN AT DESIGN SETPNT	PROCEDURAL DISCREPANCY/SET W NITROGEN
G	QC2	O20944	030478	G	RV	C25		T			SBLC RELIEF 2-1105A LEAKED THRU / LOW PUMP OUTFLT	MACHINED SEAT AND RESET TO 1450 PSIG
G	BF2	G21401	050478	G	RV	H12	R	D			RELIEF VLV.GM #8M STBY.LIQ.CONT.PUMP OPEN.BELOW SP	CAUSE OF IMP.SET POINT SETTING NOT GIVEN
G	BF3	O19562	012277	G	RV	HC8	R	D			RELIEF ON 3A STBY.LIQ.CONT.PUMP OPEN.BELOW SETPOINT	DISC BOUND IN GUIDE;VLV.SEATS DAMAGED
G	BF3	O18635	062177	G	RV	FC8	R	D			RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	SCORED AREA ON PLUG GUIDE AND PLUG
G	BF3	O18542	072577	G	RV	HC8	R	D			RELIEF ON 3A STBY.LIQ.CONT.PMP OPEN.BELOW SETPOINT	DISC GUIDE WAS GALLED WITH THE VLV DISC
G	BF3	O23291	121678	G	RV	H00		I			RV ON DISCHG.OF STDBY.LIQ.CONT.PMP.OPENED PREMATURE	NO CAUSE GIVEN(PROB.SETPOINT DRIFT)
G	BR2	O18178A	060877	G	RV	F12		T			STDBY.LIQ.CONT.PMP 2B REL.VLV LIFTED BELOW SETPCIN	MECHANICAL DRIFT
G	BR2	O18178B	060877	G	RV	H12		T			STDBY.LIQ.CONT.PMP 2A REL.VLV LIFTED BELOW SETPCIN	MECHANICAL DRIFT
G	DR2	O14542	041276	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-A LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	DR2	O14536	041376	G	RV	H25	R	T			SBLC RELIEF VALVE 1105-B LIFTED PREMATURELY	VALVE SEAT NEEDS LAPPING
G	QC1	O17359	012577	G	RV	H10		T			RV IN STANDBY LIQ CONT SYS OPENED PREMATURELY	POSS BORON CRYSTALS IN SEATING AREA
G	VY1	O18978*	082877	G	RV	H25		T	O2		TWO SBLC RELIEF VALVES LIFTED PREMATURELY	1-SEATING SURFACES LAPPED 2-RESET SETPOINT
G	DR2	O14665	051976	G	UV	V06	S	D			INCORRECT VLV L/O/SBLC SYSTEM-BORON TANK	DISCREPENCY IN PROCEDURES
G	DR2	O20170	010578	G	UV	V01	S	D			SUCTION VALVE 2-1101-4 CLOSED CONTRARY TO T.S.	OPERATING PERSONNEL ERROR
G	NH1	O22029*	080878	G	XV	A10		T	O2		DRAIN VLVs ON A&B LIQUID POISON PMPs FROZEN SHUT	BUILD-UP OF BORON CAUSED FAILURE

REACTOR CORE ISOLATION COOLING--BWR

<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYSTEM</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>STATUS</u>	<u>CLASS</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G PB2	C17262	030177	C	AV	D14	T				VALVE AD-2-23-42 LEAKING EXTERNALY	PACKING FAILURE
G BR2	C14646	020476	Q	CV	A12	R	D			RCIC TURB.DISCH.CK.VLV E51-FC40 WOULD NOT OPEN	DISC STLE BROKEN/DISC BLOCKING EXH. FLOW
G BR1	C18128	052077	C	CV	F04	D				HPCI STM.LINE EXH.CHECK VLV E41-FC49 DETER.FAILED	VLV OSCIL.CAUSED DSC HINGE FAIL;IMP.DESGN
G BR2	C16240	110276	Q	CV	V01	S	D			RCIC TURB.EXH.STP-CHK E51-FC01 CLOSED WHEN REG.CPM	PERSONNEL ERROR/VLV NOT OPEN.AFTER TEST
G FP1	C20517	021078	Q	HY	F16	S	D			RCIC TURBINE STEAM INLET VALVE FAILED TO OPERATE	COMPAND/SUPPLY BREAKER RELAY OVERLOADED
G BR1	C16861	112176	C	MV	A20	T				E41-FC01(HPCI STM.SUP.VLV) WOULD NOT OPEN	BRUSHES ON VLV MOTOR WERE STICKIN
G BR1	C16656	120376	C	MV	A16	S	D			E51-FC07(RCIC STEAM ISO.VLV) FAILED TO OPEN	LOOSE WIRE ON VLV MOTOR OPEN CONTACTOR
G BR1	C21557	052778	C	MV	A04	D				RCIC COND.STER.TK.SUC.VLV E51-FC10 WOULD NOT OPEN	DESIGN/PTR.DID NOT HAVE SPACE PTR;NEED.IT
G BR2	C17327	022377	Q	MV	A20	T				E51-FC49(STM.INL.TO RCIC TURB.)WOULD NOT OPEN	MTR OPER. FAILED DUE TO MOISTY.IN WINDINGS
G BR2	C20729	030678	C	MV	A23	U				RCIC VALVE E51-FC49 FAILED TO OPEN	TORQUE SW FAILED
G BR2	C20970	032878	Q	MV	A00	U				R.C.I.C. INJECTION VLV E51-FC13 WOULD NOT OPEN	NO CAUSE FOR FAILURE.FOUND
G FP1	C19169	052877	C	MV	A23	D				RCIC TURBINE STEAM SUPPLY MOV 131 FAILED TO OPEN	TORQUE SWITCH NEEDED RESET
G MI1	C15154	071476	Q	MV	A12	D				VALVE 1-IC-1 WOULD NOT OPEN	YUKE NUT ADAPTOR & BEVEL GEAR HOUS FAILED
G PB2	C16776	122876	Q	MV	A23	U				RCIC STM SUPPLY ISO VAL FAILED TO OPEN	TORQUE SWITCH FAILURE
G BR1	C17081	011977	C	MV	B20	T				HPCI STM.SUP.VLV E41-FC03 WOULD NOT CLOSE	DIRTY COMPUTAICR IN VLV OPERATOR
G BR1	C17290	030177	Q	MV	B12	D				HPCI MIN. FLOW VLV E41-FC12 FAILED TO CLOSE	ANTI-ROT. KEY SET SCREW HAD UNSCREWED
G BR2	C14616	031976	C	MV	B16	S	D			SPRAY LINE VALVE(2-E11-FC22)FAILED TO SHUT/TEST	NO POWER/AUX CONTACTS FOR INTERLOCK STUCK
G DA1	C15080	070476	C	MV	B00	U				RCIC MOV 2401 FAILED TO CLOSE FOR TEST	NO REASON LISTED,NOT REPRODUCIBLE
G EM1	C14766	020676	C	MV	B26	T				RCIC PUMP SUCTION ISOLATION VALVE FAILED TO CLOSE	CORRODED CONTACTS ON TORQUE LIMIT SWITCH
G PB3	C18373	071177	C	MV	B23	D				RCIC INNER ISO.VLV(MD-15) FAILED TO CLOSE MAN.CMNT	MAJFUNCTION IN VLV TORQUE SWITCH. CIRCUIT

REACTOR CORE ISOLATION COOLING---BNR

PLANT	CONT. NO.	EVENT DATE	SYM	FAIL CODE	CLASS	TYPE	FAILURE MODE	FAILURE MECHANISM
G PB3	018372	071377	Q MV	B12	R	D	RCIC OUTER ISO.VLV (MO-16) FAILED TO CLOSE	OPER-MAC STRIPPED THREADS ON STEM NUT
G PB3	023347	121276	Q MV	B14	D	D	RCIC ISOL VALVE MO-13-15 FAILED TO FULLY CLOSE	CRKED PACKING FOLLOWER JARRED STEM
G GC4	020304	051977	C MV	B16	S	D	RCIC INBOARD STM-ISO.VLV-MO-2-1301-16 WOULDNT CL-	-USE//FAIL-OF VLV-BRKR-AUX-CLOSING CONT.
G GC2	021129	040978	Q MV	B23	D	D	RCIC INBD-STM-INLET ISO.VLV-MO-2-1301-16 WOULD NO-	-T CLOSE//FAILED TORQUE SWITCH
G PB2	010718	111277	Q MV	D14	T	T	ISO VAL MO-16 LEAKING EXTERNALLY	PACKING FAILURE
G PB2	014266	022476	C MV	D14	T	T	RCIC STM-OUTBOARD ISO VLV LEAKING EXTERNALLY	PACKING LEAK DUE TO NURM-PACK-COMPRESSION
G PF3	022087	070878	C MV	F16	S	D	RCIC DISCHARGE VALVE INOPERABLE	SPRT IN IND LITE ASS CAUSED FUSES TO BLC
G DAL	014100	011476	C MV	F02	D	D	VALVE RCIC MO 2516 SEPERATED FROM OPERATOR	BCLTS SPARED, NOT TORQUED PROPERLY
G DR2	020857	032178	Q MV	F03	D	D	ISOL CONC VALVE MC 1301-3 RENDERED INOPERABLE	PERSONNEL ERROR,LOSS OF POWER TO VALVE
G DR3	019189	092477	Q MV	F01	R	D	BREAKER FOUND OPEN TO MO-3-4102	PERSONNEL ERROR
G FPI	016374	110176	Q MV	F20	D	D	RCIC ISOLATION VALVE 13-MOV-16 FAILED DURING TEST	VALVE MOTOR OPERATOR BURNED OUT
G PB2	014153	020976	C MV	F02	R	D	RCIC O.B. STM ISO VAL MO-13-16 FAILED TO STROKE	VALVE PACKING TOO TIGHT / PERSONNEL ERROR
G PB3	018525	080977	Q MV	F23	R	D	RCIC OUTER ISO.VLV(MO-16) FOUND INOPERABLE	BROKEN LLG ON TORQUE SWITCH TERMINAL
G DAL	016450	111776	Q MV	I11	T	T	LECSE COMPONENTS ON RCIC VALVE MOV 2405	EXCESS VIBRATION LOOSEMED MECH. PARTS
G FFI	021495*	061678	Q MV	I04	D	D	3 VALVE OPERATOR MOTORS HAVE WRONG CLASS WINDINGS	MOTORS REWOUND WITH CLASS H INSULATION
G BR2	014650	020676	Q MV	V02	S	D	VALVE E11-F004B FOUND LINED UP CLOSED/NEG OPEN	PERSONNEL ERROR IM VALVE LINEUP
G BR2	015416	070376	Q MV	V01	S	D	PHR VLV 2-E11-F003A SHUT WHILE MTR REMOV.FG1V. LCO	PERSONNEL ERROR/VLV COULDNT BE OP. REMOT
G BR2	014615*	031576	Q RM	B16	S	D	TWO RCIC VALVES(E51-F0076F008)FAILED TO CLOSE/TEST	TWO RELAYS CONTROLLING VALVES FAILED
G PE3	016389	111076	Q RM	800	R	L	RCIC INBD-STM-SUP.ISO.(MO-3-13-15)FAILED TO CLOSE	CAUSED CF FAILURE NOT GIVEN
G RFI	014665	041176	Q RM	F16	S	D	RCIC PUMP DISCHARGE VALVE FAILED TO OPERATE	TRANSFER SWISBM-205A07740018AD DESIGN

REACTOR CORE ISOLATION COOLING--BWR

EVENT	PLANT	CONS.NO.	EVENT DATE	SYS	COMP	FAIL CLDE	TYPE	CLASS	CNUM	KEY	FAILURE MODE	FAILURE MECHANISM
G MI1	022749	101970	C RM	F16	S D						THE ISO.COND.ISO.VLV 1-IC-3 SPURIOUSLY OPENED	FAILURE OF SWITCHES IN LOGIC CHANNEL
G BR2	016198	100976	C RM	G16	S D						RCIC STM.SUP.VLV E51-FC07 CLOSED ON SPURIOUS SIGNAL	FAILURE IN RCIC ISOLATION CIRCUITRY
G PB3	018160	061677	C RM	V06	S D						BOTH RCIC ISO.VLVs. FOUND CLOSED WHEN REQUIRE.OPEN	DEFECTIVE TEST PROCEDURE
G EN1	018189C	051877	C UV	C25	T C3						2 RCIC VALVES LEAKING EXCESSIVELY	SEATS & DISCS NOT MATING PROPERLY
G MI1	020722D	032078	C LV	CC0	U C3						SHUTDOWN COOL.VLVs(1-SC-2A,4A,4B)LEAK.EXCESS CF TS	CAUSE OF LEAKAGE NOT GIVEN
G MD1	015440	060276	C UV	CC0	U						COOL SUP VAL TO RCIC TURB LEAKING INTERNALLY	CAUSE UNKNOWN
G MI1	019629	103177	C UV	F00	U						ISO.COND.STM.SUPPLY VLV 1-IC-1 FOUND IMOPERABLE	CAUSE OF OCCURRENCE HAS NOT BEEN DETERM.
G BR1	019842	111077	C XV	V01	S D						IMPROPER VLV LINEUP;ST.SUP.LN.CO.DR.POT.ISO.CLOSE.	PERSONNEL ERROR
G DR3	019987	121677	C XV	V01	T D						PRESS SWITCH FOUND VALVED OUT	PERSONNEL ERROR

APPENDIX S

RESULTS OF THE LER RATE ESTIMATES FOR MOTOR-OPERATED VALVES

CONTENTS

CODES USED IN LER ONE-LINE DESCRIPTIONS	709
VALVE--OPERATOR (MOTOR)--FAIL TO OPERATE	711
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CODES USED IN LER ONE-LINE DESCRIPTIONS

<u>FAILURE MODE</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
A	FAILED TO OPEN
B	FAILED TO CLOSE
C	INTERNAL LEAKAGE
D	INTERNAL LEAKAGE/RUPTURE
E	REVERSE LEAKAGE (CHECK VALVES)
F	FAILED TO OPERATE AS REQUIRED
G	PLUGGED (FAILS TO REMAIN OPEN)
H	PREMATURE OPEN (RELIEF VALVES)
I	MAINTENANCE/REPLACEMENT
J	TECHNICAL SPECIFICATION VIOLATION
K	IMPROPER VALVE CONFIGURATION

<u>COMPONENT</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
MV	MOTOR OPERATED VALVE (ELEC.)
AV	PNEUMATIC OPERATED VALVE
SV	SOLENOID OPERATED VALVE
HV	HYDRAULIC OPERATED VALVE
RV	REMOTE OPERATED VALVE
XV	MANUAL OPERATED VALVE
CV	CHECK VALVE
RV	RELIEF VALVE
DV	DAMPING VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED

<u>TYPE OF EVENT</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
B	RECURRING COMMON CAUSE
C	COMMON CAUSE
R	RECURRING
S	COMMAND FAULT
T	RECURRING COMMAND FAULT

<u>FAILURE MECHANISM</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
00	UNKNOWN
01	PERSONNEL (OPERATION)
02	PERSONNEL (MAINTENANCE)
03	PERSONNEL (TESTING)
04	DESIGN ERROR
05	FABRICATION/CONSTRUCTION/QUALITY CONTROL
06	PROCEDURAL DISCREPANCY
07	NORMAL WEAR
08	EXCESSIVE WEAR
09	CORROSION
10	EXCESSIVE MATERIAL CONTAMINATION
11	EXCESSIVE VIBRATION
12	MISCH. CONTROLS PARTS FAILED/CUT OF ADJUST.
13	SEALING GASKET FAILURE/PROBLEM
14	PACKING FAILURE/PROBLEM
15	BOILER FAILURE/PROBLEM
16	BOILER CAL INPUT FAILURE/PROBLEM
17	BOILER BUSHING FAILURE/PROBLEM
18	WELD FAILURE
19	FAILURE OF LUBRICATION
20	FAILURE OF MOTOR FAILURE/PROBLEM
21	FAILURE OF MOTOR PROBLEM
22	FAILURE OF MOTOR PROBLEM
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94	FAILURE OF MOTOR PROBLEM
95	FAILURE OF MOTOR PROBLEM
96	FAILURE OF MOTOR PROBLEM
97	FAILURE OF MOTOR PROBLEM
98	FAILURE OF MOTOR PROBLEM
99	FAILURE OF MOTOR PROBLEM

<u>EVENT CLASSIFICATION</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
D	CHANGE OF STATE
Y	AGE
U	UNKNOWN

<u>ACTIVITY RESULTING IN DISCOVERY</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
D	DEMAND ON COMPONENT
M	MAINTENANCE
N	NORMAL OPERATION
R	RECORDS REVIEW
T	TESTING
U	UNKNOWN

<u>MSSS VENDOR</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
B	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING
E	GENERAL ELECTRIC
W	WESTINGHOUSE

<u>NUMERICAL KEY WORDS</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
V	VALVES
A	ARMATURE
B	BELLOWS
C	COIL
D	DIAPHRAGM
E	ELIMINATOR
F	FLANGE
G	GASKET
H	HEAD
I	IMPELLER
J	JACKET
K	KEY
L	LEAK
M	MOTOR
N	NUT
O	ORBITAL
P	PISTON
Q	QUICK
R	ROTOR
S	SEAL
T	TIE
U	UNION
V	VALVE
W	WHEEL
X	X-RAY
Y	YIELD
Z	ZIPPER

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CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE

PMR

CODE

EMR

A - AUXILIARY FEED
 B - CONTAINMENT ISOLATION (INCL PENETRATIONS)
 C - ELECTRIC POWER
 D - CONTAINMENT SPRAY INJECTION
 E - CONTAINMENT VOLUME CONTROL (MAKE-UP)
 F - HIGH PRESSURE COOLANT INJECTION
 G - COMPONENT COOLING WATER
 H - REACTOR COOLANT RECIRC
 I - LOW PRESSURE COOLANT INJECTION (RHR)
 J - REACTOR PROTECTION (CONTROL RODS)
 K - NONSAFETY-RELATED
 L - SYSTEM UNKNOWN/NOT APPLICABLE
 M - CONTAINMENT FAN COOLING SYSTEM
 N - SERVICE WATER
 O - CONDENSATE AND FEED
 P - MAIN STEAM
 Q - REACTOR PROTECTION (PPS)
 R - CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
 Z - FAILED FUEL ELEMENT DETECTION

A - AUTOMATIC DEPRESSURIZATION
 B - CONTAINMENT ISOLATION (INCL PENETRATIONS)
 C - LOW PRESSURE CORE SPRAY
 D - ELECTRIC POWER
 E - CONTAINMENT SPRAY INJECTION
 F - STANDBY LIQUID CONTROL (BRCRN)
 G - HIGH PRESSURE COOLANT INJECTION
 H - COMPONENT COOLING WATER
 I - REACTOR COOLANT RECIRC
 J - LOW PRESSURE COOLANT INJECTION (RHR)
 K - CONTROL ROD DRIVE HYDRAULIC (SCRAM)
 L - NONSAFETY-RELATED
 M - SYSTEM UNKNOWN/NOT APPLICABLE
 N - REACTOR CORE ISOLATION CYCLING
 O - SERVICE WATER
 P - STANDBY GAS TREATMENT
 Q - CONDENSATE AND FEED
 R - MAIN STEAM
 S - REACTOR PROTECTION (PPS)
 T - CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
 Z - FAILED FUEL ELEMENT DETECTION

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

VEN	PLANT	CONT. NO.	EVENT DATE	SYST	COMP	FAIL CODE	TYPE	CLASS	C ON M/D	MARK	FAILURE MODE	FAILURE MECHANISM
B	AR1	020607	011378	B	MV	A23		D			VALVE CV-2667 FAILED TO OPEN REMOTELY	TORQUE SWITCH DEFECTIVE
B	CR3	017168A	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN REMOTE ACTUATH	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	017168B	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-41 WOULDNT OPEN REMOTE ACTUATH	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	018561	071577	L	MV	A23	R	T			VLV DHV-41 WOULD NOT OPEN FROM CONTROL ROOM	CAUSED BY SHIFT IN TORQUE SWITCH SETTING
B	CR3	018562	071577	L	MV	A00	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN FROM CONT.ROOM	CAUSE OF FAILURE UNKNOWN
B	DB1	020989A	031678	B	MV	A26		D			AUX.FDPMP.1-1 STOP VLV AF3870 FAILED TO OPEN	LIMIT SWTCH ON VLV MTR NOT ADJUSTED PROP.
B	DB1	021957	071678	L	MV	A12		D			DECAY HEAT COOL.1-2 OUTLET VLV DH-14A WOLDNT OPEN	ACTUATOR ARM HAD BECOME MISALIGNED
B	DE2	016201	101476	L	MV	A16	S	D			VLV LPSW-5 COULD NOT BE OPENED REMOTELY	DIRTY ELEC-CONTACT IN MOTOR CONTROL CENTR
B	DE3	020592	020378	F	MV	A23		U			VALVE BS-3 FAILED TO OPEN	TORQUE SWITCH FAILURE
B	DE3	021047	032078	H	MV	A16	S	D			VALVE HP-24 FAILED TO OPEN	DIRT ON VAL OPER CONTACTS
B	RS1	014306	020776	L	MV	A00		U			RHR MOV FAILED TO OPEN DURING TESTING(HV-26106)	TIGHT PACKING /POSS STICKING SEAT
B	RS1	016558*	111176	L	MV	A23	B	T 02			TWO DECAY HEAT MOV5 FAILED TO OPEN FOR MONTH TEST	TORQUE SWITCHES NEEDED RESET/TESTED WEEKLY
C	CC1	016403	111776	H	MV	A23	R	D			AUX.HI.PRESS.LP.ISO.VLV SI-617 FAILED TO OPEN	DEFECTIVE TORQUE SWITCH;BURNED CONTACTS
C	CC2	019740	111577	H	MV	A26		T			MOV-627,AUX HI PRESS HDR STP LP 118,WOULDNT OPEN	OPEN LIMIT SWITCH CONTS. WERE DIRTY
C	M12	015338	072476	B	MV	A12		D			INLET STEAM TRI VALVE WOULD NOT OPEN	VALVE OPERATOR SPINDLE FAILED
C	PA1	018274	061577	H	MV	A16	S	D			MOV-3011 FAILED TO OPEN	CONTACT FOR "SEAL-IN" CKT ON RELAY FAILED
C	SL1	015002	052176	B	MV	A16	T	D			NO AUX FEED PUMP STEAM SUPPLY VALVE FAILED TO OPEN	NO SIGNAL TO VALVE/COMMAND FAULT/ELECT
C	SL1	015507	070976	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/POOR DES
C	SL1	016880	120876	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/DESIGN
C	SL1	023141	112178	H	MV	A23		D			MOV 07-18 IN IB ECCS TRAIN FAILED TO OPEN ON TEST	TORQUE SW FAULTY,REPLACED SWITCH

VALVE --- OPERATOR (MOTOR) --- FAIL TO OPERATE

PLANT	UNIT	CONT. NO.	EVENT DATE	U S P	FAIL CODE	TYPE	CL ON K	FAILURE MODE	FAILURE MECHANISM
G 8F1	018126		050977	H	MV	A20	D	HPCI TURB. STM. SUP. ISO. VLV. FCV 1-73-16 FAIL. TO OPN	BROKEN TEETH CN MTR PINION&CLUTCH GEAR
G 8F2	018807		111676	H	MV	A23	R D	HPCI TURB. STM. SUP. VLV 2-FCV-73-16 FAILED TO OPEN	TCR-SWT. GEAR ASS. PIN FOR VLV OPER. SHEARED
G 8F3	018637		070577	H	MV	A23	R D	HPCI TURB. STM. SUP. 3-FCV-73-16 FAILED TO OPEN	TCR-SWT. GEAR ASS. SHEARED; CAUS. CVLD CN MY
G 8R1	017600		021077	D	MV	A16	S D	CORE SPRAY VALVE FAILED TO OPEN AT REQUIRED PRESS	SETPOINT ON CONTROLLING INST DRIFTED HI
G 8R1	017330		030677	L	MV	A00	U	RHR PMP 10 TORUS SUC. VLV E11-F0040 WOULD NOT OPEN	CAUSE OF FAILURE UNKNOWN
G 8R1	019677		110577	L	MV	A02	D	RHR VALVE E11-F004A FAILED TO OPEN (MOTOR PROBLEM)	PERSONNEL ERROR/COVER LEFT LOOSE/WATER LK
G 8R1	022092		072878	L	MV	A16	T D	VALVE F0688 FAILED TO OPEN	BLOWN FUSE
G 8R1	022022A		080278	L	MV	A16	T D	VALVE F0688 FAILED TO OPEN	BLOWN FUSE/FOLMO GRND WIRE IN LOGIC CKT
G 8R1	022218		080878	H	MV	A00	U	HPCI FEED INJ VALVE E41-F006 FAILED TO OPEN AUTO	UNKNOWN/TESTING COULDNT DUPLICATE FAILURE
G 8R1	022218		040378	L	MV	A20	D	SHUTDOWN COOL-OUTB-SUC. VLV E11-F008 WOULDNT OPEN	ELECTRO-MECHANICAL BRAKE ON VLV-OP. FAILED
G 8R1	022218		060378	L	MV	A00	U	RHR VLV E11-F009 WOULD NOT OPEN FROM CONTROL ROOM	CAUSE OF VLV NOT OPENING, NOT GIVEN
G 8R1	022218		090770	D	MV	A20	U	VALVE CMS-MV-128 FAILED TO OPEN	THE REPAIR CLUTCH AND COMPONENTS FAILED
G 8R1	023049		091878	L	MV	A20	D	VALVE RHR-MO-66B FAILED TO OPEN	SET SCREW CN VALVE OPERATOR LOOSTENED
G 8R1	023049		121577	L	MV	A12	D	RHR CROSS TIE VALVE FAILED TO OPEN	FRACTURED TEETH CN WORM AND WORM GEAR
G 8R1	023049		021777	L	MV	A26	U	LPCI CROSS-TIE VALVE MO2-1501-328 FAILED TO OPEN	LIMIT SWITCH OPENED BEFORE VALVE OFF SEAT
G 8R1	023049		080277	H	MV	A23	U	HPCI VALVE 2-2301-8 FAILED TO OPEN	SUSPECT PROBLEM WITH TORQUE SWITCH
G 8R1	023049		081577	L	MV	A00	U	SUCTION VALVE MO-2-1501-9A FAILED TO OPEN	CAUSE UNKNOWN
G 8R1	023049		091077	H	MV	A04	D	HPCI VALVE 2-2301-8 FAILED TO OPEN, VAL DAMAGED	OVER SIZED MTR OPERATORS OVERSTRESS STEM
G 8R1	026695		101276	L	MV	A16	S D	VALVE 3-1501-27A FAILED TO OPEN ELECTRICALLY	LOOSE TERMINAL IN VALVE CONTROL CIRCUIT
G 8R1	018936		081177	L	MV	A19	T	VALVE MO-3-1501-208 FAILED TO OPEN	VALVE STEM NOT ADEQUATELY LUBRICATED

VALVE---OPER TOR(MOTOR)---FAIL TO OPERATE

PLANT	CONT. NO.	EVENT DATE	S U S P	FAIL CODE	Y A O M K	FAILURE MODE	FAILURE MECHANISM
G 043	019996	121677	F	MV A00	R U	LPCI HX DISCH VALVE M03-1501-3A FAILED TO OPEN	CAUSE UNKNOWN
G 043	020602	020778	L	MV A00	R U	VALVE M0-3-1501-5C FAILED TO OPEN	CAUSE UNKNOWN
G EN1	014792	050176	H	MV A26	R T	HPCI DISCHARGE VALVE E41-F006 FAILED TO OPEN	FAILURE OF A SNAP LOCK LIMIT SWITCH
G EN1	015555	061576	H	MV A00	R U	HPIC VALVE E41-F006 DID NOT FULLY OPEN	CAUSE UNKNOWN
G EN1	022113	070278	L	MV A16	S D	RHR MOV E11-F024A FAILED TO OPEN	DIRT IN INTERLOCK ON BREAKER CAUSED BIND
G FP1	019058	042076	H	MV A20	U	HPCI TORUS SUCTION VALVE FAILED TO OPEN	SHORT IN OPERATOR MOTOR
G FP1	019237	070376	L	MV A20	D	RHR VALVE 10 MCV 25A FAILED TO OPEN	SUSPECT OPEN CIRCUIT IN MOTOR WINDINGS
G FP1	016269	102676	L	MV A20	D	RHR SYSTEM VALVE 10-MOV-24A WOULD NOT OPEN	VALVE MOTOR OPERATOR BURNED OUT
G FP1	016497	111976	H	MV A20	D	HPCI VALVE 23-MOV-97 FAILED TO OPEN	FAILURE OF VALVE MOTOR WINDINGS
G FP1	017956	061177	H	MV A00	U	VALVE 23 MOV 98 FAILED TO OPEN ON TEST SIGNAL	CAUSE UNKNOWN
G FP1	021142	100477	L	MV A23	D	LPCI MOV 25A FAILED TO OPEN CN TEST	LOW TORQUE SWITCH SETTING
G FP1	021622	040678	L	MV A16	S D	RHR ISOLATION VALVE 10MOV18 IMPERPERABLE (CLOSED)	CONTROLLER AUXILIARY CONTACT FAILURE
G FP1	021225	042978	H	MV A23	D	HPCI 23-MOV-15 WOULD NOT OPEN	TORQUE SWITCH WAS RESET
G FP1	022329	090378	D	MV A04	D	CORE SPRAY INJECTION VALVE 14-MOV-128 FAIL TO OPEN	DESIGN ERROR,NORMAL D.P.TOO SEVERE ON VAL
G M01	018094	053077	L	MV A16	T D	M8" RHR INJECTION VALVE FAILED TO OPEN (MC-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G M01	018955	082877	L	MV A16	T D	M8" RHR INJECTION VALV: FAILED TO OPEN (MC-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G N01	014666	051576	L	MV A20	U	SHUTDOWN COOL SYST ISO VALVE 38-02 FAIL TO OPEN	OPEN MOTOR WINDINGS
G DC1	014413	040176	F	MV A16	S D	TORUS SPRAY VLV V-21-15 FAILED TO OPEN ON AUTO-SIG	MOTOR CONT.,INTR. BRKR. FAILED TO OPERATE
G DC1	015375	082076	F	MV A16	S D	VLV V-21-16 FAILED TO OPEN ON AUTO START SIGNAL	DEFECT.SWITCH IN VLV.MOTOR CONTROL
G DC1	016479	120176	D	MV A16	S D	CORE SPRAY ISO.VLV V-20-15 FAILED TO OPEN ON SIGNAL	INTERMIL.GRND.SHRT.IN VLV.MTR.CPER.PWR.FD

VALVE--OPERATOR(MOTOR)---FAIL TO OPERATE

P L A M	CONT NO.	EVENT DATE	S M	C M	FAIL CODE	T A P E	U N I T	FAILURE MODE	FAILURE MECHANISM
G	0C1 018623*	072777	D	MV	A16	S	D	02	CORE SPRAY ISO.VLV5 V-20-40 & V-20-15 FAILED TO F--ULLY OPEN//IPP.CKT.BRKR. OVERLOAD SETTING
G	0C1 022576	091478	L	MV	A23	T			SET SCREW ON TORQUE SW LOOSTENED, SET DRFT
G	0C1 023144	120478	F	MV	A16	S	D		BREAKER TO VALVE NOT RACKED IN PROPERLY
G	P82 013952	010776	L	MV	A20	U			MOTOR ON VLV OVERHEATED AND DAMAGED WINDNG
G	P82 013990	011576	L	MV	A12	D			MTR SHAFT TO PINION GEAR KEY SHEARED
G	P83 014032	010576	D	MV	A16	S	D		PROBLEM WITH MAGNET, TRIP DEVICE MTR. BRKR
G	P83 014475	011776	L	MV	A16	S	D		BROKEN WIRE TO OPENING TORQUE SWITCH
G	P83 018864	090277	H	MV	A09	T			CORRODED VLV STEM DUE TO VLV PACKING LEAK
G	P83 023062	111678	L	MV	A20	D			MOTOR & SEVERAL OPERATOR PARTS REPLACED
G	0C1 020264	111877	H	MV	A23	D			MOV HAD DEFECTIVE TORQUE SWITCH
G	0C2 019759	111477	D	MV	A08	D			STEM AND BONNET BADLY GALLED
G	VY1 014584*	051076	L	MV	A14	C	T	02	STEM PACKING AT END OF USEFULL LIFE
G	VY1 015655	092076	L	MV	A00	U			DRY VALVE PACKING CAUSED LIM SW TO TRIP
M	KE1 020788	030278	H	MV	A00	R	U		TORQUE SW PROBLEM/ADJUSTED IT(LIMITORQUE)
M	KE1 021077	060478	H	MV	A14	R	T		TORQUE SW MALFUNCTIONED/WAS REPLACED
M	NA1 022269	081778	L	MV	A14	T			TORQUE SW MALFUNCTIONED/WAS REPLACED
M	PR1 014758	051376	L	MV	A23	R	T		UNKNOW/VALWORTH AND LIMITORQUE INVESTIG.
M	PR2 016284	102576	H	MV	A23	R	D		CAUSE UNKNOWN
M	PR2 019284	100477	H	MV	A00	U			VAL PACKING AT END OF USEFULL LIFE
M	PR2 020125	122377	B	MV	A16	S	D		DRY VALVE PACKING CAUSED LIM SW TO TRIP

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

P L A N N O T	CONT. NO.	EVENT DATE	S Y S T E M	C O D E	FAIL CODE	T Y P E	C L A S S I F I C A T I O N	FAILURE MECHANISM
M P12	015186	070176	B	MV	A23	R	T	MOV-2MS-2019/STEAM TO AUX FEED PUMP FAILED TO OPEN TORQUE SN SETPOINT CAUSED TIGHT CLOSING
M R02	019350	081677	B	MV	A20	D	D	LIMITORQUE VALVE OPERATOR FAILED
M R02	019352	081777	B	MV	A20	R	D	LIMITORQUE VALVE OPERATOR FAILED
M R02	019667	102677	L	MV	A20	U	U	MOTOR WINDINGS WERE SHORTED
M R02	020653	120377	L	MV	A16	S	D	CIRCUIT THERMAL OVERLOAD DEVICE TRIPPED
M R02	022626	122177	B	MV	A12	R	T	EXCESS SEATING PRESS CAUSED BY OVERHEAT
M S41	021910	052378	H	MV	A20	D	D	WINDING FAILED/INCORRECT MOTOR SIZE/PERSN
M SUI	014871	031876	B	MV	A16	S	D	--PEN//TIPING RELAY FAILURE
M SUI	021802	062278	L	MV	A02	D	D	MAINT ERROR/STEM WAS NOT ENGAGED TO DISC
M TRI	016250	102876	H	MV	A16	S	D	BREAKER SUPPLYING POWER FAILED/COMMAND
M TRI	016250A	102876	H	MV	A23	U	U	TORQUE SN SET TOO LOW/VAL WOULDNT UNSEAT
M TRI	020216	010478	H	MV	A19	T	T	VALVE STEM LACKED LUBRICATION
M Z11	017040	012677	H	MV	A16	F	D	COMMAND/AUX CONTACTS IN CONTR CNT STUCK
M Z11	017223	012877	H	MV	A16	F	D	COMMAND/AUX CONTACTS, CONTROL CNT, STUCK
M Z11	017251	012877	H	MV	A16	F	D	AUX CONTACTS IN CONTROL CIRCUIT STUCK
M Z11	021337	042178	L	MV	A00	U	U	UNKNOWN/SOMETHING CAUSED THERMALS TO OPEN
M Z11	021397	050378	F	MV	A19	T	T	LACK OF LUBRICATION
M Z12	014253	021376	H	MV	A16	F	D	DIRTY CNT-ON CKT. BRKR. TO MTR. OPERATOR
M Z12	017861	051977	H	MV	A20	D	D	LIMITORQUE MOTOR OPERATOR FAILURE
M Z12	018212	060477	L	MV	A16	S	D	COMMAND/AUX CONTACTS STUCK IN MCC

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

W E K I	P L A N	CONT. NO.	EVENT DATE	SYM S	CU S	FAIL CODE	TY P E	COM M E N T	FAILURE MODE	FAILURE MECHANISM
B	CR3	019C10	082777	L	MV	823	T	CORE FLOOD DR. VLV FOR B CORE FL. TK. WOULDNT CLOSE		DRIFT OF TORQUE SWITCH SETTING; VLV CFV-12
B	OE2	017541	040577	G	MV	812	D	VALVE 2LP-21 FAILED TO CLOSE		LOOSE SET SCREW ON PINION GEAR OF MTR SFT
C	SL1	020639	020978	B	MV	820	D	AUX FEED PUMP VALVE (MV-09-11) FAILED TO CLOSE		MV MOTOR WINDING PARTIALLY SHORTED
G	8F1	017594A	032177	L	MV	808	D	VLV FCV 74-52 WOULD NOT GO COMPLETELY CLOSED		WORN BRNG. ASS. LOCKNUT, YOKE NUT, GASKETS
G	8F1	017594B	032177	L	MV	820	D	VLV FCV 74-92 WOULD NOT CLOSE; MTR TRIP, THERMAL O.L		MOTOR SHAFT WAS BENT
G	8R1	019824	120377	L	MV	820	U	VALVE E11-F040 FAILED IN OPEN POSITION		MOTOR FOUND TO BE OPEN (UNDETERMINED WHY)
G	CO1	017301	021977	L	MV	820	R	MOTOR OPERATED VALVE RHR-MO-34 WOULD NOT CLOSE		SHEARED KEY BETWEEN VALVE AND OPERATOR
G	CO1	020343	011378	L	MV	816	S	RHR INJ BLOCK VALVE FAILED TO CLOSE DURING TEST		DIRTY CONTACTS ON RELAY WIRING ERROR
G	DA1	019963	112377	H	MV	800	U	HPCI INJECTION VALVE MOV 2312 FAILED TO CLOSE		CAUSE UNKNOWN
G	DR3	014750	021076	D	MV	816	S	MO 3-1402-258 TRIPPED WHILE BEING CLOSED		WRONG SIZE OVERLOAD HEATER
G	DR3	022561	092278	L	MV	516	S	LPCI VALVE 3-1901-20A FAILED TO CLOSE ON TESTING		STUCK CONTACTOR IN MCC
G	FPI	019310	140877	H	MV	823	D	HPCI STEAM ISOL VALVE FAILED TO CLOSE ELECTRICALLY		TORQUE SWITCH NEEDED ADJUSTMENT
G	FPI	021712	062978	H	MV	816	S	HPCI VALVE 23-MOV-15 FAILED TO CLOSE		DEFECTIVE TEMP SWITCH (NO SIGNAL TO CLOSE)
G	FPI	021924	072278	D	MV	812	D	OUTBOARD INJECTION VALVE 14-MOV-11B FAILED TO CLOSE		OPERATOR SHAFT KEY SHEARED
G	M11	016688	121776	L	MV	823	U	ISO COND INBOARD 5YM SUPVAL FAIL TO CLOSE		TORQUE SN SET INCORRECTLY
G	M11	016689	121876	L	MV	823	U	CONDENSATE RETURN VAL 1-IC-4 FAILED TO CLOSE		TORQUE SN SET INCORRECTLY
G	M01	015708	090276	F	MV	812	R	VALVE MD-2008 FAILED TO OPEN		STEM CLAMP SET SCREWS SHEARED
G	OC1	017472	032377	D	MV	816	S	CORE SPRAY ISO-VLV V-20-15 INOPERABLE IN OPEN POS.		VLV. MTR. OPERATOR BREAKER TRIPPED
G	OC1	019680	050677	D	MV	816	S	CORE SPRAY ISO-VLV. V-20-15 FAILED TO CLOSE		DEFECTIVE CRT. BRKP. TO MOTOR
G	P82	016390	110476	D	MV	812	D	CORE SPRAY VALVE MD-26A FAILED TO CLOSE		MTR OPER GEAR TRAIN FAILED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

VEN	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CLASS	CLASS	KEY	FAILURE MODE	FAILURE MECHANISM
G	PCS	016476	112376	D	MV	B23	D					CORE SPR.B FULL FL.TST.RET.VLV FAILED TO CLOSE	TORQUE SWITCH SETTING WAS TOO LOW
G	P11	018325	062077	L	MV	B12	R	D				VALVE MO-1001-36A FAILED TO CLOSE,RHR PUMP OPERAT	KEY WHICH PREVENTS STEM ROTATION SHEARED
G	QC1	016162	090276	F	MV	B20	D					MOV FAILED TO CLOSE DURING TESTING(MO-1-1001-26-A)	EXCESS GREASE/COMPACTION/HYDRAULIC LOCK
G	QC1	021436	050478	H	MV	B23	T					HPCI PMP SUCTION VLV MO-1-2301-6 WOULD NOT CLOSE	VLV.TORQUE SWITCH WAS WORN OUT
W	BV1	016279	102276	H	MV	B16	S	D				YCT DISCH VALVE FAILED TO SHUT ON SI SIGNAL	NO PWR/ALLIS CHALMER LINESTARTER FAILURE
W	BV1	016356	102576	H	MV	B16	S	D				DRAIN VALVE ON ACCUMULATOR 1C FAILED TO SHUT	NO PWR/THERMAL OVERLOAD OF LINESTARTER
W	DC1	020694	020878	B	MV	B16	S	D				AUX FEED MOV FAILED TO CLOSE	COMMAND/LOOSE ELEC CONNECTION/CONTROL
W	DC1	023114	112678	B	MV	B16	S	D				AFM THROTTLE VLV. WOULD NOT CLOSE ELECTRICALLY	BROKEN LEAD ON MTR OPERATOR
W	Z12	016535	112776	H	MV	B14	T					BIT OUTLET MOV (2MOV-S18801B) FAILED TO CLOSE/TEST	PACKING PROB/GLAND MISALIGN/LACK OF LUB.
B	DE3	020593	020778	F	MV	F12	D					VALVE BS-2 FAILED IN INTERMEDIATE POSITION	VALVE STEM FAILURE
B	RS1	019536	100177	L	MV	F20	D					BWS ISOL VALVE FAILED TO OPERATE (SFV-25003)	LIMITORQUE OPERATOR(SMB)FAILED(EXCESS OP)
B	RS1	019798	111977	H	MV	F00	U					HPI INJECTION ISOLATION VALVE FAILED TO CYCLE/TEST	UNKNOWN
C	CC1	014465	030576	H	MV	F16	S	D				HPSI LP.ISO.VLV 1-MOV-616 WOULD NOT OPER. REMOTELY	BLOWN CONTROL CIRCUIT FUSE CAUSED FAILURE
G	BF3	020524	021378	L	MV	F12	R	D				VLV FCV.3-74-52 WAS FOUND INOPERABLE	UPPER BRNG.LOCKNUT STRIPPED FROM NOR. POS
G	BF3	021245	042878	L	MV	F12	R	D				VLV FCV 3-74-52 WAS FOUND INOPERABLE	UP.BRNG.LOCKNUT STRIPPED FROM NOR.POSITION
G	BR1	016462	111976	L	MV	F16	S	D				RHR INJECTION VALVE(E11-F015A) FAILED TO OPERATE	UNDERSIZED BRG/DESIGN PROBLEM(ROOT)
G	BR2	020240	010478	H	MV	F26	T					CLOSING TIME ON E41-F002 EXCEED. TS LIMIT (HPCI)	LIMIT SWITCH(CPEN) OUT OF ADJUSTMENT
G	CO1	014359	012476	L	MV	F20	R	D				VLV RHR-MO-34A WOULD NOT OPERATE BY MTR.OPERATOR	SHEARED WOODRUFF KEY.IN MTR.OPERATOR
G	CO1	015717	081076	D	MV	F20	D					VALVE CS-MO-12B WOULD NOT OPERATE	TRIPPER PIN IN OPERATOR DISLODGED
G	CO1	018004	042077	D	MV	F20	D					CORE SPRAY PUMP VALVE INOPERATIVE,MOTOR RUNS	MOTOR GEAR SET SCREW ON VAL OPER LOCKE

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>I</u>	<u>C</u> <u>O</u> <u>N</u> <u>T.</u> <u>N</u> <u>O.</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>T</u> <u>S</u>	<u>C</u> <u>O</u> <u>M</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>T</u> <u>E</u> <u>S</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>N</u> <u>O</u> <u>M</u> <u>P</u> <u>M</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
G	DA1	017043	021177	D	MV	F05		D			CLUTCH HOUSING FOR MOV 2115 FRACTURED DUR. TEST	MATERIAL TOO BRITTLE
G	DR2	015378	071176	D	MV	F26		D			CORE SPRAY INJECTION VAL MO2-1402-248 FAILED	BROKEN LIMIT SWITCH CONTACT BLOCK
G	DR2	016453	111376	H	MV	F12		D			HPCI INJECTION VALVE MO2-2301-8 FAILED	VALVE STEM SHEARED
G	DR3	016474	111976	H	MV	F16	S	D			HPCI LOGIC DESIGN WIRING CAUSING VALVES TO CYCLE	DESIGN ERROR
G	DR3	021679	060678	F	MV	F23		D			VALVE MO3-1501-288 FAILED WHILE BEING CYCLED	DEFECTIVE SHAFT PIN ON TORQUE SWITCH
G	DR3	022591	092778	L	MV	F00		U			LPCI HX VALVE MO3-1501-3A FAILED TO OPERATE	CAUSE UNKNOWN
G	EN1	014785	040776	L	MV	F20		U			VALVE E11-F047A FAILED TO OPERATE ELECTRICALLY	A MOTOR WINDING FAILURE OCCURRED
G	EN2	022024*	071778	L	MV	F16	S	D	02	V	RHR VALVES HAD POWER LOST TO THEM	BREAKER TRIPPED DUE TO BLOWN FUSES
G	EN2	022675	102778	H	MV	F20		T			HPCI VALVE 2E41-F001 FAILED TO OPERATE	FAILURE OF MOTOR SHUNT FIELD INSULATION
G	FP1	021023	040878	H	MV	F12		D			VALVE 23MOV14 SEPERATED FROM OPERATOR	FAILURE OF MECHANICAL FASTENERS
G	FP1	021227	050878	D	MV	F02		D			POWER REMOVED FROM CORE SPRAY VALVE MOTOR	PERSONNEL ERROR
G	MO1	023389	112178	L	MV	F16	S	D			MO-2014 LPCI A ADMISSION VALVE INOPERABLE	BLOWN FUSE IN CONTROL POWER CIRCUIT
G	P82	015142	061876	L	MV	F12		D			RHR SD COOL SUCT ISD VAL MO-2-10-18 FAIL TO STROKE	VALVE STEM BENT
G	P82	019094	091377	H	MV	F16	S	D			HPCI TURB EXHAUST VAL MTR DAMAGED	SHORT IN VAL CONTROL CIRCUIT
G	P11	019669	110477	L	MV	F12		T			MTR OPER FOR VAL MO-1001-188 OVERLOADED, BURNED OUT	WORN GEARS ALLOWED MTR TO RUN AFT VLV CLS
G	QC1	015257	070176	F	MV	F12		D			LOOP SPRAY VALVE FAILED TO OPERATE(MO-1-1001-23-B)	LOOSE BOLTS HOLDING OPERATOR TO VALVE
G	QC1	019469	093077	D	MV	F05		D			CORE SPRAY VALVE 1-1402-258 FAILED TO OPERATE	CRACKED YOKE/PROB SINCE INSTALLATION
G	VY1	014230*	021776	L	MV	F01		D	02		RHR VLVS. 25A68 WOULD NOT STROKE ELECTRICALLY	PERSON. ERROR(MUST STRO. VLVS. MANUALLY 1ST)
W	DC1	016367	110176	L	MV	F12		U			RHR VALVE FAILED TO CYCLE DURING TESTING	PACKING GLAND WAS TOO TIGHT
W	DC1	021011*	032278	H	MV	F16	S	D	03		POWER FOUND OFF TO 3 ECCS VALVES	3 BREAKERS FOUND TRIPPED ON MCC

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SY</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
W DC2	022069	071978	L	MV	F00		U				RHR PUMP SUCTION MOV FAILED TO CYCLE/TIME-WISE	UNKNOWN WHY CYCLE TIME EXCEEDED
W KE1	013963	010876	H	MV	F12		D				VALVE SI-28 DID NOT OPERATE	SCREW HOLDING TRIP LEVER BACKED OUT
W KE1	019312	100377	F	MV	F02		D				MAINT.MAN DEENERGIZED 2 SW VLVS,WHEN ONLY ALLOW.T-	-C DEENER.1 VLV//PERSONNEL ERROR
W PR1	018341	061877	B	MV	F20		D				AUX FEED PUMP DISCHARGE VALVE FAILED TO OPERATE	OPEN LEAD IN OPERATOR/LIMITORQUE SMB-000
W PT1	013945	010876	B	MV	F20		D				MOV-4020 AUX FEED PUMP DISCHARGE FAILED STUCK/TEST	VALVE OPERATOR RING WORN/GEAR REPLACED
W PT2	017035	012777	F	MV	F16	S	D				CONT.SPRAY PMP.DISCHG.VLV.2-8608 INOPERABLE	VALVE OPERATOR BREAKER WAS OPEN
W PT2	021766	061678	F	MV	F23		D				CONT SPRAY VALVE(MOV) FAILED TO OPERATE FOR TEST	SMB-00 LIMITORQUE SW FAULTY/REPLACED
W R02	020322	011178	L	MV	F13		T				VALVE RHR-7448 FAILED TO FUNCTION PROPERLY	OIL LEAK INTO MOTOR CAUSING SHORT
W SA1	016939*	011077	H	MV	F20		D 02				MTR.BRKRS.TO VLVS 15J162 TRIPPED WHEN VLVS WERE O-	PENED//BOTH MTR.OPERATORS HAD FAILED
W S01	021207	041878	H	MV	F12		D				MOV-8500 FAILED TO OPEN IN REQUIRED TIME / TESTING	SHAFT DISTORTED/PROB DUE TO EXCESS TORQUE
W S02	015526	061576	L	MV	F12		D				LPIS MOV-28628 FAILED TO OPERATE FROM CONSOLE	THERMAL OVERLOAD DUE TO VALVE PLUG BIND
W TR1	020325	112777	B	MV	F20		T				AUX FEED VLV (CV-300482) FAILED TO OPERATE	MOTOR OPER FAILED/WATER CAME THRU GASKET

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE
BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	28	12	1	735840.0	336	1.4E-06	3.0E-03
CR3	17184.0	28	8	5	481152.0	224	1.0E-05	2.2E-02
DB1	11424.0	22	6	2	251328.0	132	8.0E-06	1.5E-02
DE1	26280.0	52	12	0	1366560.0	624	2.2E-06*	4.8E-03*
DE2	26280.0	51	12	1	1340280.0	612	7.5E-07	1.6E-03
DE3	26280.0	46	12	2	1208880.0	552	1.7E-06	3.6E-03
RS1	26280.0	30	12	5	788400.0	360	6.3E-06	1.4E-02
TI1	26280.0	31	12	0	814680.0	372	3.7E-06*	8.1E-03*
TI2	6648.0	42	4	0	279216.0	168	1.1E-05*	1.8E-02*
TOTALS				16	7266336.0	3380		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE
COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	63	1	0	37800.0	63	7.9E-05*	4.6E-02*
CC1	26280.0	31	12	1	814680.0	372	1.2E-06	2.7E-03
CC2	18264.0	31	9	1	566184.0	279	1.8E-06	3.6E-03
FC1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
MI2	26280.0	33	12	1	867240.0	396	1.2E-06	2.5E-03
MY1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
PA1	26280.0	15	12	0	394200.0	180	7.6E-06*	1.7E-02*
SL1	23592.0	34	11	2	802128.0	374	2.5E-06	5.3E-03
TOTALS				5	4559712.0	2156		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTCR)--FAIL TO OPERATE
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	63	12	3	1655640.0	756	1.8E-06	4.0E-03
BF2	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
BF3	26976.0	63	10	3	1321488.0	630	2.3E-06	4.8E-03
BR1	19512.0	72	9	4	1404864.0	648	2.8E-06	6.2E-03
BR2	26280.0	72	12	3	1892160.0	864	1.6E-06	3.5E-03
CD1	26280.0	37	12	6	1497960.0	684	4.0E-06	8.8E-03
DA1	26280.0	67	12	3	1760760.0	804	1.7E-06	3.7E-03
DR2	26280.0	51	12	6	1340280.0	612	4.5E-06	9.8E-03
DR3	26280.0	51	12	5	1340280.0	612	3.7E-06	8.2E-03
EN1	26280.0	68	12	3	1787040.0	816	1.7E-06	3.7E-03
EN2	4296.0	67	2	1	287832.0	134	3.5E-06	7.5E-03
FP1	26280.0	18	12	12	473040.0	216	2.5E-05	5.6E-02
MI1	26280.0	34	12	2	893520.0	408	2.2E-06	4.9E-03
MO1	26280.0	47	12	1	1235160.0	564	8.1E-07	1.8E-03
NM1	26280.0	21	12	1	551880.0	252	1.8E-06	4.0E-03
OC1	26280.0	42	12	1	1103760.0	504	9.1E-07	2.0E-03
PB2	26280.0	58	12	4	1524240.0	696	2.6E-06	5.7E-03
PB3	26280.0	58	12	3	1524240.0	696	2.0E-06	4.3E-03
PI1	26280.0	47	12	2	1235160.0	564	1.6E-06	3.5E-03
QC1	26280.0	57	12	5	1497960.0	684	3.3E-06	7.3E-03
QC2	26280.0	57	12	1	1497960.0	684	6.7E-07	1.5E-03
VY1	26280.0	56	12	5	1471680.0	672	3.4E-06	7.4E-03
			TOTALS	75	28952544.0	13256		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE

WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	49	11	0	1133664.0	539	2.6E-06*	5.6E-03*
DC1	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
DC2	7080.0	63	3	1	446040.0	189	2.2E-06	5.3E-03
HN1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
IP2	26280.0	60	12	0	1576800.0	720	1.9E-06*	4.2E-03*
IP3	23952.0	66	11	0	1580832.0	726	1.9E-06*	4.1E-03*
JF1	12192.0	68	6	0	629056.0	408	3.6E-06*	7.3E-03*
KE1	26280.0	41	12	4	1077480.0	492	3.7E-06	8.1E-03
NA1	6456.0	48	3	1	309888.0	144	3.2E-06	6.9E-03
PR1	26280.0	54	12	2	1419120.0	648	1.4E-06	3.1E-03
PR2	26280.0	54	12	2	1419120.0	648	1.4E-06	3.1E-03
PT1	26280.0	42	12	1	1103760.0	504	9.1E-07	2.0E-03
PT2	26280.0	42	12	2	1103760.0	504	1.8E-06	4.0E-03
RG1	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
RD2	26280.0	37	12	5	972360.0	444	5.1E-06	1.1E-02
SA1	17976.0	39	8	3	701064.0	312	4.3E-06	9.6E-03
SD1	26280.0	26	12	1	683280.0	312	1.5E-06	3.2E-03
SU1	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
SU2	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
TR1	26280.0	41	12	3	1077480.0	492	2.8E-06	6.1E-03
TU3	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
TU4	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
YR1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
ZI1	26280.0	82	12	2	2154960.0	984	9.3E-07	2.0E-03
ZI2	26280.0	82	12	2	2154960.0	984	9.3E-07	2.0E-03
TOTALS				32	29624904.0	13552		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTCR)--FAIL TO OPERATE

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.5	1.5
BAB.&WIL.	2.2E-06	4.7E-03
	1.6	1.6
	2.1	2.1
COMB.ENG.	1.1E-06	2.3E-03
	2.5	2.5
	1.2	1.2
GEN.ELEC.	2.6E-06	5.7E-03
	1.2	1.2
	1.5	1.3
WESTINGH.	1.1E-06	2.4E-03
	1.4	1.4
	1.3	1.3
PWR'S	1.3E-06	2.8E-03
	1.3	1.3
	1.2	1.2
OVERALL	1.8E-06	4.0E-03
	1.2	1.2

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	28	12	1	735840.0	336	1.4E-06	3.0E-03
CR3	17184.0	28	8	5	481152.0	224	1.0E-05	2.2E-02
DB1	11424.0	22	6	2	251328.0	132	8.0E-06	1.5E-02
OE1	26280.0	52	12	0	1366560.0	624	2.2E-06*	4.8E-03*
OE2	26280.0	51	12	2	1340280.0	612	1.5E-06	3.3E-03
OE3	26280.0	46	12	3	1208880.0	552	2.5E-06	5.4E-03
RS1	26280.0	30	12	5	788400.0	360	6.3E-06	1.4E-02
T11	26280.0	31	12	0	814680.0	372	3.7E-06*	8.1E-03*
T12	6648.0	42	4	0	279216.0	168	1.1E-05*	1.8E-02*
TOTALS				18	7266336.0	3380		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

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VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	63	1	0	37800.0	63	7.9E-05*	4.6E-02*
CC1	26280.0	31	12	2	814680.0	372	2.5E-06	5.4E-03
CC2	18264.0	31	9	1	566184.0	279	1.8E-06	3.6E-03
FC1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
MI2	26280.0	33	12	1	867240.0	396	1.2E-06	2.5E-03
MY1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
PA1	26280.0	15	12	1	394200.0	180	2.5E-06	5.6E-03
SL1	23592.0	34	11	5	872128.0	374	6.2E-06	1.3E-02
TOTALS				10	4559712.0	2156		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	63	12	3	1655640.0	756	1.8E-06	4.0E-03
BF2	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
BF3	20976.0	63	10	3	1321488.0	630	2.3E-06	4.8E-03
BR1	19512.0	72	9	8	1404864.0	648	5.7E-06	1.2E-02
BR2	26280.0	72	12	3	1892160.0	864	1.6E-06	3.5E-03
CD1	26280.0	57	12	7	1497960.0	684	4.7E-06	1.0E-02
DA1	26280.0	67	12	3	1760760.0	804	1.7E-06	3.7E-03
DR2	26280.0	51	12	6	1340280.0	612	4.5E-06	9.8E-03
DR3	26280.0	51	12	9	1340280.0	612	6.7E-06	1.5E-02
EN1	26280.0	68	12	4	1787040.0	816	2.2E-06	4.9E-03
EN2	4296.0	67	2	3	287832.0	134	1.0E-05	2.2E-02
FP1	26280.0	18	12	14	473040.0	216	3.0E-05	6.5E-02
MI1	26280.0	34	12	2	893520.0	468	2.2E-06	4.9E-03
MC1	26280.0	47	12	4	1235160.0	564	3.2E-06	7.1E-03
NM1	26280.0	21	12	1	551880.0	252	1.8E-06	4.0E-03
OC1	26280.0	42	12	9	1103760.0	504	8.2E-06	1.8E-02
PB2	26280.0	58	12	5	1524240.0	696	3.3E-06	7.2E-03
PB3	26280.0	58	12	5	1524240.0	696	3.3E-06	7.2E-03
PI1	26280.0	47	12	2	1235160.0	564	1.6E-06	3.5E-03
QC1	26280.0	57	12	5	1497960.0	684	3.3E-06	7.3E-03
QC2	26280.0	57	12	1	1497960.0	684	6.7E-07	1.5E-03
VY1	26280.0	56	12	5	1471680.0	672	3.4E-06	7.4E-03
			TOTALS	103	28952544.0	13256		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE (COMMAND FAILTS INCLUDED)
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	49	11	2	1133664.0	539	1.8E-06	3.7E-03
DC1	26280.0	63	12	6	1655640.0	756	3.6E-06	7.9E-03
DC2	7080.0	63	3	1	446040.0	189	2.2E-06	5.3E-03
HN1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
IP2	26280.0	60	12	0	1576800.0	720	1.9E-06*	4.2E-03*
IP3	23952.0	66	11	0	1580832.0	726	1.9E-06*	4.1E-03*
JF1	12192.0	68	6	0	829056.0	408	3.6E-06*	7.3E-03*
KE1	26280.0	41	12	4	1077480.0	492	3.7E-06	8.1E-03
NA1	6456.0	48	3	1	309888.0	144	1.2E-06	6.9E-03
PR1	26280.0	54	12	2	1419120.0	648	1.4E-06	3.1E-03
PR2	26280.0	54	12	3	1419120.0	648	2.1E-06	4.6E-03
PT1	26280.0	42	12	1	1103760.0	504	9.1E-07	2.0E-03
PT2	26280.0	42	12	3	1103760.0	504	2.7E-06	6.0E-03
RG1	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
RO2	26280.0	37	12	6	972360.0	444	6.2E-06	1.4E-02
SA1	17976.0	39	8	3	701064.0	312	4.3E-06	9.6E-03
SO1	26280.0	26	12	1	683280.0	312	1.5E-06	3.2E-03
SU1	26280.0	55	12	2	1445400.0	660	1.4E-06	3.0E-03
SU2	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
TR1	26280.0	41	12	4	1077480.0	492	3.7E-06	8.1E-03
TU3	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
TU4	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
YK1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
ZI1	26280.0	82	12	5	2154960.0	984	2.3E-06	5.1E-03
ZI2	26280.0	82	12	4	2154960.0	984	1.9E-06	4.1E-03
			TOTALS	49	29624904.0	13562		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.5	1.5
BAB.&WIL.	2.5E-06	5.3E-03
	1.5	1.5
	1.7	1.7
COMB.ENG.	2.2E-06	4.6E-03
	1.8	1.8
	1.2	1.2
GEN.ELEC.	3.6E-06	7.8E-03
	1.2	1.2
	1.3	1.3
WESTINGH.	1.7E-06	3.6E-03
	1.3	1.3
	1.2	1.2
2'S	1.9E-06	4.0E-03
	1.2	1.2
	1.1	1.1
OVERALL	2.6E-06	5.6E-03
	1.1	1.1

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY

UNIT	CONT. NO.	EVENT DATE	SUMMARY	FAIL CODE	TYPE	CM	MODE	MECHANISM
B T11	016382	110676	L MV 013	D			EXTERNAL LEAK INCREASED WHEN MOV (DH-V1) OPENED	LEAKAGE PAST SEAL RING GASKET/SHUT VALVE
G FP1	020929	040478	L MV 014	T			VALVE 10MOV27A LEAKING EXTERNALLY	FAILURE OF VALVE PACKING
G PR2	016987	020877	H MV 012	U			EXTERNAL STM LEAK VAL MO-2-23-16	VAL PACKING LUBE PLUS LEAKING
M DC1	018418	070677	B MV 011	T			AUX FEED WATER VALVE FOUND WITH CRACK IN BODY	WATER HAMMER AND VIBRATION
M LP2	014094	010376	L MV 014	T			EXTERNAL LEAKAGE FROM VALVE MOV-731	PACKING GLAND LEAKAGE
M LP2	016039	092776	L MV 014	T			14-IN VAL CM RHR SYST LEAKING EXTERNALLY	EXCESSIVE PACKING GLAND LEAKAGE
M SU2	020236	012078	L MV 009	T			18 GPM LEAK FROM MOV-RH-2700 PACKING GLAND	CORROSION FAILED STUDS HOLDING PACKING

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	28	0	735840.0	4.1E-06*
CR3	17184.0	28	0	481152.0	6.2E-06*
DB1	11424.0	22	0	251328.0	1.2E-05*
DE1	26280.0	52	0	1366560.0	2.2E-06*
DE2	26280.0	51	0	1340280.0	2.2E-06*
DE3	26280.0	46	0	1208880.0	2.5E-06*
RS1	26280.0	30	0	788400.0	3.8E-06*
TI1	26280.0	31	1	814680.0	1.2E-06
TI2	6648.0	42	0	279216.0	1.1E-05*
TOTALS			1	7266336.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	63	0	37800.0	7.9E-05*
CC1	26280.0	31	0	814680.0	3.7E-06*
CC2	18264.0	31	0	566184.0	5.3E-06*
FC1	26280.0	6	0	157680.0	1.9E-05*
MI2	26280.0	33	0	867240.0	3.5E-06*
MY1	26280.0	35	0	919800.0	3.3E-06*
PA1	26280.0	15	0	394200.0	7.6E-06*
SL1	23592.0	34	0	802128.0	3.7E-06*
TOTALS			0	4559712.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY

GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	63	0	1655640.0	1.8E-06*
BF2	26280.0	63	0	1655640.0	1.8E-06*
BF3	20976.0	63	0	1321488.0	2.3E-06*
BR1	19512.0	72	0	1404864.0	2.1E-06*
BR2	26280.0	72	0	1892160.0	1.6E-06*
CD1	26280.0	57	0	1497960.0	2.0E-06*
DA1	26280.0	67	0	1760760.0	1.7E-06*
DR2	26280.0	51	0	1340280.0	2.2E-06*
DR3	26280.0	51	0	1340280.0	2.2E-06*
EN1	26280.0	68	0	1787040.0	1.7E-06*
EN2	4296.0	67	0	287832.0	1.0E-05*
FP1	26280.0	18	1	473040.0	2.1E-06
MI1	26280.0	34	0	893520.0	3.4E-06*
MO1	26280.0	47	0	1235160.0	2.4E-06*
NM1	26280.0	21	0	551880.0	5.4E-06*
OC1	26280.0	42	0	1103760.0	2.7E-06*
PB2	26280.0	58	1	1524240.0	6.6E-07
PB3	26280.0	58	0	1524240.0	2.0E-06*
PI1	26280.0	47	0	1235160.0	2.4E-06*
QC1	26280.0	57	0	1497960.0	2.0E-06*
QC2	26280.0	57	0	1497960.0	2.0E-06*
VY1	26280.0	56	0	1471680.0	2.0E-06*
		TOTALS	2	28952544.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY

WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	49	0	1133664.0	2.6E-06*
DC1	26280.0	63	1	1655640.0	6.0E-07
DC2	7080.0	63	0	446040.0	6.7E-06*
HN1	26280.0	28	0	735840.0	4.1E-06*
IP2	26280.0	60	2	1576800.0	1.3E-06
IP3	23952.0	66	0	1580832.0	1.9E-06*
JF1	12192.0	68	0	829056.0	3.6E-06*
KE1	26280.0	41	0	1077480.0	2.8E-06*
NA1	6456.0	48	0	309888.0	9.7E-06*
PR1	26280.0	54	0	1419120.0	2.1E-06*
PR2	26280.0	54	0	1419120.0	2.1E-06*
PT1	26280.0	42	0	1103760.0	2.7E-06*
PT2	26280.0	42	0	1103760.0	2.7E-06*
RG1	26280.0	47	0	1235160.0	2.4E-06*
RD2	26280.0	37	0	972360.0	3.1E-06*
SA1	17976.0	39	0	701064.0	4.3E-06*
SO1	26280.0	26	0	683280.0	4.4E-06*
SU1	26280.0	55	0	1445400.0	2.1E-06*
SU2	26280.0	55	1	1445400.0	6.9E-07
TR1	26280.0	41	0	1077480.0	2.8E-06*
TU3	26280.0	50	0	1314000.0	2.3E-06*
TU4	26280.0	50	0	1314000.0	2.3E-06*
YR1	26280.0	28	0	735840.0	4.1E-06*
ZI1	26280.0	82	0	2154960.0	1.4E-06*
ZI2	26280.0	82	0	2154960.0	1.4E-06*
		TOTALS	4	29624904.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--LEAK EXTERNALLY
FINAL STATISTICS

	STANDBY HOUR RATE
	4.7
BAB.&WIL.	1.4E-07 19.5
COMB.ENG.	6.6E-07*
	3.1
GEN.ELEC.	6.9E-08 5.6
	2.3
WESTINGH.	1.4E-07 2.9
	2.1
PWR'S	1.2E-07 2.5
	1.9
OVERALL	9.9E-08 2.1

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--PLUGGED

V E N T	P L A N T	CONT.NO.	EVENT DATE	S I S T E M	C O D E	FAIL CGDE	T Y P E	C L A S S	C O N T R O L P H	K E Y	FAILURE MODE	FAILURE MECHANISM
C	PA1	020230	122377	H	MV	G16	S	D			MOV-3011(HPCI ISO.VLV) FAILED TO REMAIN OPEN	BAD SWITCH CAUSED CLOSING CONT.TO STICK
M	TR1	014504	022176	L	MV	G16	S	D			RHR VLV CLOSED WHEN IT WAS REQUIRED TO REMAIN OPEN VOLT.FLUC.ON INSTRUMENT AC BUS	
M	TR1	021068*	032078	L	MV	G16	S	D	OZ	V	DEENERGIZING PROTECTION SYS CAUSED RHR VALVES TO--	--CLOSE//PROCEDURAL DEFICIENCY

VALVE--OPERATOR(MOTOR)--PLUGGED (COMMAND FAULTS INCLUDED)

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	28	0	735840.0	4.1E-06*
CR3	17184.0	28	0	481152.0	6.2E-06*
DB1	11424.0	22	0	251328.0	1.2E-05*
DE1	26280.0	52	0	1366560.0	2.2E-06*
DE2	26280.0	51	0	1340280.0	2.2E-06*
DE3	26280.0	46	0	1208880.0	2.5E-06*
RS1	26280.0	30	0	788400.0	3.8E-06*
TI1	26280.0	31	0	814680.0	3.7E-06*
TI2	6648.0	42	0	279216.0	1.1E-05*
TOTALS			0	7266336.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--PLUGGED (COMMAND FAULTS INCLUDED)

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	63	0	37800.0	7.9E-05*
CC1	26280.0	31	0	814680.0	3.7E-06*
CC2	18264.0	31	0	566184.0	5.3E-06*
FC1	26280.0	6	0	157680.0	1.9E-05*
MI2	26280.0	33	0	867240.0	3.5E-06*
MY1	26280.0	35	0	919800.0	3.3E-06*
PA1	26280.0	15	1	394200.0	2.5E-06
SL1	23592.0	34	0	802128.0	3.7E-06*
TOTALS			1	4559712.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--PLUGGED (COMMAND FAULTS INCLUDED)
 GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	63	0	1655640.0	1.8E-06*
BF2	26280.0	63	0	1655640.0	1.8E-06*
BF3	20976.0	63	0	1321488.0	2.3E-06*
BR1	19512.0	72	0	1404864.0	2.1E-06*
BR2	26280.0	72	0	1892160.0	1.6E-06*
CO1	26280.0	57	0	1497960.0	2.0E-06*
DA1	26280.0	67	0	1760760.0	1.7E-06*
DR2	26280.0	51	0	1340280.0	2.2E-06*
DR3	26280.0	51	0	1340280.0	2.2E-06*
EN1	26280.0	68	0	1787040.0	1.7E-06*
EN2	4296.0	67	0	287832.0	1.0E-05*
FP1	26280.0	18	0	473040.0	6.3E-06*
MI1	26280.0	34	0	893520.0	3.4E-06*
MO1	26280.0	47	0	1235160.0	2.4E-06*
NM1	26280.0	21	0	551880.0	5.4E-06*
OC1	26280.0	42	0	1103760.0	2.7E-06*
PB2	26280.0	58	0	1524240.0	2.0E-06*
PB3	26280.0	58	0	1524240.0	2.0E-06*
PI1	26280.0	47	0	1235160.0	2.4E-06*
QC1	26280.0	57	0	1497960.0	2.0E-06*
QC2	26280.0	57	0	1497960.0	2.0E-06*
VY1	26280.0	56	0	1471680.0	2.0E-06*
		TOTALS	0	28952544.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--PLUGGED (COMMAND FAULTS INCLUDED)

WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	49	0	1133664.0	2.6E-06*
DC1	26280.0	63	0	1655640.0	1.8E-06*
DC2	7080.0	63	0	446040.0	6.7E-06*
HN1	26280.0	28	0	735840.0	4.1E-06*
IP2	26280.0	60	0	1576800.0	1.9E-06*
IP3	23952.0	66	0	1580832.0	1.9E-06*
JF1	12192.0	68	0	829056.0	3.6E-06*
KE1	26280.0	41	0	1077480.0	2.8E-06*
NA1	6456.0	48	0	309888.0	9.7E-06*
PR1	26280.0	54	0	1419120.0	2.1E-06*
PR2	26280.0	54	0	1419120.0	2.1E-06*
PT1	26280.0	42	0	1103760.0	2.7E-06*
PT2	26280.0	42	0	1103760.0	2.7E-06*
RG1	26280.0	47	0	1235160.0	2.4E-06*
RD2	26280.0	37	0	971160.0	3.1E-06*
SA1	17976.0	39	0	701160.0	4.3E-06*
SG1	26280.0	26	0	683280.0	4.4E-06*
SH1	26280.0	55	0	1445400.0	2.1E-06*
SU2	26280.0	55	0	1445400.0	2.1E-06*
IR1	26280.0	41	3	1077480.0	2.8E-06
TU3	26280.0	50	0	1314000.0	2.3E-06*
TU4	26280.0	50	0	1314000.0	2.3E-06*
YR1	26280.0	28	0	735840.0	4.1E-06*
ZI1	26280.0	82	0	2154960.0	1.4E-06*
ZI2	26280.0	82	0	2154960.0	1.4E-06*
		TOTALS	3	29624904.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MOTOR)--PLUGGED (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	STANDBY HCLR RATE
BAB.&WIL.	4.1E-07*
	4.7
COMB.ENG.	2.2E-07
	19.5
GEN.ELEC.	1.0E-07*
	2.6
WESTINGH.	1.0E-07
	3.7
	2.3
PWR'S	9.6E-08
	2.9
	1.3
OVERALL	5.7E-08
	2.9

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX T

RESULTS OF THE LER RATE ESTIMATES FOR REMOTE-OPERATED VALVES
PLUS MOTOR-OPERATED VALVES

CONTENTS

CODES USED IN LER ONE-LINE DESCRIPTIONS 743
VALVE--OPERATOR (UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE 745
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CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

<u>CODE</u>	<u>PWR</u>	<u>CODE</u>	<u>BWR</u>
A	- AUXILIARY FEED	A	- AUTOMATIC DEPRESSURIZATION
B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)	B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	- ELECTRIC POWER	C	- LOW PRESSURE CORE SPRAY
D	- CONTAINMENT SPRAY INJECTION	D	- ELECTRIC POWER
E	- CHEMICAL VOLUME CONTROL (MAKE-UP)	E	- CONTAINMENT SPRAY INJECTION
F	- HIGH PRESSURE COOLANT INJECTION	F	- STANDBY LIQUID CONTROL (BLCR)
G	- COMPONENT COOLING WATER	G	- HIGH PRESSURE COOLANT INJECTION
H	- REACTOR COOLANT	H	- COMPONENT COOLING WATER
I	- LOW PRESSURE COOLANT INJECTION (RHR)	I	- REACTOR COOLANT RECIRC
J	- REACTOR PROTECTION (CONTROL RCD)	J	- LOW PRESSURE COOLANT INJECTION (RHR)
K	- NONSAFETY-RELATED	K	- CONTROL ROD DRIVE HYDRAULIC (SCRAM)
L	- SYSTEM UNKNOWN/NOT APPLICABLE	L	- NONSAFETY-RELATED
M	- CONTAINMENT FAN COOLING SYSTEM	M	- SYSTEM UNKNOWN/NOT APPLICABLE
N	- SERVICE WATER	N	- REACTOR CORE ISOLATION COLLING
O	- CONDENSATE AND FEED	O	- SERVICE WATER
P	- MAIN STEAM	P	- STANDBY GAS TREATMENT
Q	- REACTOR PROTECTION (PPS)	Q	- CONDENSATE AND FEED
R	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.	R	- MAIN STEAM
S	- FAILED FUEL ELEMENT DETECTION	S	- REACTOR PROTECTION (PPS)
		T	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
		U	- FAILED FUEL ELEMENT DETECTION

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VEN	PLANT	CONT. NO.	EVENT DATE	UNOS	CODE	FAIL CODE	TYPE	STATUS	CON	YORK	FAILURE MODE	FAILURE MECHANISM
B	ARI	020607	011378	B	MV	A23		D			VALVE CV-2667 FAILED TO OPEN REMOTELY	TORQUE SWITCH DEFECTIVE
B	CR3	017168A	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN REMOTE ACTUATN	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	017168B	020377	L	MV	A20	R	U			DECAY HEAT VLV DHV-41 WOULDNT OPEN REMOTE ACTUATN	MTR. OPERATOR WOULDNT OVERCOME VLV. DRAG
B	CR3	018561	071577	L	MV	A23	R	T			VLV DHV-41 WOULD NOT OPEN FROM CONTROL ROOM	CAUSED BY SHIFT IN TORQUE SWITCH SETTING
B	CR3	018562	071577	L	MV	A00	R	U			DECAY HEAT VLV DHV-4 WOULD NOT OPEN FROM CONT.ROOM	CAUSE OF FAILURE UNKNOWN
B	DB1	020989A	031678	B	MV	A26		D			AUX.FDPMP. 1-1 STOP VLV AF3870 FAILED TO OPEN	LIMIT SWITCH ON VLV MTR NOT ADJUSTED PROP.
B	DB1	021957	071678	L	MV	A12		D			DECAY HEAT COOL.1-2 OUTLET VLV DH-14A WOLDNT OPEN	ACTUATOR ARM HAD BECOME MISALIGNED
B	DE2	016201	101476	L	MV	A16	S	D			VLV LPSW-5 COULD NOT BE OPENED REMOTELY	DIRTY ELEC.CONTACT IN MOTOR CONTROL CENTR
B	DE3	020592	020378	F	MV	A23		U			VALVE BS-3 FAILED TO OPEN	TORQUE SWITCH FAILURE
B	DE3	021047	032078	H	MV	A16	S	D			VALVE HP-24 FAILED TO OPEN	DIRT ON VAL OPER CONTACTS
B	RS1	014306	020776	L	MV	A00		U			RHR MOV FAILED TO OPEN DURING TESTING(MV-26106)	TIGHT PACKING /POSS STICKING SEAT
B	RS1	016558*	111176	L	MV	A23	B	T 02			TWO DECAY HEAT MOVS FAILED TO OPEN FOR MONTH TEST	TORQUE SWITCHES NEEDED RESET/TESTED WEEKLY
C	CC1	016403	111776	H	MV	A23	R	D			AUX.HI.PRESS.LP.ISO.VLV SI-617 FAILED TO OPEN	DEFECTIVE TORQUE SWITCH;BURNED CONTACTS
C	CC2	019740	111577	H	MV	A26		T			MOV-627,AUX HI PRESS HDR STP LP 118,WOULDNT OPEN	OPEN LIMIT SWITCH CONTS. WERE DIRTY
C	MI2	015338	072476	B	MV	A12		D			INLET STEAM TRIVALVE WOULD NOT OPEN	VALVE OPERATOR SPINDLE FAILED
C	PA1	018274	061577	H	MV	A16	S	D			MOV-3011 FAILED TO OPEN	CONTACT FOR "SEAL-IN" CKT ON RELAY FAILED
C	SL1	015002	052176	B	MV	A16	T	D			NO AUX FEED PUMP STEAM SUPPLY VALVE FAILED TO OPEN	NO SIGNAL TO VALVE/COMMAND FAULT/ELECT
C	SL1	015507	070976	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/POOR DES
C	SL1	016680	120876	B	MV	A16	T	D			AUX FEED PUMP STEAM INLET VALVE FAILED TO OPEN	COMMAND/H2O IN CONTROL CIRCUIT/DESIGN
C	SL1	023141	112178	H	MV	A23		D			MOV 07-18 IN IB ECCS TRAIN FAILED TO OPEN ON TEST	TORQUE SW FAULTY,REPLACED SWITCH

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VEN	PLANE	CONT.NO.	EVENT DATE	SY	COMP	FAIL CODE	TYPE	CLASS	CUMULATIVE	KEY	FAILURE MODE	FAILURE MECHANISM
G	BF1	018126	050977	H	MV	A20		D			HPCI TURB.STM.SUP.ISO.VLV. FCV 1-73-16 FAIL TO OPN	BRCKEN TEETH ON MTR PINION&CLUTCH GEAR
G	BF2	016807	111676	H	MV	A23	R	D			HPCI TURB.STM.SUP.VLV 2-FCV-73-16 FAILED TO OPEN	TOR.SWT.GEAR ASS.PIN FOR VLV OPER.SHEARED
G	BF3	018637	070577	H	MV	A23	R	D			HPCI TURB.STM.SUP. 3-FCV-73-16 FAILED TO OPEN	TOR.SWT.GEAR ASS.SHEARED;CAUS.OVLD ON MT
G	BR1	017600	021077	D	MV	A16	S	D			CORE SPRAY VALVE FAILED TO OPEN AT REQUIRED PRESS	SETPOINT ON CONTROLLING INST DRIFTED HI
G	BR1	017330	030677	L	MV	A00		U			RHR PMP 1D TORUS SUC.VLV E11-F004D WOULD NOT OPEN	CAUSE OF FAILRE UNKNOWN
G	BR1	019677	110577	L	MV	A02		D			RHR VALVE E11-F004A FAILED TO OPEN(MOTOR PROBLEM)	PERSONNEL ERROR/COVER LEFT LOOSE/WATER LK
G	BR1	022092	072878	L	MV	A16	T	D			VALVE F0688 FAILED TO OPEN	BLOWN FUSE
G	BR1	022092A	080278	L	MV	A16	T	D			VALVE F0688 FAILED TO OPEN	BLOWN FUSE/FOUND GRND WIRE IN LOGIC CKT
G	BR1	022218	080878	H	MV	A00		U			HPCI FEED INJ VALVE E41-F006 FAILED TO OPEN AUTO	UNKNOWN/TESTING COULDNT DUPLICATE FAILURE
G	BR2	020913	040378	L	MV	A20		D			SHUTDOWN COOL. OUTB.SUC.VLV E11-F008 WOULDNT OPEN	ELECTRO-MECHANICAL BRAKE ON VLV.OP.FAILED
G	BR2	021663	060378	L	MV	A00		U			RHR VLV E11-F009 WOULD NOT OPEN FROM CONTROL ROOM	CAUSE OF VLV NOT OPENING, NOT GIVEN
G	CO1	016008	090776	D	MV	A20		D			VALVE CNS-MV-128 FAILED TO OPEN	THE REPAIR CLUTCH AND COMPONENTS FAILED
G	CO1	023049	091878	L	MV	A20		D			VALVE RHR-MO-668 FAILED TO OPEN	SET SCREW ON VALVE OPERATOR LOOSTENED
G	DA1	019967	121577	L	MV	A12		D			RHR CROSS TIE VALVE FAILED TO OPEN	FRACTURED TEETH ON WCRM AND WCRM GEAR
G	DR2	017182	021777	L	MV	A26		U			LPCI CROSS-TIE VALVE MO2-1501-328 FAILED TO OPEN	LIMIT SWITCH OPENED BEFORE VALVE OFF SEAT
G	DR2	018508	080277	H	MV	A23		U			HPCI VALVE 2-2301-8 FAILED TO OPEN	SUSPECT PROBLEM WITH TORQUE SWITCH
G	DR2	018934	081577	L	MV	A00		U			SUCTION VALVE MO-2-1501-5A FAILED TO OPEN	CAUSE UNKNOWN
G	DR2	018985	091077	H	MV	A04		D			HPCI VALVE 2-2301-8 FAILED TO OPEN, VAL DAMAGED	OVER SIZED MTR OPERATORS OVERSTRESS STEM
G	DR3	016695	101276	L	MV	A16	S	D			VALVE 3-1501-27A FAILED TO OPEN ELECTRICALLY	LOOSE TERMINAL IN VALVE CONTROL CIRCUIT
G	DR3	018936	081177	L	MV	A19		T			VALVE MO-3-1501-20B FAILED TO OPEN	VALVE STEM NOT ADEQUATELY LUBRICATED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

V E N T	P L A N T	CONT.NO.	EVENT DATE	S Y S	C O M P	FA C O D E	T Y P E	C L A S S	C O N T R O L P H	K E Y	FAILURE MODE	FAILURE MECHANISM
G	DR3	019996	121677	F	MV	A00	R	U			LPCI HX DISCH VALVE MO3-1501-3A FAILED TO OPEN	CAUSE UNKNOWN
G	DR3	020602	020778	L	MV	A00	R	U			VALVE MO-3-1501-5C FAILED TO OPEN	CAUSE UNKNOWN
G	EN1	014792	050176	H	MV	A26	R	T			HPCI DISCHARGE VALVE E41-F006 FAILED TO OPEN	FAILURE OF A SNAP LOCK LIMIT SWITCH
G	EN1	015555	061576	H	MV	A00	R	U			HPCI VALVE E41-F006 DID NOT FULLY OPEN	CAUSE UNKNOWN
G	EN1	022113	070278	L	MV	A16	S	D			RHR MOV E11-F024A FAILED TO OPEN	DIRT IN INTERLOCK ON BREAKER CAUSED BIND
G	FP1	015058	042076	H	MV	A20		U			HPCI TORUS SUCTION VALVE FAILED TO OPEN	SHORT IN OPERATOR MOTOR
G	FP1	015237	070376	L	MV	A20		D			RHR VALVE 10 MOV 25A FAILED TO OPEN	SUSPECT OPEN CIRCUIT IN MOTOR WINDINGS
G	FP1	016269	102676	L	MV	A20		D			RHR SYSTEM VALVE 10-MOV-24A WOULD NOT OPEN	VALVE MOTOR OPERATOR BURNED OUT
G	FP1	016497	111976	H	MV	A20		D			HPCI VALVE 23-MOV-57 FAILED TO OPEN	FAILURE OF VALVE MOTOR WINDINGS
G	FP1	017956	061177	H	MV	A00		U			VALVE 23 MOV 58 FAILED TO OPEN ON TEST SIGNAL	CAUSE UNKNOWN
G	FP1	021142	100477	L	MV	A23		D			LPCI MOV 25A FAILED TO OPEN ON TEST	LOW TORQUE SWITCH SETTING
G	FP1	021022	040678	L	MV	A16	S	D			RHR ISOLATION VALVE 10MOV18 INOPERABLE (CLOSED)	CONTROLLER AUXILIARY CONTACT FAILURE
G	FP1	021225	042978	H	MV	A23		D			HPCI 23-MOV-15 WOULD NOT OPEN	TORQUE SWITCH WAS RESET
G	FP1	022329	090378	D	MV	A04		D			CORE SPRAY INJECTION VALVE 14-MOV-12B FAIL TO OPEN	DESIGN ERROR,NORMAL D.P.TOO SEVERE ON VAL
G	MO1	018094	053077	L	MV	A16	T	D			"B" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G	MO1	018955	082877	L	MV	A16	T	D			"B" RHR INJECTION VALVE FAILED TO OPEN (MO-2013)	CONTACTOR IN CONT.CIRCUITRY DID NOT CLOSE
G	NM1	014666	051576	L	MV	A20		U			SHUTDOWN COOL SYST ISO VALVE 38-02 FAIL TO OPEN	OPEN MOTOR WINDINGS
G	DC1	014413	040176	F	MV	A16	S	D			TORUS SPRAY VLV V-21-15 FAILED TO OPEN ON AUTO.SIG	MOTOR CENT.(INTR. BRKR. FAILED TO OPERATE
G	DC1	015375	082076	F	MV	A16	S	D			VLV V-21-18 FAILED TO OPEN ON AUTO START SIGNAL	DEFECT.SWITCH IN VLV.MOTOR CONTROL
G	DC1	016479	120176	D	MV	A16	S	D			CORE SPRAY ISO.VLV V-20-15 FAILED TO OPEN ON SIGNAL	INTERMIT.GRND.SHRT.IN VLV.MTR.OPER.PWR.FD

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

<u>VE</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>SYSTEMS</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON</u>	<u>MU</u>	<u>PH</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G	OC1	018623*	072777	D	MV	A16	S	D	02				CORE SPRAY ISO.VLV'S V-20-40 & V-20-15 FAILED TO FULLY OPEN//IMP.CKT.BRKR.OVERLOAD SETTING	
G	OC1	022576	091478	L	MV	A23							VALVE V-14-37 WOULD NOT OPEN,BKR TRIPPED	SET SCREW ON TORQUE SW LOOSTENED,SET DRFT
G	OC1	023144	120478	F	MV	A16	S	D					CONT SPRAY VALVE V-21-78 FAILED TO OPEN ON TESTING	BREAKER TO VALVE NOT RACKED IN PROPERLY
G	P82	013992	010776	L	MV	A20							MO-10-25B RHR INJECTION VLV FAILED TO OPEN	MOTOR ON VLV OVERHEATED AND DAMAGED WINDG
G	P82	013990	011576	L	MV	A12							RHR INJECTION VALVE MO-10-25A FAILED TO OPEN	MTR SHAFT TO PINION GEAR KEY SHEARED
G	P83	014032	010576	D	MV	A16	S	D					MO-3-14-128(B CORE SPR.LP.INJ.VLV) FAILED TO OPEN	PROBLEM WITH MAGNET.TRIP DEVICE MTR. BRKR
G	P83	014475	021776	L	MV	A16	S	D					RHR INJ. VLV.MO-10-25A FAILED TO FULLY OPEN	BROKEN WIRE TO OPENING TORQUE SWITCH
G	P83	018884	090277	H	MV	A09							HPCI SYS.VLV MO-3-23-41 FAILED TO FULLY OPEN	CORRODED VLV STEM DUE TO VLV PACKING LEAK
G	P83	023062	111678	L	MV	A20							RHR VALVE MO1548 FAILED TO OPEN ON TESTING	MOTOR & SEVERAL OPERATOR PARTS REPLACED
G	QC1	020264	111877	H	MV	A23							HPCI MOV 1-2301-4 FAILED TO OPEN DURING TESTING	MOV HAD DEFECTIVE TORQUE SWITCH
G	QC2	019759	111477	D	MV	A08							CORE SPRAY MOV 2-1402-248 FAILED TO OPEN / TEST	STEM AND BONNET BADLY GALLED
G	VY1	014584*	051076	L	MV	A14	C	T	02				TWO 24 INCH MOV'S (RHR-27A/B) FAILED TO OPEN / TEST	PACKING MAINTENANCE PROBLEM
G	VY1	015855	092076	L	MV	A00							LPCI MOV (RHR-258) FAILED TO OPEN DURING TESTING	UNKNOWN/WALWORTH AND LIMITORQUE INVESTIG.
W	KE1	020788	030278	H	MV	A00	R	U					CNTNMNT SUMP ISO VAL WOULD NOT FULLY OPEN	CAUSE UNKNOWN
W	KE1	021077	040478	H	MV	A14	R	T					CNTNMNT SUMP ISO VAL WOULD NOT FULLY OPEN	VAL PACKING AT END OF USEFULL LIFE
W	NA1	022269	081778	L	MV	A14							VALVE MOV-18608 FAILED TO OPEN DURING TEST	DRY VALVE PACKING CAUSED LIM SW TO TRIP
W	PR1	014758	051376	L	MV	A23	R	T					MOV FAILED TO OPEN DURING TEST (MV-32065)	TORQUE SW PROBLEM/ADJUSTED IT(LIMITORQUE)
W	PR2	016284	102576	H	MV	A23	R	D					MOV/BORIC ACID SUPPLY MV-32184 FAILED TO OPEN	TORQUE SW MALFUNCTIONED/WAS REPLACED
W	PR2	019284	100477	H	MV	A00							SAFETY INJ PUMP SUPPLY VLV MV-32183 FAILED TO OPEN	UNKNOWN/ STEM WAS LUBRICATED/NEXT TRY OK
W	PR2	020125	122377	B	MV	A16	S	D					#22 TURB.DRIVEN AFM PUMP STM.SUP.VLV.FAILED TO OP-	-EN//MOTOR LEAD GROUNDED TO JUNCTION BOX

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

V E N T	P L A N I	CONT.NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N M U P M	K E Y	FAILURE MODE	FAILURE MECHANISM
W	PT2	015186	070176	B	MV	A23	R	T			MOV-2MS-2019/STEAM TO AUX FEED PUMP FAILED TO OPEN	TORQUE SW SETPOINT CAUSED TIGHT CLOSING
W	RO2	019350	081677	B	MV	A20	D				VALVE V2-16B FAILED TO OPEN AS REQUIRED	LIMITORQUE VALVE OPERATOR FAILED
W	RO2	019352	081777	B	MV	A20	R	D			VALVE V2-16A FAILED TO OPEN	LIMITORQUE VALVE OPERATOR FAILED
W	RO2	019667	102677	L	MV	A20	U				RHR VALVE 759B FAILED TO OPEN	MOTOR WINDINGS WERE SHORTED
W	RO2	020053	120377	L	MV	A16	S	D			RHR VALVE 744B FAILED TO OPEN	CIRCUIT THERMAL OVERLOAD DEVICE TRIPPED
W	RO2	022626	122177	B	MV	A12	R	T			AUX FEED PUMP DISCH VAL,V2-16A FAILED TO OPEN	EXCESS SEATING PRESS CAUSED BY OVERHEAT
W	SA1	021910	052378	H	MV	A20	D				MOV 15J1 (HPIS) FAILED TO OPEN DURING TEST	WINDING FAILED/INCORRECT MOTOR SIZE/PERSN
W	SU1	014871	031876	B	MV	A16	S	D			AUX.FEEDWTR.PUMP DISC.VLV.MOV-FW-151A FAILED TO O-	-PEN//TIMING RELAY FAILURE
W	SU1	021802	062278	L	MV	A02	D				MOV-RH-100 FAILED TO OPEN	MAINT ERROR/STEM WAS NOT ENGAGED TO DISC
W	TR1	016250	102876	H	MV	A16	S	D			RWST SUCTION VALVE (MO-112D) FAILED TO OPEN/DEMAND	BREAKER SUPPLYING POWER FAILED/COMMAND
W	TR1	016250A	102876	H	MV	A23	U				RWST SUCTION VALVE(MO-112E)FAILED TO OPEN/DEMAND	TORQUE SW SET TOO LOW/VAL WOULDN'T UNSEAT
W	TR1	020516	010478	H	MV	A19	T				MOV-88807A FAILED TO OPEN DURING TESTING	VALVE STEM LACKED LUBRICATION
W	Z11	017040	012677	H	MV	A16	T	D			VALVE 1MOV-S18808A FAILED TO OPEN	COMMAND/AUX CONTACTS IN CONTL CKT STUCK
W	Z11	017223	012877	H	MV	A16	T	D			VALVE 1MOV-S18808B FAILED TO OPEN	COMMAND/AUX CONTACTS,CONTROL CKT,STUCK
W	Z11	017251	012877	H	MV	A16	T	D			VALVE 1MOV-S18800C FAILED TO OPEN/COMMAND	AUX CONTACTS IN CONTROL CIRCUIT STUCK
W	Z11	021337	042178	L	MV	A00	U				RHR 1MOV-8700B FAILED TO OPEN DURING TESTING	UNKNOWN/SOMETHING CAUSED THERMALS TO OPEN
W	Z11	021397	050378	F	MV	A19	T				CONFINMENT SPRAY VALVE 1MOV-CS0002 FAILED TO OPEN	LACK OF LUBRICATION
W	Z12	014253	021076	H	MV	A16	T	D			2B SI PMP.SUC.VLV 2MOV-S18923B FAILED TO OPEN	DIRTY CENT.ON CKT.BRKR.TO MTR-OPERATOR
W	Z12	017861	051977	H	MV	A20	D				VALVE 2MOV-S18800D FAILED TO CLOSE	LIMITORQUE MOTOR OPERATOR FAILURE
W	Z12	018212	060477	L	MV	A16	S	D			RHR VALVE(2MOV-RH8700B) FAILED TO OPEN DURING TEST	COMMAND/AUX CONTACTS STUCK IN MCC

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VEN	PLANT	CONT.NO.	EVENT DATE	SY S	COMP	FAIL CODE	TYPE	CLASS	CON PH	KEY	FAILURE MODE	FAILURE MECHANISM
B	CR3	019010	082777	L	MV	B23	T				CORE FLOOD DR.VLV FOR B CORE FL.TK.WOULDNT CLOSE	DRIFT OF TORQUE SWITCH SETTING;VLV CFV-12
B	DE2	017541	040577	G	MV	B12	D				VALVE RLP-21 FAILED TO CLOSE	LOOSE SET SCREW ON PINION GEAR OF MTR SFT
C	SL1	020639	020978	B	MV	B20	D				AUX FEED PUMP VALVE (MV-09-11) FAILED TO CLOSE	MOV MOTOR WINDING PARTIALLY SHORTED
G	BF1	017594A	032177	L	MV	B08	D				VLV FCV 74-52 WOULD NOT GO COMPLETELY CLOSED	WORN BRNG.ASS, LOCKNUT, YOKE&NUT, GASKETS
G	BF1	017594B	032177	L	MV	B20	D				VLV FCV 74-52 WOULD NOT CLOSE;MTR TRIP, THERMAL O.L	MOTOR SHAFT WAS BENT
G	BR1	019824	120377	L	MV	B20	U				VALVE E11-F040 FAILED IN OPEN POSITION	MOTOR FOUND TO BE OPEN(UNDETERMINED WHY)
G	CO1	017301	021977	L	MV	B20	R D				MOTOR OPERATED VALVE RHR-MO-34 WOULD NOT CLOSE	SHEARED KEY BETWEEN VALVE AND OPERATOR
G	CO1	020343	011378	L	MV	B16	S D				RHR INJ BLOCK VALVE FAILED TO CLOSE DURING TEST	DIRTY CONTACTS ON RELAY&WIRING ERROR
G	DA1	019963	112377	H	MV	B00	U				HPCI INJECTION VALVE MOV 2312 FAILED TO CLOSE	CAUSE UNKNOWN
G	DE3	014750	051076	D	MV	B16	S D				M 3-1402-258 TRIPPED WHILE BEING CLOSED	WRONG SIZE OVERLOAD HEATER
G	DR3	022561	092278	L	MV	B16	S D				LPCI VALVE 3-1501-20A FAILED TO CLOSE ON TESTING	STUCK CONTACTOR IN MCC
G	FP1	019310	100877	H	MV	B23	D				HPCI STEAM ISOL VALVE FAILED TO CLOSE ELECTRICALLY	TORQUE SWITCH NEEDED ADJUSTMENT
G	FP1	021712	062978	H	MV	B16	S D				HPCI VALVE 23-MOV-15 FAILED TO CLOSE	DEFECTIVE TEMP SWITCH(ND SIGNAL TO CLOSE)
G	FP1	021924	072278	D	MV	B12	D				OUTBOARD INJECTION VALVE 14-MOV-118 FAILED TO CLOS	OPERATOR SHAFT KEY SHEARED
G	MI1	016688	121776	L	MV	B23	U				ISO COND INBOARD STM SUPVAL FAI TO CLOSE	TORQUE SW SET INCORRECTLY
G	MI1	016689	121876	L	MV	B23	U				CONDENSATE RETURN VAL 1-IC-4 FAILED TO CLOSE	TORQUE SW SET INCORRECTLY
G	MO1	015708	090276	F	MV	B12	R D				VALVE MO-2008 FAILED TO OPEN	STEM CLAMP SET SCREWS SHEARED
G	OC1	017472	032377	D	MV	B16	S D				CORE SPRAY ISO.VLV V-20-15 INOPERABLE IN OPEN POS.	VLV.MTR. OPERATOR BREAKER TRIPPED
G	OC1	019080	090877	D	MV	B16	S D				CORE SPRAY ISO.VLV. V-20-15 FAILED TO CLOSE	DEFECTIVE CKT.BRKR. TO MOTOR
G	P82	016390	110976	D	MV	B12	D				CORE SPRAY VALVE MO-26A FAILED TO CLOSE	MTR OPER GEAR TRAIN FAILED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

PLANT	CONT.NO.	EVENT DATE	TIME	AREA	FAIL CODE	TYPE	CLASS	CON	KEY	FAILURE MODE	FAILURE MECHANISM
G PB3	016476	112376	D	MV	B23	D				CORE SPR.B FULL FL.TST.RET.VLV FAILED TO CLOSE	TORQUE SWITCH SETTING WAS TOO LOW
G PI1	018325	062077	L	MV	B12	R	D			VALVE MO-1001-36A FAILED TO CLOSE,RHR PUMP OPERAT	KEY WHICH PREVENTS STEM ROTATION SHEARED
G QC1	016162	090276	F	MV	B20	D				MOV FAILED TO CLOSE DURING TESTING(MD-1-1001-26-A)	EXCESS GREASE/COMPACTION/HYDRAULIC LOCK
G QC1	021436	050478	H	MV	B23	T				HPCI PMP SUCTION VLV MO-1-2301-6 WOULD NOT CLOSE	VLV.TORQUE SWITCH WAS WORN OUT
W BV1	016279	102276	H	MV	B16	S	D			VCT DISCH VALVE FAILED TO SHUT ON SI SIGNAL	NO PWR/ALLIS CHALMER LINESTARTER FAILED
W BV1	016356	102576	H	MV	B16	S	D			DRAIN VALVE ON ACCUMULATOR 1C FAILED TO SHUT	NO PWR/THERMAL OVERLOAD OF LINESTARTER
W DC1	020694	020878	B	MV	B16	S	D			AUX FEED MOV FAILED TO CLOSE	COMMAND/LOOSE ELEC CONNECTION/CONTROL
W DC1	023114	112878	B	MV	B16	S	D			AFW THROTTLE VLV. WOULD NOT CLOSE ELECTRICALLY	BROKEN LEAD ON MTR OPERATOR
W ZI2	016535	112776	H	MV	B14	T				BIT OUTLET MOV (2MOV-SI88018 FAILED TO CLOSE/TEST	PACKING PROB/GLAND MISALIGN/LACK OF LUB.
B DE3	020593	020778	F	MV	F12	D				VALVE BS-2 FAILED IN INTERMEDIATE POSITION	VALVE STEM FAILURE
B RS1	019536	100177	L	MV	F20	D				BWS ISOL VALVE FAILED TO OPERATE (SFV-25003)	LIMITORQUE OPERATOR(SMB)FAILED(EXCESS OP)
B RS1	019798	111977	H	MV	F00	U				HPI INJECTION ISOLATION VALVE FAILED TO CYCLE/TEST	UNKNOWN
C CC1	014465	030576	H	MV	F16	S	D			HPSI LP.ISO.VLV 1-MOV-616 WOULD NOT OPER. REMOTELY	BLOWN CONTROL CIRCUIT FUSE CAUSED FAILURE
G BF3	020524	021378	L	MV	F12	R	D			VLV FCV.3-74-52 WAS FOUND INOPERABLE	UPPER BRNG.LOCKNUT STRIPPED FROM NOR. POS
G BF3	021245	042878	L	MV	F12	R	D			VLV FCV 3-74-52 WAS FOUND INCOPERABLE	UP.BRNG.LOCKNUT STRIPPED FROM NOR.POSITIN
G BR1	016402	111976	L	MV	F16	S	D			RHR INJECTION VALVE(E11-F015A) FAILED TO OPERATE	UNDERSIZED BKR/DESIGN PROBLEM(RCOT)
G BR2	020240	010478	H	MV	F26	T				CLOSING TIME ON E41-F002 EXCEED. TS LIMIT (HPCI)	LIMIT SWITCH(OPEN) OUT OF ADJUSTMENT
G CO1	014359	012476	L	MV	F20	R	D			VLV RHR-MO-34A WOULD NOT OPERATE BY MTR.OPERATOR	SHEARED WOODRUFF KEY.IN MTR.OPERATOR
G CO1	015717	081076	D	MV	F20	D				VALVE CS-MG-128 WOULD NOT OPERATE	TRIPPER PIN IN OPERATOR DISLODGED
G CO1	018004	042077	D	MV	F20	D				CORE SPRAY PUMP VALVE INOPERATIVE,MOTOR RUNS	MOTOR GEAR SET SCREW ON VAL OPER LOOSE

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VEH	PLANT	CONJ.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CUMPH	KEY	FAILURE MODE	FAILURE MECHANISM
G	DA1	017043	021177	D	MV	F05		D			CLUTCH HOUSING FOR MCV 2115 FRACTURED DUR. TEST	MATERIAL TOO BRITTLE
G	DR2	015378	071176	D	MV	F26		D			CORE SPRAY INJECTION VAL M02-1402-24B FAILED	BROKEN LIMIT SWITCH CONTACT BLOCK
G	DR2	016453	111376	H	MV	F12		D			HPCI INJECTION VALVE M02-2301-0 FAILED	VALVE STEM SHEARED
G	DR3	016474	111976	H	MV	F16	S	D			HPCI LOGIC DESIGN WIRING CAUSING VALVES TO CYCLE	DESIGN ERROR
G	DR3	021679	060678	F	MV	F23		D			VALVE M03-1501-288 FAILED WHILE BEING CYCLED	DEFECTIVE SHAFT PIN ON TORQUE SWITCH
G	DR3	022591	092278	L	MV	F00		U			LPCI HX VALVE M03-1501-3A FAILED TO OPERATE	CAUSE UNKNOWN
G	EN1	C14785	040776	L	MV	F20		U			VALVE E11-F047A FAILED TO OPERATE ELECTRICALLY	A MOTOR WINDING FAILURE OCCURRED
G	EN2	022024*	071778	L	MV	F16	S	D	02	V	RHR VALVES HAD POWER LOST TO THEM	BREAKER TRIPPED DUE TO BLOWN FUSES
G	EN2	022675	102778	H	MV	F20		T			HPCI VALVE 2E41-F001 FAILED TO OPERATE	FAILURE OF MOTOR SHUNT FIELD INSULATION
G	FP1	021023	040878	H	MV	F12		D			VALVE 23MOV14 SEPERATED FROM OPERATOR	FAILURE OF MECHANICAL FASTENERS
G	FP1	021227	050878	D	MV	F02		D			POWER REMOVED FROM CORE SPRAY VALVE MOTOR	PERSONNEL ERROR
G	M01	023389	112178	L	MV	F16	S	D			M0-2014 LPCI A ADMISSION VALVE INOPERABLE	BLOWN FUSE IN CONTROL POWER CIRCUIT
G	PB2	C15142	061876	L	MV	F12		D			RHR SD COOL SUCT ISO VAL M0-2-10-18 FAIL TO STROKE	VALVE STEM BENT
G	PB2	019094	091377	H	MV	F16	S	D			HPCI TURB EXHAUST VAL MTR DAMAGED	SHORT IN VAL CONTROL CIRCUIT
G	PI1	019669	110477	L	MV	F12		T			MTR OPER FOR VAL M0-1001-188 OVERLOADED*BURNED OUT	WORN GEARS ALLOWED MTR TO RUN AFT VLV CLS
G	QC1	015257	070176	F	MV	F12		D			LOOP SPRAY VALVE FAILED TO OPERATE(M0-1-1001-23-0)	LOOSE BELTS HOLDING OPERATOR TO VALVE
G	QC1	019489	093077	D	MV	F05		D			CORE SPRAY VALVE 1-1402-258 FAILED TO OPERATE	CRACKED YOKE/PROB SINCE INSTALLATION
G	VY1	014230*	021776	L	MV	F01		D	02		RHR VLVS. 25A&B WOULD NOT STROKE ELECTRICALLY	PERSON.ERROR(MUST STRO.VLVS.MANUALLY 1ST)
W	DC1	016367	110176	L	MV	F12		U			RHR VALVE FAILED TO CYCLE DURING TESTING	PACKING GLAND WAS TOO TIGHT
W	DC1	021011*	032278	H	MV	F16	S	D	03		POWER FOUND OFF TO 3 ECCS VALVES	3 BREAKERS FOUND TRIPPED ON MCC

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VEN	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CONTR	KEY	FAILURE MODE	FAILURE MECHANISM
W	DC2	022069	071978	L	MV	F00		U			RHR PUMP SUCTION MOV FAILED TO CYCLE/TIME-WISE	UNKNOWN WHY CYCLE TIME EXCEEDED
W	KE1	013963	010876	H	MV	F12		D			VALVE SI-2B DID NOT OPERATE	SCREW HOLDING TRIP LEVER BACKED OUT
W	KE1	019312	100377	F	MV	F02		D			MAINT.MAN DEENERGIZED 2 SW VLVS WHEN ONLY ALLOW-T-	-O DEENER.1 VLV//PERSONNEL ERROR
W	PR1	018341	061877	B	MV	F20		D			AUX FEED PUMP DISCHARGE VALVE FAILED TO OPERATE	OPEN LEAD IN OPERATOR/LIMITORQUE SMB-000
W	PT1	013945	010876	B	MV	F20		D			MOV-4020 AUX FEED PUMP DISCHARGE FAILED STUCK/TEST	VALVE OPERATOR RING WORN/GEAR REPLACED
W	PT2	017035	012777	F	MV	F16	S	D			CONT.SPRAY PMP.DISCHG.VLV.2-8608 INOPERABLE	VALVE OPERATOR BREAKER WAS OPEN
W	PI2	021766	061678	F	MV	F23		D			CONT SPRAY VALVE(MOV) FAILED TO OPERATE FOR TEST	SMB-00 LIMITORQUE SW FAULTY/REPLACED
W	RO2	020322	011178	L	MV	F13		T			VALVE RHR-744B FAILED TO FUNCTION PROPERLY	OIL LEAK INTO MOTOR CAUSING SHORT
W	SA1	016939*	011077	H	MV	F20		D 02			MTR.BRKRS.TO VLVS 15J162 TRIPPED WHEN VLVS WERE O-	PENED//OCTH MTR.OPERATORS HAD FAILED
W	SO1	021207	041878	H	MV	F12		D			MOV-850C FAILED TO OPEN IN REQUIRED TIME / TESTIN'	SHAFT DISTORTED/PROB DUE TO EXCESS TORQUE
W	SO2	015526	061576	L	MV	F12		D			LPIS MOV-2862B FAILED TO OPERATE FROM CONSOLE	THERMAL OVERLOAD DUE TO VALVE PLUG BIND
W	TR1	020325	112777	B	MV	F20		T			AUX FEED VLV (CV-30G4B2) FAILED TO OPERATE	MOTOR OPER FAILED/WATER CAME THRU GASKET
B	CR3	021775	062178	L	RM	A00		U			DECAY HEAT REMOV.VLV DMV-111 WOULD NOT OPEN REMOT.	CAUSE OF EVENT IS UNDETERMINED
C	FC1	022469	092178	B	RM	A24	S	D			VAL YCV-1045 FAILED TO OPEN(AUX.FD.PMP.STM.INL.)	INSTRUMENT AIR SUPPLY TO VAL CLOSED
C	MI2	014461	030976	B	RM	A16	S	D			AUX.FEEDPMP.STM.INLET VLV.CYCLED;WOULD NOT REOPEN	FAILURE OF VALVE OPERATING CIRCUIT
C	SL1	019504	081777	F	RM	A00		U			CONTAINMENT SPRAY VALVE FAILED TO OPEN/TESTING	UNKNOWN/ LOCKED OPEN HANDWHEEL
C	SL1	019507	092977	F	RM	A00		U			CONT.SPRAY HDR.ISO.VLV FCV-07-1B NOT FULLY OPEN	UNKNOWN (CONT.SPRAY VLV.STICKING)
G	BR2	014618	031076	H	RM	A26		D			VALVE 2-E41-PV-1219D FAILED TO OPEN DURING TEST	LIMIT SW WAS OUT OF ADJUSTMENT
G	BR2	023034	111278	L	RM	A16	S	D			RHR VLV E11-FO08 WOULD NOT OPEN AT REQ. SETPOINT	FAIL. OF RX.STM.DOME HIGH PRESS.SWITCH
G	CO1	016658	102876	L	RM	A16	S	D			VALVE RHR MO-17 FAILED TO OPEN	BROKEN RELAY COIL KEEPER LODGED IN CONT.

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

VE N	P L A N	CONT. NO.	EVENT DATE	S Y S	C O M P	FAIL CODE	T Y P E	C L A S S	C O N T R O L P H Y	KEY	FAILURE MODE	FAILURE MECHANISM
G	DR2	014330	031376	H	RM	A16	S	D			HPCI STEAM SUPPLY VALVE 2-2301-4 FAILED TO OPEN	DIRTY CONTACTS IN BREAKER SUPPLYING VALVE
G	M11	019326	101277	F	RM	A00	U				TORUS SPRAY VLV FAILED TO OPEN ON SIGNAL	CAUSE OF OCCURRENCE IS UNKNOWN
G	OC1	016486	111176	F	RM	A00	U				VALVE V-21-5 FAILED TO OPEN/CKT BRKR TRIPPED	CAUSE UNKNOWN / VLV OPENED HARD MANUALLY
G	PB2	015374	082076	F	RM	A12	U				CONDENSATE CONT. VLV FAILED IN CLOSED POSITION	DEFECTIVE POSITIONER ON CONTROL VALVE
W	BV1	018725	072877	B	RM	A23	D				AUX. FEEDWATER CONT VLV WOULD NOT OPEN ELECTRIC.	BINDING TORQUE SWITCH
W	KE1	014240	022076	F	RM	A01	D				VALVE ICS-5B FAILED TO OPEN(CONT. SPRAY DISCH. VLV)	VALVE MANUALLY TORQUED DOWN TOO TIGHT
W	RO2	015570	081776	B	RM	A04	R	D			VALVE V2-16A FAILED TO OPEN	LIMITORQUE OPER FAILED TO OPEN VALVE
W	RO2	017540	032677	B	RM	A00	U				VALVE V2-14A FAILED TO OPEN	INCREASE IN TENSION BETWEEN SEATING SURF.
B	CR3	019013	083177	L	RM	B00	U				CORE FLOOD SAMP. ISO. VLV CFV-11 WOULDNT CLOSE	CAUSE OF FAILURE UNKNOWN
B	OE3	014927	050476	L	RM	B23	U				VALVE 3CS-5 WOULD NOT CLOSE REMOTELY	TORQUE SWITCH FAILURE
C	FC1	014561	041476	H	RM	B16	S	D			HCV-383-4 FAILED TO CLOSE ON TEST	BINDING CONTACT IN BREAKER TO VALVE
G	CD1	020846	020778	H	RM	B16	T	D			HPCI VALVE FAILED TO CLOSE DURING TEST	NO SIGNAL FROM DP SWITCH
G	DR2	015748	061076	D	RM	B19	T				VALVE MD2-1402-4B FAILED TO CLOSE AGAINST PUMP HEAD	INADAQUATE LUBRICATION OF VALVE STEM
G	DR2	022776	101378	D	RM	B19	T				THE 2-1402-4B FLOW TEST VALVE FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
G	DR2	022775	101878	L	RM	B19	T				LPCI SUCTION VALVE MD-1501-5C FAILED TO CLOSE	VALVE STEM NOT ADEQUATELY LUBRICATED
G	EN2	022500*	091078	L	RM	B04	D	Q2			RHR VALVES 2E11-F003A, F047A FAILED TO CLOSE	VALVE GATES SAG+BIND IN FULL OPEN POSIT
G	PB3	014471	030176	L	RM	B12	R	D			B RHR OUTBOARD INJECTION VLV MD-1548 FAIL. TO CLOSE	VLV DISC SEPARATED FROM VLV STEM
W	BV1	022135	080178	L	RM	B10	T				1B LOW HEAD SAFETY INJECTION PMP. HEAD. ISO. NOT CLOS	VLV FAIL. TO CLOSE DUE TO BORIC CRY. IN PAK
W	NA1	021150	042878	H	RM	B00	U				STEAM DUMP VAL 408E STUCK OPEN FOLL. TRIP	CAUSE NOT GIVEN
W	PR2	016284A	102576	H	RM	B00	U				HOT LEG SAMPLE LOOP VLV CV-31807 FAILED TO CLOSE	UNKNOWN/RETEST WAS OK

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)---FAIL TO OPERATE

EVENT	PLANT	CONT.NO.	EVENT DATE	SYS	COMP	FAIL CODE	TYPE	CLASS	CONSUM	KEY	FAILURE MODE		FAILURE MECHANISM	
W	SD1	020609	013078	F	RM	B00		U				CONT SPRAY VLV (CV-517) FAILED TO CLOSE FOR TEST	UNKNOWN/POSSIBLE LUBRICATION PROBLEM	
B	AR1	022339	072078	G	RM	F23		T				SODIUM THIOSULFATE BLOCK VLV CV-2411 FAIL. TO OPER	TORQUE SETTING OUT OF ADJ; DRY PACKING	
B	CR3	023095	100478	L	RM	F16	S	D				FLOW CONTROL VALVE DHV-110 FAILED TO CONTROL FLOW	NO SIGNAL FROM FLOW CONTROLLER	
C	CC2	018881	0825	F	RM	F16	S	D				#21 CONT.SPRAY SYS.HDR.ISO.VLV(2-SI-4150-CV) 005	VLV PLACED OUT OF SERV.DUE TO FAIL.RESIST.	
C	FC1	023139	1124	L	RM	F16	S	D				PC-105B WAS NOT OPERATING	VALVE CLOSING RELAY NOT REWIRED AFT MAINT	
C	MY1	020758	020277	H	RM	F16	S	D				WIRES DISCONNECTED FROM VALVE SL-P-3,SIAS FUNCT.	CAUSE UNKNOWN	
G	DA1	017312	021977	H	RM	F03		D				CONTACT BLOCK FOUND INSTALLED IN VALVE CIRCUIT	PERSONNEL ERROR, FAILED TO REMOVE AFTER TS	
G	EN1	018191	060477	L	RM	F02		D				LPCI VALVE E11-F017B CYCLE TIME OUTSIDE T.S.	VALVE STEM PACKED TOO TIGHTLY	
G	EN2	022486*	092678	L	RM	F12		D 02				RESTRICTED FLOW THROUGH RHR SYSTEM CONTROL VALVES	DAMAGED CAVITROL TRIMS IN VALVES	
G	EN2	022753*	110678	H	RM	F16	S	D 02	V			HPCI CONTROL VALVES FAILED TO OPERATE	WIRE LEFT OFF BY MAINT PERSONNEL	
G	NM1	018279	063077	H	RM	F16	S	D				NO.12 INLET INSIDE IV-B(40-01)FAIL TO OPERATE	FAILURE OF ELECT CONTACTOR (CLOSING)	
G	PP2	013084*	092176	D	RM	F06		D 03	Z			TRIP LEVEL FOR CORE SPRAY SET IMPROPERLY	DEFECTIVE PROCEDURES	
G	PB3	015881*	092176	D	RM	F06		D 03	Z			TRIP LVL.SET.FOR ECCS VLVS SET AT WRONG PRESSURE	MISUNDERSTANDING BETWEEN NSSS & LICENSE	
W	IP2	0187878	050777	F	RM	F23		D				VALVE 822B DID NOT OPERATE PROPERLY	TORQUE SWITCH MALFUNCTION	
W	JF1	022633*	090978	B	RM	F24	S	D 03				CONTROL WAS LOST ON FLOW CONT.VLVS 3228A,B,6C	DEFECTIVE RELAY IN TDAFP CONTROL CIRCUIT.	
W	SA1	022161	061578	B	RM	F00		U				AUX FEED MAKE-UP VALVE (1DR6) FAILED TO OPERATE	UNKNOWN	
W	YR1	019495	102477	H	RM	F00		U				REGULATOR VALVE FAILED TO OPER.(CONTROL PRESSURE)	UNKNOWN / SETPOINT DRIFT / ADJUSTED VLV	

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	28	12	2	735840.0	336	2.7E-06	6.0E-03
CR3	17184.0	28	8	7	481152.0	224	1.5E-05	3.1E-02
DB1	11424.0	22	6	2	251328.0	132	8.0E-06	1.5E-02
DE1	26280.0	52	12	0	1366560.0	624	2.2E-06*	4.8E-03*
DE2	26280.0	51	12	1	1340280.0	612	7.5E-07	1.6E-03
DE3	26280.0	46	12	3	1208880.0	552	2.5E-06	5.4E-03
RS1	26280.0	30	12	5	788400.0	360	6.3E-06	1.4E-02
TI1	26280.0	31	12	0	814680.0	372	3.7E-06*	8.1E-03*
TI2	6648.0	42	4	0	279216.0	168	1.1E-05*	1.8E-02*
TOTALS				20	7266336.0	3380		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	63	1	0	37800.0	63	7.9E-05*	4.6E-02*
CC1	26280.0	31	12	1	814680.0	372	1.2E-06	2.7E-03
CC2	18264.0	31	9	1	566184.0	279	1.8E-06	3.6E-03
FC1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
MI2	26280.0	33	12	1	867240.0	396	1.2E-06	2.5E-03
MY1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
PA1	26280.0	15	12	0	394200.0	180	7.6E-06*	1.7E-02*
SL1	23592.0	34	11	4	852128.0	374	5.0E-06	1.1E-02
TOTALS				7	4559712.0	2156		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	63	12	3	1655640.0	756	1.8E-06	4.0E-03
BF2	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
BF3	26976.0	63	10	3	1321488.0	630	2.3E-06	4.8E-03
BR1	19512.0	72	9	4	1404864.0	648	2.8E-06	6.2E-03
BR2	26280.0	72	12	4	1892160.0	864	2.1E-06	4.6E-03
CO1	26280.0	57	12	6	1497960.0	684	4.0E-06	8.8E-03
DA1	26280.0	67	12	4	1760760.0	804	2.3E-06	5.0E-03
DR2	26280.0	51	12	9	1340280.0	612	6.7E-06	1.5E-02
DR3	26280.0	51	12	5	1340280.0	612	3.7E-06	8.2E-03
EN1	26280.0	68	12	4	1787040.0	816	2.2E-06	4.9E-03
EN2	4296.0	67	2	5	287832.0	134	1.7E-05	3.7E-02
FP1	26280.0	18	12	12	473040.0	216	2.5E-05	5.6E-02
MI1	26280.0	34	12	3	893520.0	408	3.4E-06	7.4E-03
MO1	26280.0	47	12	1	1235160.0	564	8.1E-07	1.8E-03
NM1	26280.0	21	12	1	551880.0	252	1.8E-06	4.0E-03
OC1	26280.0	42	12	2	1103760.0	504	1.8E-06	4.0E-03
PB2	26280.0	58	12	0	1524240.0	696	5.2E-06	1.1E-02
PB3	26280.0	58	12	7	1524240.0	696	4.6E-06	1.0E-02
PI1	26280.0	47	12	2	1235160.0	564	1.6E-06	3.5E-03
QC1	26280.0	57	12	5	1497960.0	684	3.3E-06	7.3E-03
QC2	26280.0	57	12	1	1497960.0	684	6.7E-07	1.5E-03
VY1	26280.0	56	12	5	1471680.0	672	3.4E-06	7.4E-03
			TOTALS	95	28952544.0	13256		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	49	11	2	1133664.0	539	1.8E-06	3.7E-03
DC1	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
DC2	7080.0	63	3	1	446040.0	189	2.2E-06	5.3E-03
HN1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
IP2	26280.0	60	12	1	1576800.0	720	6.3E-07	1.4E-03
IP3	21952.0	66	11	0	1580832.0	726	1.9E-06*	4.1E-03*
JF1	12192.0	68	6	0	829056.0	408	3.6E-06*	7.3E-03*
KE1	26180.0	41	12	5	1077480.0	492	4.6E-06	1.0E-02
NA1	6456.0	48	3	2	309888.0	144	6.5E-06	1.4E-02
PR1	26280.0	54	12	2	1419120.0	648	1.4E-06	3.1E-03
PR2	26280.0	54	12	3	1419120.0	648	2.1E-06	4.6E-03
PT1	26280.0	42	12	1	1103760.0	504	9.1E-07	2.0E-03
PT2	26280.0	42	12	2	1103760.0	504	1.8E-06	4.0E-03
RG1	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
RD2	26280.0	37	12	7	972360.0	444	7.2E-06	1.6E-02
SA1	17976.0	39	8	4	701064.0	312	5.7E-06	1.3E-02
SO1	26280.0	26	12	2	683280.0	312	2.9E-06	6.4E-03
SU1	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
SU2	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
TP1	26280.0	41	12	3	1077480.0	492	2.8E-06	6.1E-03
TU3	26260.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
TU4	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
YR1	26280.0	28	12	1	735840.0	336	1.4E-06	3.0E-03
ZI1	26280.0	82	12	2	2154960.0	984	9.3E-07	2.0E-03
ZI2	26280.0	82	12	2	2154960.0	984	9.3E-07	2.0E-03
			TOTALS	43	29624904.0	13562		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--FAIL TO OPERATE

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.5	1.5
BAB.6WIL.	2.8E-06	5.9E-03
	1.5	1.5
	1.9	1.9
COMB.ENG.	1.5E-06	3.2E-03
	2.1	2.1
	1.2	1.2
GEN.ELEC.	3.3E-06	7.2E-03
	1.2	1.2
	1.3	1.3
WESTINGH.	1.5E-06	3.2E-03
	1.3	1.3
	1.2	1.2
PWR'S	1.7E-06	3.7E-03
	1.2	1.2
	1.1	1.1
OVERALL	2.3E-06	5.1E-03
	1.1	1.1

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE MOTOR)--FAIL TO OPERATE (COMMAND FAULTS)

BABCOCK & WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	28	12	2	735840.0	336	2.7E-06	6.0E-03
CR3	17184.0	28	8	8	481152.0	224	1.7E-05	3.6E-02
DB1	11424.0	22	6	2	251328.0	132	8.0E-06	1.5E-02
OE1	26280.0	52	12	0	1366560.0	624	2.2E-06*	4.8E-03*
OE2	26280.0	51	12	2	1340280.0	612	1.5E-06	3.3E-03
OE3	26280.0	46	12	4	1208880.0	552	3.3E-06	7.2E-03
RS1	26280.0	30	12	5	788400.0	360	6.3E-06	1.4E-02
TI1	26280.0	31	12	0	814680.0	372	3.7E-06*	8.1E-03*
TI2	6648.0	42	4	0	279216.0	168	1.1E-05*	1.8E-02*
TOTALS				23	7266336.0	3380		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE MOTOR)--FAIL TO OPERATE (COMMAND FAULTS)

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	63	1	0	37800.0	63	7.9E-05*	4.6E-02*
CC1	26280.0	31	12	2	814680.0	372	2.5E-06	5.4E-03
CC2	18264.0	31	9	2	566184.0	279	3.5E-06	7.2E-03
FC1	26280.0	6	12	3	157680.0	72	1.9E-05	4.2E-02
MI2	26280.0	33	12	2	867240.0	396	2.3E-06	5.1E-03
MY1	26280.0	35	12	1	919800.0	420	1.1E-06	2.4E-03
PA1	26280.0	15	12	1	394200.0	180	2.5E-06	5.6E-03
SL1	23592.0	34	11	7	802128.0	374	8.7E-06	1.9E-02
TOTALS				18	4559712.0	2156		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE&MOTOR)--FAIL TO OPERATE (COMMAND FAULTS)
 GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	63	12	3	1655640.0	756	1.8E-06	4.0E-03
BF2	26280.0	63	12	1	1655640.0	756	6.0E-07	1.3E-03
BF3	20976.0	63	10	3	1321488.0	630	2.3E-06	4.8E-03
BR1	19512.0	72	9	8	1404864.0	648	5.7E-06	1.2E-02
BR2	26280.0	72	12	5	1892160.0	864	2.6E-06	5.8E-03
CO1	26280.0	57	12	9	1497960.0	684	6.0E-06	1.3E-02
DA1	26280.0	67	12	4	1760760.0	804	2.3E-06	5.0E-03
DR2	26280.0	51	12	10	1340280.0	612	7.5E-06	1.6E-02
DR3	26280.0	51	12	9	1340280.0	612	6.7E-06	1.5E-02
EN1	26280.0	68	12	5	1787040.0	816	2.8E-06	6.1E-03
EN2	4296.0	67	2	9	287832.0	134	3.1E-05	6.7E-02
FP1	26280.0	18	12	14	473040.0	216	3.0E-05	6.5E-02
MI1	26280.0	34	12	3	893520.0	408	3.4E-06	7.4E-03
MO1	26280.0	47	12	4	1235160.0	564	3.2E-06	7.1E-03
NM1	26280.0	21	12	2	551880.0	252	3.6E-06	7.9E-03
OC1	26280.0	42	12	10	1103760.0	504	9.1E-06	2.0E-02
PB2	26280.0	58	12	9	1524240.0	696	5.9E-06	1.3E-02
PB3	26280.0	58	12	9	1524240.0	696	5.9E-06	1.3E-02
PI1	26280.0	47	12	2	1235160.0	564	1.6E-06	3.5E-03
QC1	26280.0	57	12	5	1497960.0	684	3.3E-06	7.3E-03
QC2	26280.0	57	12	1	1497960.0	684	6.7E-07	1.5E-03
VY1	26280.0	56	12	5	1471680.0	672	3.4E-06	7.4E-03
			TOTALS	130	28952544.0	13256		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE&MOTOR)--FAIL TO OPERATE (COMMAND FAULTS)
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	49	11	4	1133664.0	539	3.5E-06	7.4E-03
DC1	26280.0	63	12	6	1655640.0	756	3.6E-06	7.9E-03
DC2	7080.0	63	3	1	446040.0	189	2.2E-06	5.3E-03
HN1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
IP2	26280.0	60	12	1	1576800.0	720	6.3E-07	1.4E-03
IP3	23952.0	66	11	0	1580832.0	726	1.9E-06*	4.1E-03*
JF1	12192.0	68	6	3	829056.0	408	3.6E-06	7.4E-03
KE1	26280.0	41	12	5	1077480.0	492	4.6E-06	1.0E-02
NA1	6456.0	48	3	2	309888.0	144	6.5E-06	1.4E-02
PR1	26280.0	54	12	2	1419120.0	648	1.4E-06	3.1E-03
PR2	26280.0	54	12	4	1419120.0	648	2.8E-06	6.2E-03
PT1	26280.0	42	12	1	1103760.0	504	9.1E-07	2.0E-03
PT2	26280.0	42	12	3	1103760.0	504	2.7E-06	6.0E-03
RG1	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
RO2	26280.0	37	12	8	972360.0	444	8.2E-06	1.8E-02
SA1	17976.0	39	8	4	701064.0	312	5.7E-06	1.3E-02
SO1	26280.0	26	12	2	683280.0	312	2.9E-06	6.4E-03
SU1	26280.0	55	12	2	1445400.0	660	1.4E-06	3.0E-03
SU2	26280.0	55	12	1	1445400.0	660	6.9E-07	1.5E-03
TR1	26280.0	41	12	4	1077480.0	492	3.7E-06	8.1E-03
TU3	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
TU4	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
YR1	26280.0	28	12	1	735040.0	336	1.4E-06	3.0E-03
ZI1	26280.0	82	12	5	2154960.0	984	2.3E-06	5.1E-03
ZI2	26280.0	82	12	4	2154960.0	984	1.9E-06	4.1E-03
			TOTALS	63	29624904.0	13562		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE MOTOR)--FAIL TO OPERATE (COMMAND FAULTS)

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.4	1.4
BAB.&WIL.	3.2E-06	6.8E-03
	1.5	1.5
	1.5	1.5
COMB.ENG.	3.9E-06	8.3E-03
	1.5	1.5
	1.2	1.2
GEN.ELEC.	4.5E-06	9.8E-03
	1.2	1.2
	1.2	1.2
WESTINGH.	2.1E-06	4.6E-03
	1.2	1.2
	1.2	1.2
PWR'S	2.5E-06	5.4E-03
	1.2	1.2
	1.1	1.1
OVERALL	3.3E-06	7.2E-03
	1.1	1.1

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY

VEN	PLANT	CONT. NO.	EVENT DATE	SY	COMP	FAIL CODE	TYPE	CLASS	CONMUM	KEY	FAILURE MODE	FAILURE MECHANISM
B	TI1	016382	110676	L	MV	D13	D				EXTERNAL LEAK INCREASED WHEN MOV (DM-V1) OPENED	LEAKAGE PAST SEAL RING GASKET/SHUT VALVE
G	FP1	020929	040478	L	MV	D14	T				VALVE 10MOV27A LEAKING EXTERNALLY	FAILURE OF VALVE PACKING
G	PB2	016987	020877	H	MV	D12	U				EXTERNAL STM LEAK VAL MO-2-23-16	VAL PACKING LUBE PLUG LEAKING
W	DC1	018418	070677	B	MV	D11	T				AUX FEED WATER VALVE FOUND WITH CRACK IN BODY	WATER HAMMER AND VIBRATION
W	IP2	014004	010376	L	MV	D14	T				EXTERNAL LEAKAGE FROM VALVE MOV-731	PACKING GLAND LEAKAGE
W	IP2	016039	092776	L	MV	D14	T				14-IN VAL ON RHR SYST LEAKING EXTERNALLY	EXCESSIVE PACKING GLAND LEAKAGE
W	SU2	020236	012078	L	MV	D09	T				18 GPM LEAK FROM MOV-RH-2700 PACKING GLAND	CORROSION FAILED STUDS HOLDING PACKING
G	DR2	020950	033078	H	RM	D08	T				VALVE MO-2301-3 LEAKING EXTERNALLY	STEAM CUT OF SEAL RING
G	MO1	023388	111478	F	RM	D09	T				PINHOLE LEAK IN CV-1729,RHR D/P CONTROL VALVE	CORROSION&CORROSION OF UPPER VALVE BODY
G	PB2	019187	092677	H	RM	D22	R U				HPCI OIL SYST CONT VAL LEAKING OIL	DIAPHRAGM LEAKING
G	PB3	019556	102677	H	RM	D22	R D				OIL LEAK FOUND ON HPCI OIL PRESSURE CONTROL VALVE	OIL LEAK WAS CAUSED BY A SPLIT DIAPHRAGM
W	PR2	023221	112878	L	RM	D14	U				RHR HX O ILET VALVE CV-31239 LEAKING EXTERNALLY	DETERIORATION OF PACKING

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	28	0	735840.0	4.1E-06*
CR3	17184.0	28	0	481152.0	6.2E-06*
DB1	11424.0	22	0	251328.0	1.2E-05*
DE1	26280.0	52	0	1366560.0	2.2E-06*
DE2	26280.0	51	0	1340280.0	2.1E-06*
DE3	26280.0	46	0	1208880.0	2.5E-06*
RS1	26280.0	30	0	788400.0	3.8E-06*
TI1	26280.0	31	1	814680.0	1.2E-06
TI2	6648.0	42	0	279216.0	1.1E-05*
TOTALS			1	7266336.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	63	0	37800.0	7.9E-05*
CC1	26280.0	31	0	814680.0	3.7E-06*
CC2	18264.0	31	0	566184.0	5.3E-06*
FC1	26280.0	6	0	157680.0	1.9E-05*
MI2	26280.0	33	0	867240.0	3.5E-06*
MY1	26280.0	35	0	919800.0	3.3E-06*
PA1	26280.0	15	0	394200.0	7.6E-06*
SL1	23592.0	34	0	802128.0	3.7E-06*
TOTALS			0	4559712.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY

 GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	63	0	1655640.0	1.8E-06*
BF2	26280.0	63	0	1655640.0	1.8E-06*
BF3	20976.0	63	0	1321488.0	2.3E-06*
BR1	19512.0	72	0	1404864.0	2.1E-06*
BR2	26280.0	72	0	1892160.0	1.6E-06*
CO1	26280.0	57	0	1497960.0	2.0E-06*
DA1	26280.0	67	0	1760760.0	1.7E-06*
DR2	26280.0	51	1	1340280.0	7.5E-07
DR3	26280.0	51	0	1340280.0	2.2E-06*
EN1	26280.0	68	0	1787040.0	1.7E-06*
EN2	4296.0	67	0	287832.0	1.0E-05*
FP1	26280.0	18	1	473040.0	2.1E-06
MI1	26280.0	34	0	893520.0	3.4E-06*
MO1	26280.0	47	1	1235160.0	8.1E-07
NM1	26280.0	21	0	551880.0	5.4E-06*
OC1	26280.0	42	0	1103760.0	2.7E-06*
PB2	26280.0	58	2	1524240.0	1.3E-06
PB3	26280.0	58	1	1524240.0	6.6E-07
PI1	26280.0	47	0	1235160.0	2.4E-06*
QC1	26280.0	57	0	1497960.0	2.0E-06*
QC2	26280.0	57	0	1497960.0	2.0E-06*
VY1	26280.0	56	0	1471680.0	2.0E-06*
		TOTALS	6	28952544.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	49	0	1133664.0	2.6E-06*
DC1	26280.0	63	1	1655640.0	6.0E-07
DC2	7080.0	63	0	446040.0	6.7E-06*
HN1	26280.0	28	0	735840.0	4.1E-06*
IP2	26280.0	60	2	1576800.0	1.3E-06
IP3	23952.0	66	0	1580832.0	1.9E-06*
JF1	12192.0	68	0	829056.0	3.6E-06*
KE1	26280.0	41	0	1077480.0	2.8E-06*
NA1	6456.0	48	0	309888.0	9.7E-06*
PR1	26280.0	54	0	1419120.0	2.1E-06*
PR2	26280.0	54	1	1419120.0	7.0E-07
PT1	26280.0	42	0	1103760.0	2.7E-06*
PT2	26280.0	42	0	1103760.0	2.7E-06*
RG1	26280.0	47	0	1230160.0	2.4E-06*
RO2	26280.0	37	0	972360.0	3.1E-06*
SA1	17976.0	39	0	701064.0	4.3E-06*
SD1	26280.0	26	0	687260.0	4.4E-06*
SU1	26280.0	55	0	1445400.0	2.1E-06*
SU2	26280.0	55	1	1445400.0	6.9E-07
TR1	26280.0	41	0	1077480.0	2.8E-06*
TU3	26280.0	50	0	1314000.0	2.3E-06*
TU4	26280.0	50	0	1314000.0	2.3E-06*
YR1	26280.0	28	0	735840.0	4.1E-06*
ZI1	26280.0	82	0	2154960.0	1.4E-06*
ZI2	26280.0	82	0	2154960.0	1.4E-06*
		TOTALS	5	29624904.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR (UNKNOWN REMOTE & MOTOR)--LEAK EXTERNALLY

FINAL STATISTICS

	STANDBY HOUR RATE
	4.7
BAB.&WIL.	1.4E-07
	19.5
COMB.ENG.	6.6E-07*
	2.0
GEN.ELEC.	2.1E-07
	2.3
	2.1
WESTINGH.	1.7E-07
	2.5
	2.0
PWR'S	1.4E-07
	2.3
	1.6
OVERALL	1.7E-07
	1.7

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED

V E N T	P L A N T	CONI.NO.	EVENT DATE	S Y S	C O D E	FAIL CODE	Y P E	C L A S S	C O N T R O L M O D E	K E Y	FAILURE MODE		FAILURE MECHANISM	
											FAILURE MODE	FAILURE MECHANISM		
C	PA1	020230	122377	H	MV	G16	S	D			MOV-3011(HPCI ISO.VLV) FAILED TO REMAIN OPEN	BAD SWITCH CAUSED CLOSING CONT.TO STICK		
W	TR1	014564	022176	L	MV	G16	S	D			RHR VLV CLOSED WHEN IT WAS REQUIRED TO REMAIN OPEN	VCLT.FLUC.ON INSTRUMENT AC BUS		
W	TR1	021068*	032078	L	MV	G16	S	D	O2	V	DEENERGIZING PROTECTION SYS CAUSED RHR VALVES TO--	--CLOSE//PROCEDURAL DEFICIENCY		
B	CR3	022361	081978	L	RM	G16	T	D			DHV-3 WENT CLOSED WHEN REQUIRED TO REMAIN OPEN	LOSS OF 120 VOLT AC VITAL BUS(INVERTER)		
G	EN1	C15564	072076	L	RM	G16	S	D			RHR FLOW VALVE E11-F0078 FAILED TO STAY OPEN	DEFECTIVE SWITCH SUPPLYING SIGNAL TO VALV		
G	QC1	018459	061177	H	RM	G24	S	D			HPCI PUMP INLET VALVE WOULD NOT STAY OPEN/TESTING	HALF FUNCTION IN LOCAL VALVE CONT STAT CIRC		
W	SA1	022873*	110678	F	RM	G16	S	D	O2	V	SERVICE H2O VALVES FOUND TRIPPED	INADVERTANT TRIP SIGNAL, DESIGN PROBLEM DT		

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED (COMMAND FAULTS)

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	28	0	735840.0	4.1E-06*
CR3	17184.0	28	1	481152.0	2.1E-06
DB1	11424.0	22	0	251328.0	1.2E-05*
DE1	26280.0	52	0	1366560.0	2.2E-06*
DE2	26280.0	51	0	1340280.0	2.2E-06*
DE3	26280.0	46	0	1208880.0	2.5E-06*
RS1	26280.0	30	0	788400.0	3.8E-06*
TI1	26280.0	31	0	814680.0	3.7E-06*
TI2	6648.0	42	0	279216.0	1.1E-05*
TOTALS			1	7266336.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED (COMMAND FAULTS)

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	63	0	37800.0	7.9E-05*
CC1	26280.0	31	0	814680.0	3.7E-06*
CC2	18264.0	31	0	566184.0	5.3E-06*
FC1	26280.0	6	0	157680.0	1.9E-05*
MI2	26280.0	33	0	867240.0	3.5E-06*
MY1	26280.0	35	0	919800.0	3.3E-06*
PA1	26280.0	15	1	394200.0	2.5E-06
SL1	23592.0	34	0	802128.0	3.7E-06*
TOTALS			1	4559712.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED (COMMAND FAULTS)

GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	63	0	1655640.0	1.8E-06*
BF2	26280.0	63	0	1655640.0	1.8E-06*
BF3	20976.0	63	0	1321488.0	2.3E-06*
BR1	19512.0	72	0	1404864.0	2.1E-06*
BR2	26280.0	72	0	1892160.0	1.6E-06*
CO1	26280.0	57	0	1497960.0	2.0E-06*
DA1	26280.0	57	0	1760760.0	1.7E-06*
DR2	26280.0	51	0	1340280.0	2.2E-06*
DR3	26280.0	51	0	1340280.0	2.2E-06*
EN1	26280.0	68	1	1787040.0	5.6E-07
EN2	4296.0	67	0	287832.0	1.0E-05*
FP1	26280.0	18	0	473040.0	6.3E-06*
MI1	26280.0	34	0	893520.0	3.4E-06*
MO1	26280.0	47	0	1235160.0	2.4E-06*
NM1	26280.0	21	0	551860.0	5.4E-06*
OC1	26280.0	42	0	1103760.0	2.7E-06*
PB2	26280.0	58	0	1524240.0	2.0E-06*
PB3	26280.0	58	0	1524240.0	2.0E-06*
PI1	26280.0	47	0	1235160.0	2.4E-06*
QC1	26280.0	57	1	1497960.0	6.7E-07
QC2	26280.0	57	0	1497960.0	2.0E-06*
VY1	26280.0	56	0	1471680.0	2.0E-06*
		TOTALS	2	28952544.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED (COMMAND FAULTS)

WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	49	0	1133664.0	2.6E-06*
DC1	26280.0	63	0	1655640.0	1.8E-06*
DC2	7080.0	63	0	446040.0	6.7E-06*
HN1	26280.0	28	0	735840.0	4.1E-06*
IP2	26280.0	60	0	1576800.0	1.9E-06*
IP3	23952.0	66	0	1580832.0	1.9E-06*
JF1	12192.0	68	0	829056.0	3.6E-06*
KE1	26280.0	41	0	1077680.0	2.8E-06*
NA1	6456.0	48	0	309888.0	9.7E-06*
PR1	26280.0	54	0	1419120.0	2.1E-06*
PR2	26280.0	54	0	1419120.0	2.1E-06*
PT1	26280.0	42	0	1103760.0	2.7E-06*
PT2	26280.0	42	0	1103760.0	2.7E-06*
RG1	26280.0	47	0	1235160.0	2.4E-06*
RO2	26280.0	37	0	972360.0	3.1E-06*
SA1	17976.0	39	2	701064.0	2.9E-06
SO1	26280.0	26	0	683280.0	4.4E-06*
SU1	26280.0	55	0	1445400.0	2.1E-06*
SU2	26280.0	55	0	1445400.0	2.1E-06*
TR1	26280.0	41	3	1077480.0	2.8E-06
TU3	26280.0	50	0	1314000.0	2.3E-06*
TU4	26280.0	50	0	1314000.0	2.3E-06*
YR1	26280.0	28	0	735840.0	4.1E-06*
ZI1	26280.0	82	0	2154960.0	1.4E-06*
ZI2	26280.0	82	0	2154960.0	1.4E-06*
		TOTALS	5	29624904.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(UNKNOWN REMOTE & MOTOR)--PLUGGED (COMMAND FAULTS)

FINAL STATISTICS

	STANDBY HOUR RATE
	4.7
BAB.SWIL.	1.4E-07
	19.5
	4.7
COMB.ENG.	2.2E-07
	19.5
	3.1
GEN.ELEC.	6.9E-08
	5.6
	2.1
WESTINGH.	1.7E-07
	2.5
	1.9
PWR'S	1.7E-07
	2.1
	1.7
OVERALL	1.3E-07
	1.9

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX U

RESULTS OF THE LER RATE ESTIMATES FOR AIR-OPERATED VALVES

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VALVE--OPERATOR (AIR)--FAIL TO OPERATE 781

VALVE--OPERATOR (AIR)--LEAK EXTERNALLY 790

VALVE--OPERATOR (AIR)--PLUGGED 795

CODES USED IN LER ONE-LINE DESCRIPTIONS

<u>CODE</u>	<u>FAILURE MODE</u>	<u>DESCRIPTION</u>
A	FAILURE TO OPEN	
B	FAILURE TO CLOSE	
C	INTERNAL LEAKAGE	
D	EXTERNAL LEAKAGE	
E	INTERNAL/EXTERNAL LEAKAGE	
F	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
G	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
H	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
I	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
J	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
K	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
L	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
M	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
N	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
O	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
P	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
Q	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
R	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
S	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
T	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
U	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
V	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
W	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
X	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
Y	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	
Z	INTERNAL/EXTERNAL LEAKAGE (CHECK VALVES)	

<u>CODE</u>	<u>COMPONENT</u>	<u>DESCRIPTION</u>
MV	MOTOR OPERATED VALVE (ELEC.)	
AV	PNEUMATIC OPERATED VALVE	
SV	SOLENOID OPERATED VALVE	
HV	HYDRAULIC OPERATED VALVE	
RM	REMOTE OPERATED VALVE	
XV	MANUAL OPERATED VALVE	
CV	CHECK VALVE	
RV	RELIEF VALVE	
DV	DAMPER VALVE	
UV	OPERATOR TYPE OR FUNCTION NOT STATED	

<u>CODE</u>	<u>TYPE OF EVENT</u>	<u>DESCRIPTION</u>
B	RECURRING COMMON CAUSE	
C	COMMON CAUSE	
D	RECURRING	
E	COMMAND FAULT	
F	RECURRING COMMAND FAULT	

<u>CODE</u>	<u>FAILURE MECHANISM</u>	<u>DESCRIPTION</u>
00	UNKNOWN	
0001	OPERATIONAL (OPERATION)	
0002	MAINTENANCE (MAINTENANCE)	
0003	TESTING (TESTING)	
0004	DESIGN ERROR	
0005	FABRICATION/CONSTRUCTION/QUALITY CONTROL	
0006	PROCEDURAL DISCREPANCY	
0007	NORMAL WEAR	
0008	EXCESSIVE WEAR	
0009	OVERSTRESS	
0010	MATERIAL CONTAMINATION	
0011	VIBRATION	
0012	MECH. CONTROLS/PARTS; FAILED/CUT OF ADJUST.	
0013	SEAL/GASKET FAILURE/PROBLEM	
0014	PACKING FAILURE/PROBLEM	
0015	ROOT FAILURE/PROBLEM	
0016	ELECTRICAL INPUT FAILURE/PROBLEM	
0017	BEARING/BUSHING FAILURE/PROBLEM	
0018	WELD FAILURE	
0019	LACK OF LUBRICATION	
0020	ELECTRIC MOTOR OPERATOR FAILURE/PROBLEM	
0021	SOLENOID FAILURE/PROBLEM	
0022	TEARING/RUPTURED DIAPHRAGM	
0023	TORQUE SWITCH FAILURE/PROBLEM	
0024	FAILURE OF COMPONENT SUPPLY SYSTEM	
0025	HEAT/DISC FAILURE/PROBLEM	
0026	LIMIT SWITCH FAILURE/PROBLEM	
0027	PILOT VALVE FAILURE/PROBLEM	

<u>CODE</u>	<u>NUMERICAL KEY WORDS</u>	<u>DESCRIPTION</u>
V	VALVES	
A	SOME	
B	VARIOUS	
C	CENTRAL	
D	OTHER	

<u>CODE</u>	<u>EVENT CLASSIFICATION</u>	<u>DESCRIPTION</u>
D	CHANGE OF STATE	
T	AGE	
U	UNKNOWN	

<u>CODE</u>	<u>ACTIVITY RESULTING IN DISCOVERY</u>	<u>DESCRIPTION</u>
D	DEMAND ON COMPONENT	
M	MAINTENANCE	
N	NORMAL OPERATION	
R	RECORDS REVIEW	
Y	TESTING	
U	UNKNOWN	

<u>CODE</u>	<u>MSSS VENDOR</u>	<u>DESCRIPTION</u>
B	BABCOCK & WILCOX	
C	COMBUSTION ENGINEERING	
G	GENERAL ELECTRIC	
W	WESTINGHOUSE	

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE	PWR	CODE	BWR
A	- AUXILIARY FEED	A	- AUTOMATIC DEPRESSURIZATION
B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)	B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	- ELECTRIC POWER	C	- LOW PRESSURE CORE SPRAY
D	- CONTAINMENT SPRAY INJECTION	D	- ELECTRIC POWER
E	- CHEMICAL VOLUME CONTROL (MAKE-UP)	E	- CONTAINMENT SPRAY INJECTION
F	- HIGH PRESSURE COOLANT INJECTION	F	- STANDBY LIQUID CONTROL (SERVO)
G	- COMPONENT COOLING WATER	G	- HIGH PRESSURE COOLANT INJECTION
H	- REACTOR COOLANT	H	- COMPONENT COOLING WATER
I	- LOW PRESSURE COOLANT INJECTION (RHR)	I	- REACTOR COOLANT RECIRC
J	- REACTOR PROTECTION (CONTROL RCCS)	J	- LOW PRESSURE COOLANT INJECTION (RHR)
K	- NONSAFETY-RELATED	K	- CONTROL RCL DRIVE HYDRAULIC (SCRAM)
L	- SYSTEM UNKNOWN/NOT APPLICABLE	L	- NONSAFETY-RELATED
M	- CONTAINMENT FAN COOLING SYSTEM	M	- SYSTEM UNKNOWN/NOT APPLICABLE
N	- SERVICE WATER	N	- REACTOR CORE ISOLATION COOLING
O	- CONDENSATE AND FEED	O	- SERVICE WATER
P	- MAIN STEAM	P	- STANDBY GAS TREATMENT
Q	- REACTOR PROTECTION (PPS)	Q	- CONDENSATE AND FEED
R	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.	R	- MAIN STEAM
S	- FAILED FUEL ELEMENT DETECTION	S	- REACTOR PROTECTION (PPS)
		T	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
		U	- FAILED FUEL ELEMENT DETECTION

VALVE--OPERATOR(AIR)--FAIL TO OPERATE

<u>V</u> <u>E</u> <u>N</u>	<u>P</u> <u>L</u> <u>A</u> <u>N</u> <u>T</u>	<u>C</u> <u>O</u> <u>N</u> <u>T</u> <u>N</u> <u>O</u> <u>D</u> <u>O</u>	<u>E</u> <u>V</u> <u>E</u> <u>N</u> <u>T</u> <u>D</u> <u>A</u> <u>T</u> <u>E</u>	<u>S</u> <u>S</u> <u>T</u> <u>E</u> <u>M</u>	<u>C</u> <u>O</u> <u>M</u> <u>P</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>C</u> <u>O</u> <u>D</u> <u>E</u>	<u>T</u> <u>Y</u> <u>P</u> <u>E</u>	<u>C</u> <u>L</u> <u>A</u> <u>S</u> <u>S</u>	<u>C</u> <u>O</u> <u>N</u> <u>N</u> <u>O</u> <u>M</u> <u>P</u>	<u>K</u> <u>E</u> <u>Y</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>O</u> <u>D</u> <u>E</u>	<u>F</u> <u>A</u> <u>I</u> <u>L</u> <u>M</u> <u>E</u> <u>C</u> <u>H</u> <u>A</u> <u>N</u> <u>I</u> <u>S</u> <u>M</u>
B	TI2	021277	040478	L	AV	A27	U				RHR ADV (NS-V838) FAILED TO OPEN DURING TEST	FAILURE OF SOLENOID OPERATED PILOT VALVE
C	PA1	020231	010878	L	AV	A24	S	D			VALVE CV-3025 FAILED IN CLOSED POSITION	WATER IN AIR LINE TO VALVE OPERATOR
W	SA1	022422	082478	B	AV	A12	D				AUX FEED PUMP STEAM VLV (1SM132) FAILED TO OPEN	STEM WAS FOUND DISENGAGED FROM ACTUATOR
G	QC1	018106	041277	F	AV	B24	S	D			DRAIN VALVE FAILED TO CLOSE/COMMAND FAULT	AIR SUPPLY SV FAILED/AIR WOULDNT VENT OFF
W	BV1	022139	070978	H	AV	B24	S	D			BORDON INJECTION TANK RECIRC.VLV.WOULD NOT CLOSE	WORN INTERNALS IN SOLENOID SUPPLYING AIR
B	DE3	020064	010378	L	AV	F12	D				VALVE 3LP-14 FAILED TO CYCLE MANUALLY	MECH PARTS LOOSE+OUT OF ALIGN
G	MI1	014290	021276	U	AV	F24	S	D			1 OF 2 FEEDWTR.REG.VLVs LOCK IN THE AS IS POSITION	FAILURE IN 3 WAY PRESSURE REGULATOR
G	MI1	018414	071377	U	AV	F24	S	D			"B" FEEDWTR.REG.VLV EXPERIENCED CONTROL PROBLEMS	FAILURE CAUSED BY DIA.FAIL.IN SUP.SYS.VLV
G	MI1	018625*	080677	U	AV	F24	S	D	O2	V	FEEDWTR.REG.VLVs. LOCKED UP "AS IS"	LOSS OF INSTRUMENT AIR PRESS.CAUSED FAIL.

VALVE--OPERATOR(AIR)--FAIL TO OPERATE

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
CR3	17184.0	1	8	0	17184.0	8	1.7E-04*	3.1E-01*
DB1	11424.0	14	6	0	159936.0	84	1.9E-05*	3.5E-02*
OE1	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
OE2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
OE3	26280.0	8	12	1	210240.0	96	4.6E-06	1.0E-02
TI1	26280.0	3	12	0	78840.0	36	3.8E-05*	8.0E-02*
TI2	6648.0	4	4	1	26592.0	16	3.8E-05	6.3E-02
TOTALS				2	703032.0	336		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	6	1	0	3600.0	6	8.3E-04*	3.9E-01*
CC1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
CC2	18264.0	6	9	0	109584.0	54	2.7E-05*	5.4E-02*
FC1	26280.0	37	12	0	972360.0	444	3.1E-06*	6.8E-03*
MI2	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
MY1	26280.0	25	12	0	657000.0	300	4.6E-06*	1.0E-02*
PA1	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
SL1	23592.0	7	11	0	165144.0	77	1.8E-05*	3.8E-02*
TOTALS				0	2328168.0	1073		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BR1	19512.0	4	9	0	78048.0	36	3.8E-05*	8.0E-02*
BR2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
CO1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
DA1	26280.0	10	12	0	262800.0	120	1.1E-05*	2.5E-02*
EN1	26280.0	13	12	0	341640.0	156	8.8E-06*	1.9E-02*
EN2	4296.0	15	2	0	64440.0	30	4.7E-05*	9.5E-02*
FP1	26280.0	9	12	0	236520.0	108	1.3E-05*	2.8E-02*
MI1	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
MO1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
MM1	26280.0	13	12	0	341640.0	156	8.8E-06*	1.9E-02*
DC1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
PB2	26280.0	2	12	0	52560.0	24	5.7E-05*	1.2E-01*
PB3	26280.0	2	12	0	52560.0	24	5.7E-05*	1.2E-01*
PI1	26280.0	5	12	0	131400.0	60	2.3E-05*	4.9E-02*
QC1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
QC2	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
TOTALS				0	2639088.0	1206		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	3	11	0	69408.0	33	4.3E-05*	8.7E-02*
DC1	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
DC2	7080.0	30	3	0	212400.0	90	1.4E-05*	3.3E-02*
HN1	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
IP2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
IP3	23952.0	8	11	0	191616.0	88	1.6E-05*	3.3E-02*
JF1	12192.0	8	6	0	97536.0	48	3.1E-05*	6.1E-02*
NA1	6456.0	3	3	0	19368.0	9	1.5E-04*	2.8E-01*
PR1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
PR2	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
PT1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
PT2	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
RG1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
RD2	26280.0	11	12	0	269080.0	132	1.0E-05*	2.3E-02*
SA1	17976.0	18	8	1	323568.0	144	3.1E-06	6.9E-03
SO1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
TU3	26280.0	8	12	0	210240.0	96	1.4E-05*	3.1E-02*
TU4	26280.0	8	12	0	210240.0	96	1.4E-05*	3.1E-02*
ZI1	26280.0	12	12	0	315360.0	144	9.5E-06*	2.1E-02*
ZI2	26280.0	12	12	0	315360.0	144	9.5E-06*	2.1E-02*
TOTALS				1	4307016.0	1960		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	3.1	3.1
BAB.&WIL.	2.8E-06	6.0E-03
	5.6	5.6
COMB.ENG.	1.3E-06*	2.8E-03*
GEN.ELEC.	1.1E-06*	2.5E-03*
	4.7	4.7
WESTINGH.	2.3E-07	5.1E-04
	19.5	19.5
	2.6	2.6
PWR'S	4.1E-07	8.9E-04
	3.7	3.7
	2.6	2.6
OVERALL	3.0E-07	6.6E-04
	3.7	3.7

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
CR3	17184.0	1	8	0	17184.0	8	1.7E-04*	3.1E-C1*
DB1	11424.0	14	6	0	159936.0	84	1.9E-05*	3.5E-C2*
OE1	26280.0	4	12	0	105120.0	48	2.9E-C5*	6.1E-02*
OE2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
OE3	26280.0	8	12	1	210240.0	96	4.8E-05	1.0E-02
TI1	26280.0	3	12	0	78840.0	36	3.8E-C5*	8.0E-02*
TI2	6648.0	4	4	1	26592.0	16	3.8E-05	6.3E-02
			TOTALS	2	703032.0	336		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	6	1	0	3600.0	6	8.3E-04*	3.9E-C1*
CC1	26280.0	6	12	0	157680.0	72	1.9E-C5*	4.1E-02*
CC2	18264.0	6	9	0	109584.0	54	2.7E-C5*	5.4E-C2*
FC1	26280.0	37	12	0	972360.0	444	3.1E-06*	6.8E-03*
MI2	26280.0	6	12	0	157680.0	72	1.9E-C5*	4.1E-02*
MY1	26280.0	25	12	0	657000.0	300	4.6E-C6*	1.0E-02*
PA1	26280.0	4	12	1	105120.0	48	9.5E-06	2.1E-02
SL1	23592.0	7	11	0	165144.0	77	1.8E-C5*	3.8E-02*
			TOTALS	1	2328168.0	1073		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BR1	19512.0	4	9	0	78048.0	36	3.8E-05*	8.0E-02*
BR2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
CO1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
DA1	26280.0	10	12	0	262800.0	120	1.1E-05*	2.5E-02*
EN1	26280.0	13	12	0	341640.0	156	8.8E-06*	1.9E-02*
EN2	4296.0	15	2	0	64440.0	30	4.7E-05*	9.5E-02*
FP1	26280.0	9	12	0	236520.0	108	1.3E-05*	2.8E-02*
MI1	26280.0	4	12	4	105120.0	48	3.8E-05	8.3E-02
MO1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
NM1	26280.0	13	12	0	341640.0	156	8.8E-06*	1.9E-02*
OC1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
PB2	26280.0	2	12	0	52560.0	24	5.7E-05*	1.2E-01*
PB3	26280.0	2	12	0	52560.0	24	5.7E-05*	1.2E-01*
PI1	26280.0	5	12	0	131400.0	60	2.3E-05*	4.9E-02*
QC1	26280.0	6	12	1	157680.0	72	6.3E-06	1.4E-02
QC2	26280.0	6	12	0	157680.0	72	1.7E-05*	4.1E-02*
TOTALS				5	2639088.0	1206		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	3	11	1	69408.0	33	1.4E-05	3.0E-02
DC1	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
DC2	7080.0	30	3	0	212400.0	90	1.4E-05*	3.3E-02*
HN1	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
IP2	26280.0	4	12	0	105120.0	48	2.9E-05*	6.1E-02*
IP3	23952.0	8	11	0	191616.0	88	1.6E-05*	3.3E-02*
JF1	12192.0	8	6	0	97536.0	48	3.1E-05*	6.1E-02*
NA1	6456.0	3	3	0	19368.0	9	1.5E-04*	2.8E-01*
PR1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
PR2	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
PT1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
PT2	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
RG1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
RD2	26280.0	11	12	0	289080.0	132	1.0E-05*	2.3E-02*
SA1	17976.0	18	8	1	323568.0	144	3.1E-06	6.9E-03
SD1	26280.0	7	12	0	183960.0	84	1.6E-05*	3.5E-02*
TU3	26280.0	8	12	0	210240.0	96	1.4E-05*	3.1E-02*
TU4	26280.0	8	12	0	210240.0	96	1.4E-05*	3.1E-02*
ZI1	26280.0	12	12	0	315360.0	144	9.5E-06*	2.1E-02*
ZI2	26280.0	12	12	0	315360.0	144	9.5E-06*	2.1E-02*
TOTALS				2	4304016.0	1960		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--FAIL TO OPERATE (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	3.1	3.1
BAB. SWIL.	2.8E-06	6.0E-03
	5.6	5.6
	4.7	4.7
COMB. ENG.	4.3E-07	9.3E-04
	19.5	19.5
	2.1	2.1
GEN. ELEC.	1.9E-06	4.1E-03
	2.5	2.5
	3.1	3.1
WESTINGH.	4.6E-07	1.0E-03
	5.6	5.6
	2.1	2.1
PWR'S	6.8E-07	1.5E-03
	2.5	2.5
	1.7	1.7
OVERALL	1.0E-06	2.2E-03
	1.8	1.8

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY

NEW	PLANT	CONT.NO.	EVENT DATE	S-S	C	D	FAIL CODE	M	T	C	S	P	C	R	C	N	K	Y	<u>FAILURE MODE</u>		<u>FAILURE MECHANISM</u>	
G	P82	019096	091477	H	AV	D14		T												VALVE AD-53 LEAKING EXTERNALLY	PACKING FAILURE	
M	Z11	016647	091676	H	AV	D13		T												NITROGEN FILL VALVE (1S168758) LEAKED EXTERNALLY	BODY TO BONNET LEAK OF AD PLUG VALVE	

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY
BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
CR3	17184.0	1	0	17184.0	1.7E-04*
DB1	11424.0	14	0	159936.0	1.9E-05*
DE1	26280.0	4	0	105120.0	2.9E-05*
DE2	26280.0	4	0	105120.0	2.9E-05*
DE3	26280.0	8	0	210240.0	1.4E-05*
TI1	26280.0	3	0	78840.0	3.8E-05*
TI2	6648.0	4	0	26592.0	1.1E-04*
		TOTALS	0	703032.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY
COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	6	0	3600.0	8.3E-04*
CC1	26280.0	6	0	157680.0	1.9E-05*
CC2	18264.0	6	0	109584.0	2.7E-05*
FC1	26280.0	37	0	972360.0	3.1E-06*
MI2	26280.0	6	0	157680.0	1.9E-05*
MY1	26280.0	25	0	657000.0	4.6E-06*
PA1	26280.0	4	0	105120.0	2.9E-05*
SL1	23592.0	7	0	165144.0	1.8E-05*
		TOTALS	0	2328168.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY
 GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BR1	19512.0	4	0	78048.0	3.8E-05*
BR2	26280.0	4	0	105120.0	2.9E-05*
CO1	26280.0	7	0	183960.0	1.6E-05*
DA1	26280.0	10	0	262800.0	1.1E-05*
EN1	26280.0	13	0	341640.0	8.8E-06*
EN2	4296.0	15	0	64440.0	4.7E-05*
FP1	26280.0	9	0	236520.0	1.3E-05*
MI1	26280.0	4	0	105120.0	2.9E-05*
MO1	26280.0	7	0	183960.0	1.6E-05*
NM1	26280.0	13	0	341640.0	8.8E-06*
OC1	26280.0	7	0	183960.0	1.6E-05*
PB2	26280.0	2	1	52560.0	1.9E-05
PB3	26280.0	2	0	52560.0	5.7E-05*
PI1	26280.0	5	0	131400.0	2.3E-05*
QC1	26280.0	6	0	157680.0	1.9E-05*
QC2	26280.0	6	0	157680.0	1.9E-05*
TOTALS			1	2639088.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	3	0	69408.0	4.3E-05*
DC1	26280.0	30	0	788400.0	3.8E-06*
DC2	7080.0	30	0	212400.0	1.4E-05*
HN1	26280.0	4	0	105120.0	2.9E-05*
IP2	26280.0	4	0	105120.0	2.9E-05*
IP3	23952.0	8	0	191616.0	1.6E-05*
JF1	12192.0	8	0	97536.0	3.1E-05*
NA1	6456.0	3	0	19368.0	1.5E-04*
PR1	26280.0	6	0	157680.0	1.9E-05*
PR2	26280.0	6	0	157680.0	1.9E-05*
PT1	26280.0	7	0	183960.0	1.6E-05*
PT2	26280.0	7	0	183960.0	1.6E-05*
RG1	26280.0	7	0	183960.0	1.6E-05*
RO2	26280.0	11	0	289080.0	1.4E-05*
SA1	17976.0	18	0	323568.0	9.3E-06*
SO1	26280.0	7	0	183960.0	1.6E-05*
TU3	26280.0	8	0	210240.0	1.4E-05*
TU4	26280.0	8	0	210240.0	1.4E-05*
ZI1	26280.0	12	1	315360.0	3.2E-06
ZI2	26280.0	12	0	315360.0	9.5E-06*
		TOTALS	1	4304016.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--LEAK EXTERNALLY
FINAL STATISTICS

	STANDBY HOUR RATE
BAB.&WIL.	4.3E-06*
COMB.ENG.	1.3E-06*
	4.7
GEN.ELEC.	3.8E-07
	19.5
	4.7
WESTINGH.	2.3E-07
	19.5
	4.7
PWR'S	1.4E-07
	19.5
	3.1
OVERALL	2.0E-07
	5.6

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

794

VALVE--OPERATOR(AIR)--PLUGGED

PLANT CONT.NO. 015909
EVENT DATE 091076
SYM SP
CQ CM
FAL CODE
PLCS PM
CJCS MUE
K

FAILURE MECHANISM

AIR PRESS TO VAL DROPPED/AIR SYS(DESIGN)

FAILURE MODE

COOL WATER CONT ISOLATION VALVE BENT CLOSED

VALVE--OPERATOR(AIR)--PLUGGED (COMMAND FAULTS INCLUDED)

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
CR3	17184.0	1	0	17184.0	1.7E-04*
DB1	11424.0	14	0	159936.0	1.9E-05*
OE1	26280.0	4	0	105120.0	2.9E-05*
OE2	26280.0	4	0	105120.0	2.9E-05*
OE3	26280.0	8	0	210240.0	1.4E-05*
TI1	26280.0	3	0	78840.0	3.6E-05*
TI2	6648.0	4	0	26592.0	1.1E-04*
TOTALS			0	703032.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--PLUGGED (COMMAND FAULTS INCLUDED)

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	6	0	3600.0	9.3E-04*
CC1	26280.0	6	0	157680.0	1.9E-05*
CC2	18264.0	6	0	109584.0	2.7E-05*
FC1	26280.0	37	0	972360.0	3.1E-06*
MI2	26280.0	6	0	157680.0	1.9E-05*
MY1	26280.0	25	0	657000.0	4.6E-06*
PA1	26280.0	4	0	105120.0	2.9E-05*
SL1	23592.0	7	0	165144.0	1.8E-05*
TOTALS			0	2328168.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--PLUGGED (COMMAND FAULTS INCLUDED)
 GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BR1	19512.0	4	0	78048.0	3.8E-05*
BR2	26280.0	4	0	105120.0	2.9E-05*
CD1	26280.0	7	0	183960.0	1.6E-05*
DA1	26280.0	10	0	262800.0	1.1E-05*
EH1	26280.0	13	0	341640.0	8.8E-06*
EN2	4296.0	15	0	64440.0	4.7E-05*
FP1	26280.0	9	0	236520.0	1.3E-05*
MI1	26280.0	4	0	105120.0	2.9E-05*
MO1	26280.0	7	0	183960.0	1.6E-05*
NM1	26280.0	13	0	341640.0	8.8E-06*
OC1	26280.0	7	0	183960.0	1.6E-05*
PB2	26280.0	2	0	52560.0	5.7E-05*
PB3	26280.0	2	0	52560.0	5.7E-05*
PI1	26280.0	5	0	131400.0	2.3E-05*
QC1	26280.0	6	0	157680.0	1.9E-05*
QC2	26280.0	6	0	157680.0	1.9E-05*
		TOTALS	0	2639088.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--PLUGGED (COMMAND FAULTS INCLUDED)

WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	3	1	69408.0	1.4E-05
DC1	26280.0	30	0	788400.0	3.8E-06*
DC2	7080.0	30	0	212400.0	1.4E-05*
HN1	26280.0	4	0	105120.0	2.9E-05*
IP2	26280.0	4	0	105120.0	2.9E-05*
IP3	23952.0	8	0	191616.0	1.6E-05*
JF1	12192.0	8	0	97536.0	3.1E-05*
NA1	6456.0	3	0	19368.0	1.5E-04*
PK1	26280.0	6	0	157680.0	1.9E-05*
PR2	26280.0	6	0	157680.0	1.9E-05*
PT1	26280.0	7	0	183960.0	1.6E-05*
PT2	26280.0	7	0	183960.0	1.6E-05*
RG1	26280.0	7	0	183960.0	1.6E-05*
RO2	26280.0	11	0	289080.0	1.0E-05*
SA1	17976.0	18	0	323568.0	9.3E-06*
SO1	26280.0	7	0	183960.0	1.6E-05*
TU3	26280.0	8	0	210240.0	1.4E-05*
TU4	26280.0	8	0	210240.0	1.4E-05*
ZI1	26280.0	12	0	315360.0	9.5E-06*
ZI2	26280.0	12	0	315360.0	9.5E-06*
TOTALS			1	4304016.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(AIR)--PLUGGED (COMMAND FAULTS INCLUDED)
FINAL STATISTICS

	STANDBY HOUR RATE
BAB.&WIL.	4.3E-06*
COMB.ENG.	1.3E-06*
GEN.ELEC.	1.1E-06*
	4.7
WESTINGH.	2.3E-07
	19.5
	4.7
PWR'S	1.4E-07
	19.5
	4.7
OVERALL	1.0E-07
	19.5

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX V

RESULTS OF THE LER RATE ESTIMATES FOR MANUAL-OPERATED VALVES

CONTENTS

CODES USED IN LER ONE-LINE DESCRIPTIONS	805
VALVE--OPERATOR (MANUAL)--FAIL TO OPERATE	807
VALVE--OPERATOR (MANUAL)--LEAK EXTERNALLY	812

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

<u>CODE</u>	<u>PWR</u>	<u>CODE</u>	<u>BWR</u>
A	- AUXILIARY FEED	A	- AUTOMATIC DEPRESSURIZATION
B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)	B	- CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	- ELECTRIC POWER	C	- LOW PRESSURE CORE SPRAY
D	- CONTAINMENT SPRAY INJECTION	D	- ELECTRIC POWER
E	- CHEMICAL VOLUME CONTROL (MAKE-UP)	E	- CONTAINMENT SPRAY INJECTION
F	- HIGH PRESSURE COOLANT INJECTION	F	- STANDBY LIQUID CONTROL (BSCRN)
G	- COMPONENT COOLING WATER	G	- HIGH PRESSURE COOLANT INJECTION
H	- REACTOR COOLANT	H	- COMPONENT COOLING WATER
I	- LOW PRESSURE COOLANT INJECTION (RHR)	I	- REACTOR COOLANT RECIRC
J	- REACTOR PROTECTION (CONTROL RODS)	J	- LOW PRESSURE COOLANT INJECTION (RHR)
K	- NONSAFETY-RELATED	K	- CONTROL ROD DRIVE HYDRAULIC (SCRAM)
L	- SYSTEM UNKNOWN/NOT APPLICABLE	L	- NONSAFETY-RELATED
M	- CONTAINMENT FAN COOLING SYSTEM	M	- SYSTEM UNKNOWN/NOT APPLICABLE
N	- SERVICE WATER	N	- REACTOR CORE ISOLATION COOLING
O	- CONDENSATE AND FEED	O	- SERVICE WATER
P	- MAIN STEAM	P	- STANDBY GAS TREATMENT
Q	- REACTOR PROTECTION (PPS)	Q	- CONDENSATE AND FEED
R	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.	R	- MAIN STEAM
S	- FAILED FUEL ELEMENT DETECTION	S	- REACTOR PROTECTION (PPS)
		T	- CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
		Z	- FAILED FUEL ELEMENT DETECTION

VALVE---OPERATOR(MANUAL)---FAIL TO OPERATE

PLANT	CONT. NO.	EVENT DATE	SUMMARY	C U M S P	FAIL CODE	FLY P S	CON DU CT	FAILURE MODE	FAILURE MECHANISM
B 011	014808	041376	H XV F12	H XV F12	D			FLOOD TANK 1A NITROGEN ADD VLV FAILED OPEN	VAL STEM SEPERATED FROM DISK
C CC2	018620	081977	B XV F01	B XV F01	D			#21 AUX.FDWR.PMP.THROT.STOP VLV HANDWHEEL BROKE	A PERSON APPL.EXCESS.FORCE WITH VLV WREN. GALLED THREADS/STEM SEIZED
G VY1	019854	110177	D XV F08	D XV F08	D			MANIFOLD BYPASS VALVE FAILED TO OPERATE	

VALVE--OPERATOR(MANUAL)--FAIL TO OPERATE

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
CR3	17184.0	34	8	0	584256.0	272	5.1E-06*	1.1E-02*
DB1	11424.0	24	6	0	274176.0	144	1.1E-05*	2.1E-02*
DE1	26280.0	75	12	1	1971000.0	900	5.1E-07	1.1E-03
DE2	26280.0	77	12	0	2023560.0	924	1.5E-06*	3.2E-03*
DE3	26280.0	75	12	0	1971000.0	900	1.5E-06*	3.3E-03*
RS1	26280.0	74	12	0	1944720.0	888	1.5E-06*	3.4E-03*
TI1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
TI2	6648.0	59	4	0	392232.0	236	7.6E-06*	1.3E-02*
TOTALS				1	11105664.0	5152		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--FAIL TO OPERATE

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	42	1	0	25200.0	42	1.2E-04*	6.9E-02*
CC1	26280.0	49	12	0	1287720.0	588	2.3E-06*	5.1E-03*
CC2	18264.0	49	9	1	894936.0	441	1.1E-06	2.3E-03
FC1	26280.0	55	12	0	1445400.0	660	2.1E-06*	4.5E-03*
MI2	26280.0	61	12	0	1603080.0	732	1.9E-06*	4.1E-03*
MY1	26280.0	87	12	0	2286360.0	1044	1.3E-06*	2.9E-03*
PA1	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
SL1	23592.0	59	11	0	1391928.0	649	2.2E-06*	4.6E-03*
TOTALS				1	9959544.0	4624		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--FAIL TO OPERATE
 GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	38	12	0	998640.0	456	3.0E-06*	6.6E-03*
BF2	26280.0	38	12	0	998640.0	456	3.0E-06*	6.6E-03*
BF3	20976.0	38	10	0	797088.0	380	3.8E-06*	7.9E-03*
BR1	19512.0	41	9	0	799992.0	369	3.7E-06*	8.1E-03*
BR2	26280.0	41	12	0	1077480.0	492	2.8E-06*	6.1E-03*
CD1	26280.0	5	12	0	131400.0	60	2.3E-05*	4.9E-02*
DA1	26280.0	34	12	0	893570.0	408	3.4E-06*	7.3E-03*
DR2	26280.0	44	12	0	1156320.0	528	2.6E-06*	5.7E-03*
DR3	26280.0	44	12	0	1156320.0	528	2.6E-06*	5.7E-03*
EN1	26280.0	40	12	0	1051200.0	480	2.9E-06*	6.2E-03*
EN2	4296.0	43	2	0	184728.0	86	1.6E-05*	3.4E-02*
FP1	26280.0	33	12	0	867240.0	396	3.5E-06*	7.6E-03*
MI1	26280.0	71	12	0	1865880.0	852	1.6E-06*	3.5E-03*
MO1	26280.0	52	12	0	1366560.0	624	2.2E-06*	4.8E-03*
NM1	26280.0	28	12	0	735840.0	336	4.1E-06*	8.9E-03*
OC1	26280.0	15	12	0	394200.0	180	7.6E-06*	1.7E-02*
PB2	26280.0	58	12	0	1524240.0	696	2.0E-06*	4.3E-03*
PB3	26280.0	58	12	0	1524240.0	696	2.0E-06*	4.3E-03*
PI1	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
QC1	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
QC2	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
VY1	26280.0	51	12	1	1340280.0	612	7.5E-07	1.6E-03
			-----	-----				
			TOTALS	1	21702048.0	9931		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--FAIL TO OPERATE
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	38	11	0	879168.0	415	3.4E-06*	7.2E-03*
DC1	26280.0	91	12	0	2391480.0	1092	1.3E-06*	2.7E-03*
DC2	7080.0	91	3	0	644280.0	273	4.7E-06*	1.1E-02*
HN1	26280.0	65	12	0	1708200.0	780	1.8E-06*	3.8E-03*
IP2	26280.0	73	12	0	1918440.0	876	1.6E-06*	3.4E-03*
IP3	23952.0	76	11	0	1820352.0	836	1.6E-06*	3.6E-03*
JF1	12192.0	94	6	0	1146048.0	564	2.6E-06*	5.3E-03*
KE1	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
NA1	6456.0	42	3	0	271152.0	126	1.1E-05*	2.4E-02*
PR1	26280.0	42	12	0	1103760.0	504	2.7E-06*	5.9E-03*
PR2	26280.0	42	12	0	1103760.0	504	2.7E-06*	5.9E-03*
PT1	26280.0	74	12	0	1944720.0	888	1.5E-06*	3.4E-03*
PT2	26280.0	74	12	0	1944720.0	888	1.5E-06*	3.4E-03*
RG1	26280.0	64	12	0	1681920.0	768	1.8E-06*	3.9E-03*
RD2	26280.0	77	12	0	2023560.0	924	1.5E-06*	3.2E-03*
SA1	17976.0	85	8	0	1527960.0	680	2.6E-06*	4.4E-03*
SO1	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
SU1	26280.0	56	12	0	1471680.0	672	2.0E-06*	4.5E-03*
SU2	26280.0	56	12	0	1471680.0	672	2.0E-06*	4.5E-03*
TR1	26280.0	58	12	0	1524240.0	696	2.0E-06*	4.3E-03*
TU3	26280.0	57	12	0	1497960.0	684	2.0E-06*	4.4E-03*
TU4	26280.0	57	12	0	1497960.0	684	2.0E-06*	4.4E-03*
YR1	26280.0	36	12	0	946080.0	432	3.2E-06*	5E-03*
ZI1	26280.0	72	12	0	1892160.0	864	1.6E-06*	3.5E-03*
ZI2	26280.0	72	12	0	1892160.0	864	1.6E-06*	3.5E-03*
			TOTALS	0	36642360.0	16757		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--FAIL TO OPERATE

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	4.7	4.7
BAB.COIL.	9.0E-08	1.9E-04
	19.5	19.5
	4.7	4.7
COB.CO.ENG.	1.0E-07	2.2E-04
	19.5	19.5
	4.7	4.7
GEN.ELEC.	4.6E-08	1.0E-04
	19.5	19.5
	4.7	4.7
WESTINGH.	8.2E-08*	1.8E-04*
	3.1	3.1
PWR.S	3.5E-08	7.5E-05
	5.6	5.6
	2.6	2.6
OVERALL	3.8E-08	8.2E-05
	3.7	3.7

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY

PLANT	CONT. NO.	EVENT DATE	SUMMARY	FAIL CODE	VALVE	CONTR	FAILURE MODE	FAILURE MECHANISM
C MI2	017400	031577	B XV 007		STM TRAP	ISO VAL	LEAKING EXTERNALLY	NORMAL PACKING WEAR

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY
BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	39	0	1024920.0	2.9E-06*
CR3	17184.0	34	0	584256.0	5.1E-06*
DB1	11424.0	24	0	274176.0	1.1E-05*
GE1	26280.0	75	0	1971000.0	1.5E-06*
GE2	26280.0	77	0	2023560.0	1.5E-06*
GE3	26280.0	75	0	1971000.0	1.5E-06*
RS1	26280.0	74	0	1944720.0	1.5E-06*
TI1	26280.0	35	0	919800.0	3.3E-06*
TI2	6648.0	59	0	392232.0	7.6E-06*
		TOTALS	0	11105664.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY
COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	42	0	25200.0	1.2E-04*
CC1	26280.0	49	0	1287720.0	2.3E-06*
CC2	18264.0	49	0	894936.0	3.3E-06*
FC1	26280.0	55	0	1445400.0	2.1E-06*
MI2	26280.0	61	1	1603080.0	6.2E-07
MY1	26280.0	87	0	2286360.0	1.3E-06*
PA1	26280.0	39	0	1024920.0	2.9E-06*
SL1	23592.0	59	0	1391928.0	2.2E-06*
		TOTALS	1	9959544.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY
GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	38	0	998640.0	3.0E-06*
BF2	26280.0	38	0	998640.0	3.0E-06*
BF3	20976.0	38	0	797088.0	3.8E-06*
BR1	19512.0	41	0	799992.0	3.7E-06*
BR2	26280.0	41	0	1077480.0	2.8E-06*
CO1	26280.0	5	0	131400.0	2.3E-05*
DA1	26280.0	34	0	893520.0	3.4E-06*
DR2	26280.0	44	0	1156320.0	2.6E-06*
DR3	26280.0	44	0	1156320.0	2.6E-06*
EN1	26280.0	40	0	1051200.0	2.9E-06*
EN2	4296.0	43	0	184728.0	1.6E-05*
FP1	26280.0	33	0	867240.0	3.5E-06*
MI1	26280.0	71	0	1865880.0	1.6E-06*
MO1	26280.0	52	0	1366560.0	2.2E-06*
NM1	26280.0	28	0	735840.0	4.1E-06*
OC1	26280.0	15	0	394200.0	7.6E-06*
PB2	26280.0	58	0	1524240.0	2.0E-06*
PB3	26280.0	58	0	1524240.0	2.0E-06*
PI1	26280.0	30	0	788400.0	3.8E-06*
QC1	26280.0	39	0	1024920.0	2.9E-06*
QC2	26280.0	39	0	1024920.0	2.9E-06*
VY1	26280.0	51	0	1340280.0	2.2E-06*
		TOTALS	0	21702048.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	38	0	879168.0	3.4E-06*
DC1	26280.0	91	0	2391480.0	1.3E-06*
DC2	7080.0	91	0	644280.0	4.7E-06*
HN1	26280.0	65	0	1708200.0	1.8E-06*
IP2	26280.0	73	0	1918440.0	1.6E-06*
IP3	23952.0	76	0	1820352.0	1.6E-06*
JF1	12192.0	94	0	1146048.0	2.6E-06*
KE1	26280.0	50	0	1314000.0	2.3E-06*
NA1	6456.0	42	0	271152.0	1.1E-05*
PR1	26280.0	42	0	1103760.0	2.7E-06*
PR2	26280.0	42	0	1103760.0	2.7E-06*
PT1	26280.0	74	0	1944720.0	1.5E-06*
PT2	26280.0	74	0	1944720.0	1.5E-06*
RG1	26280.0	64	0	1681920.0	1.8E-06*
RD2	26280.0	77	0	2023560.0	1.5E-06*
SA1	17976.0	85	0	1527960.0	2.0E-06*
SO1	26280.0	39	0	1024920.0	2.9E-06*
SU1	26280.0	56	0	1471680.0	2.0E-06*
SU2	26280.0	56	0	1471680.0	2.0E-06*
TR1	26280.0	58	0	1524240.0	2.0E-06*
TU3	26280.0	57	0	1497960.0	2.0E-06*
TU4	26280.0	57	0	1497960.0	2.0E-06*
YR1	26280.0	36	0	946080.0	3.2E-06*
ZI1	26280.0	72	0	1892160.0	1.6E-06*
ZI2	26280.0	72	0	1892160.0	1.6E-06*
		TOTALS	0	36642360.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--OPERATOR(MANUAL)--LEAK EXTERNALLY
FINAL STATISTICS

	STANDBY HOUR RATE
BAB.&WIL.	2.7E-07*
	4.7
COMB.ENG.	1.0E-07
	19.5
GEN.ELEC.	1.4E-07*
WESTINGH.	8.2E-08*
	4.7
PWR'S	1.7E-08
	19.5
	4.7
OVERALL	1.3E-08
	19.5

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX W

RESULTS OF THE LER RATE ESTIMATES FOR CHECK VALVES

CONTENTS

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CODES USED IN LER ONE-LINE DESCRIPTIONS

<u>FAILURE MODE</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
A	FAILED TO OPEN
B	FAILED TO CLOSE
C	INTERNAL LEAKAGE
D	EXTERNAL LEAKAGE
E	INTERNAL LEAKAGE (RUPTURE)
F	EXTERNAL LEAKAGE (CHECK VALVES)
G	PLUGGED TO OPERATE AS REQUIRED
H	PLUGGED TO REMAIN OPEN
I	PREMATURE OPEN (RELIEF VALVES)
J	PREMATURE CLOSURE/REPLACEMENT
K	TECHNICAL SPECIFICATION VIOLATION
L	IMPROPER VALVE CONFIGURATION

<u>COMPONENT</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
NV	MOTOR OPERATED VALVE (ELEC.)
AV	PNEUMATIC OPERATED VALVE
SV	SOLENOID OPERATED VALVE
HV	HYDRAULIC OPERATED VALVE
RV	RELIEF OPERATED VALVE
MV	MANUAL OPERATED VALVE
CV	CHECK VALVE
RV	RELIEF VALVE
DV	DAMPER VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED

<u>TYPE OF EVENT</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
B	RECURRING COMMON CAUSE
C	COMMON CAUSE
R	RECURRING
S	COMMAND FAULT
T	RECURRING COMMAND FAULT

<u>FAILURE MECHANISM</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
00	UNKNOWN
01	OPERATIONAL (OPERATION)
02	MAINTENANCE (MAINTENANCE)
03	TESTING (TESTING)
04	DESIGN ERROR
05	FABRICATION/CONSTRUCTION/QUALITY CONTROL
06	PROCEDURAL DISCREPANCY
07	NORMAL WEAR
08	EXCESSIVE WEAR
09	CORROSION
10	CONTAMINATION
11	VIBRATION
12	MATERIAL CONTAMINATION
13	MECHANICAL CONTROLS/PARTS; FAILED/CUT OF ADJUST.
14	SEAL/GASKET FAILURE/PROBLEM
15	PACKING FAILURE/PROBLEM
16	BOOT FAILURE/PROBLEM
17	BEARING FAILURE/PROBLEM
18	BEARING FAILURE/PROBLEM
19	BEARING FAILURE/PROBLEM
20	BEARING FAILURE/PROBLEM
21	BEARING FAILURE/PROBLEM
22	BEARING FAILURE/PROBLEM
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91	BEARING FAILURE/PROBLEM
92	BEARING FAILURE/PROBLEM
93	BEARING FAILURE/PROBLEM
94	BEARING FAILURE/PROBLEM
95	BEARING FAILURE/PROBLEM
96	BEARING FAILURE/PROBLEM
97	BEARING FAILURE/PROBLEM
98	BEARING FAILURE/PROBLEM
99	BEARING FAILURE/PROBLEM

<u>EVENT CLASSIFICATION</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
D	CHANGE OF STATE
A	AGE
U	UNKNOWN

<u>ACTIVITY RESULTING IN DISCOVERY</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
D	DEMAND ON COMPONENT
M	MAINTENANCE
N	NORMAL OPERATION
R	RECORDS REVIEW
U	UNKNOWN

<u>NUMERICAL KEY WORDS</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
V	VALVES
A	SOME
N	VARIOUS
S	SEVERAL
Z	OTHER

<u>HSSS VENDOR</u>	
<u>CODE</u>	<u>DESCRIPTION</u>
B	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING
G	GENERAL ELECTRIC
W	WESTINGHOUSE

CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

<u>CODE</u>	<u>PWR</u>	<u>CODE</u>	<u>BWR</u>
A	AUXILIARY FEED	A	AUTOMATIC DEPRESSURIZATION
B	CONTAINMENT ISOLATION (INCL PENETRATIONS)	B	CONTAINMENT ISOLATION (INCL PENETRATIONS)
C	ELECTRIC POWER	C	LOW PRESSURE CORE SPRAY
D	CONTAINMENT SPRAY INJECTION	D	ELECTRIC POWER
E	CHEMICAL VOLUME CONTROL (MAKE-UP)	E	CONTAINMENT SPRAY INJECTION
F	HIGH PRESSURE COOLANT INJECTION	F	STANDBY LIQUID CONTROL (BERGN)
G	COMPONENT COOLING WATER	G	HIGH PRESSURE COOLANT INJECTION
H	REACTOR COOLANT	H	COMPONENT COOLING WATER
I	LOW PRESSURE COOLANT INJECTION (RHR)	I	REACTOR COOLANT RECIRC
J	REACTOR PROTECTION (CONTROL RCD)	J	LOW PRESSURE COOLANT INJECTION (RHR)
K	NONSAFETY-RELATED	K	CONTROL ROD DRIVE HYDRAULIC (SCRAM)
L	SYSTEM UNKNOWN/NOT APPLICABLE	L	NONSAFETY-RELATED
M	CONTAINMENT FAN COOLING SYSTEM	M	SYSTEM UNKNOWN/NOT APPLICABLE
N	SERVICE WATER	N	REACTOR CORE ISOLATION COOLING
O	CONDENSATE AND FEED	O	SERVICE WATER
P	MAIN STEAM	P	STANDBY GAS TREATMENT
Q	REACTOR PROTECTION (PPS)	Q	CONDENSATE AND FEED
R	CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.	R	MAIN STEAM
S	FAILED FUEL ELEMENT DETECTION	S	REACTOR PROTECTION (PPS)
T		T	CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
U		U	FAILED FUEL ELEMENT DETECTION
V		V	
W		W	
X		X	
Y		Y	
Z		Z	

VALVE--CHECK--FAIL TO OPEN

PLANT	CONT.NO.	EVENT DATE	SHW	CODE	FAIL CODE	TYPE	CLASS	CON NUM	PK	FAIL MODE	FAILURE MECHANISM
G BF3	016055	082476	H	CV	A00	U				CHECK VALVE IN HPCI TURB.EXH.LINE WAS BINDING	CAUSE OF CHECK VLV BINDING NOT STATED
M DC2	023030*	112176	F	CV	A05	C	D	02		CHK.VLVS.CTS-127E6W TO THE LOWER CONT-SPRAY NOZZL-	-ES INSTALLED BACKWARDS//FABRICATION ERR.

VALVE--CHECK--FAIL TO OPEN

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	29	12	0	762120.0	348	3.9E-06*	8.6E-03*
CR3	17184.0	40	8	0	687360.0	320	4.4E-06*	9.4E-03*
DB1	11424.0	39	6	0	445536.0	234	6.7E-06*	1.3E-02*
DE1	26280.0	29	12	0	762120.0	348	3.9E-06*	8.6E-03*
DE2	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
DE3	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
RS1	26280.0	56	12	0	1471680.0	672	2.0E-06*	4.5E-03*
TI1	26280.0	38	12	0	998640.0	456	3.0E-06*	6.6E-03*
TI2	6648.0	41	4	0	272568.0	164	1.1E-05*	1.8E-02*
TOTALS				0	6976824.0	3262		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--FAIL TO OPEN

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	69	1	0	41400.0	69	7.2E-05*	4.2E-02*
CC1	26280.0	53	12	0	1392840.0	636	2.2E-06*	4.7E-03*
CC2	18264.0	53	9	0	967992.0	477	3.1E-06*	6.3E-03*
FC1	26280.0	49	12	0	1287720.0	588	2.3E-06*	5.1E-03*
MI2	26280.0	51	12	0	1340280.0	612	2.2E-06*	4.9E-03*
MY1	26280.0	57	12	0	1497960.0	684	2.0E-06*	4.4E-03*
PA1	26280.0	27	12	0	709560.0	324	4.2E-06*	9.3E-03*
SL1	23592.0	49	11	0	1156008.0	539	2.6E-06*	5.6E-03*
TOTALS				0	8393760.0	3929		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--FAIL TO OPEN
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
BF2	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
BF3	20976.0	35	10	1	734160.0	350	1.4E-06	2.9E-03
BR1	19512.0	38	9	0	741456.0	342	4.0E-06*	8.8E-03*
BR2	26280.0	38	12	0	998640.0	456	3.0E-06*	6.6E-03*
CO1	26280.0	12	12	0	315360.0	144	9.5E-06*	2.1E-02*
DA1	26280.0	21	12	0	551880.0	252	5.4E-06*	1.2E-02*
DR2	26280.0	24	12	0	630720.0	288	4.8E-06*	1.0E-02*
DR3	26280.0	24	12	0	630720.0	288	4.8E-06*	1.0E-02*
EN1	26280.0	44	12	0	1156320.0	528	2.6E-06*	5.7E-03*
EN2	4296.0	30	2	0	128880.0	60	2.3E-05*	4.9E-02*
FP1	26280.0	8	12	0	210240.0	96	1.4E-05*	3.1E-02*
MI1	26280.0	9	12	0	236520.0	108	1.3E-05	2.8E-02*
MO1	26280.0	33	12	0	867240.0	396	3.5E-06*	7.6E-03*
NM1	26280.0	25	12	0	657000.0	300	4.6E-06*	1.0E-02*
OC1	26280.0	23	12	0	604440.0	276	5.0E-06*	1.1E-02*
PB2	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
PB3	26280.0	50	12	0	1314000.0	600	2.3E-06*	5.0E-03*
PI1	26280.0	9	12	0	236520.0	108	1.3E-05*	2.8E-02*
QC1	26280.0	26	12	0	683280.0	312	4.4E-06*	9.6E-03*
QC2	26280.0	26	12	0	683280.0	312	4.4E-06*	9.6E-03*
VY1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
			TOTALS	1	15454056.0	7076		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--FAIL TO OPEN
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	46	11	0	1064256.0	506	2.8E-06*	5.9E-03*
DC1	26280.0	56	12	0	1471680.0	672	2.0E-06*	4.5E-03*
DC2	7080.0	56	3	2	396480.0	168	5.0E-06	1.2E-02
HN1	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
IP2	26280.0	54	12	0	1419120.0	648	2.1E-06*	4.6E-03*
IP3	23952.0	68	11	0	1628736.0	748	1.8E-06*	4.0E-03*
JF1	12192.0	59	6	0	719328.0	354	4.2E-06*	8.5E-03*
KE1	26280.0	43	12	0	1130040.0	516	2.7E-06*	5.8E-03*
NA1	6456.0	47	3	0	303432.0	141	9.9E-06*	2.1E-02*
PR1	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
PR2	26280.0	39	12	0	1024920.0	468	2.9E-06*	6.4E-03*
PT1	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
PT2	26280.0	47	12	0	1235160.0	564	2.4E-06*	5.3E-03*
RG1	26280.0	33	12	0	867240.0	396	3.5E-06*	7.6E-03*
RD2	26280.0	35	12	0	919800.0	420	3.3E-06*	7.1E-03*
SA1	17976.0	55	8	0	988680.0	440	3.0E-06*	6.8E-03*
SD1	26280.0	30	12	0	788400.0	360	3.8E-06*	8.3E-03*
SU1	26280.0	48	12	0	1261440.0	576	2.4E-06*	5.2E-03*
SU2	26280.0	48	12	0	1261440.0	576	2.4E-06*	5.2E-03*
TR1	26280.0	43	12	0	1130040.0	516	2.7E-06*	5.8E-03*
TU3	26280.0	41	12	0	1077480.0	492	2.8E-06*	6.1E-03*
TU4	26280.0	41	12	0	1077480.0	492	2.8E-06*	6.1E-03*
YR1	26280.0	21	12	0	551880.0	252	5.4E-06*	1.2E-02*
ZI1	26280.0	69	12	0	1813320.0	828	1.7E-06*	3.6E-03*
ZI2	26280.0	69	12	0	1813320.0	828	1.7E-06*	3.6E-03*
			TOTALS	2	27123552.0	12413		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--FAIL TO OPEN

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
BAB. & WIL.	4.3E-07*	9.2E-04*
COMB. ENG.	3.6E-07*	7.6E-04*
	4.7	4.7
GEN. ELEC.	6.5E-08	1.4E-04
	19.5	19.5
	3.1	3.1
WESTINGH.	7.4E-08	1.6E-04
	5.6	5.6
	3.1	3.1
PWR'S	4.7E-08	1.0E-04
	5.6	5.6
	2.6	2.6
OVERALL	5.2E-08	1.1E-04
	3.7	3.7

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK EXTERNALLY

<u>V</u>	<u>E</u>	<u>N</u>	<u>P</u>	<u>C</u>	<u>E</u>	<u>S</u>	<u>C</u>	<u>F</u>	<u>T</u>	<u>C</u>	<u>C</u>	<u>K</u>	<u>F</u>	<u>M</u>
<u>ENT</u>	<u>CONT.</u>	<u>NO.</u>	<u>EVENT</u>	<u>S</u>	<u>COMP</u>	<u>FAIL</u>	<u>TYPE</u>	<u>CLASS</u>	<u>UN</u>	<u>KEY</u>	<u>FAILURE</u>	<u>MODE</u>	<u>FAILURE</u>	<u>MECHANISM</u>
<u>---</u>	<u>---</u>	<u>---</u>	<u>DATE</u>	<u>S</u>	<u>P</u>	<u>CODE</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
B	DB1	021177	041078	B	CV	D13	U						SHUT DOWN AUX.FDPMP.1-2 DUE TO STM.LEAK ON MS-735	STM.LEAK CAUSED BY BAD COVER GASKET&SURF.
B	DB1	021851	060578	L	CV	D13	T						CORE FLOOD LINE DISC.CK.VLV CF30 LEAKING AT BONNET	FAILURE CF BONNET GASKET
G	M11	015879	092576	L	CV	D14	T						ISOLATION VALVE 1-IC-1 LEAKING	PACKING FAILURE

VALVE--CHECK--LEAK EXTERNALLY

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	29	0	762120.0	3.9E-06*
CR3	17184.0	40	0	687360.0	4.4E-06*
DB1	11424.0	39	2	445536.0	4.5E-06
DE1	26280.0	29	0	762120.0	3.9E-06*
DE2	26280.0	30	0	788400.0	3.8E-06*
DE3	26280.0	30	0	788400.0	3.8E-06*
RS1	26280.0	56	0	1471680.0	2.0E-06*
TI1	26280.0	38	0	998640.0	3.0E-06*
TI2	6648.0	41	0	272568.0	1.1E-05*
TOTALS			2	6976824.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK EXTERNALLY

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	800.0	69	0	41400.0	7.2E-05*
CC1	26280.0	53	0	1392840.0	2.2E-06*
CC2	18264.0	53	0	967992.0	3.1E-06*
FC1	26280.0	49	0	1287720.0	2.3E-06*
MI2	26280.0	51	0	1340280.0	2.2E-06*
MY1	26280.0	57	0	1497960.0	2.0E-06*
PA1	26280.0	27	0	709560.0	4.2E-06*
SL1	23592.0	49	0	1156008.0	2.6E-06*
TOTALS			0	8393760.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK EXTERNALLY
GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	35	0	919800.0	3.3E-06*
BF2	26280.0	35	0	919800.0	3.3E-06*
BF3	20976.0	35	0	734160.0	4.1E-06*
BR1	19512.0	38	0	741456.0	4.0E-06*
BR2	26280.0	38	0	998640.0	3.0E-06*
CO1	26280.0	12	0	315360.0	9.5E-06*
DA1	26280.0	21	0	551880.0	5.4E-06*
DR2	26280.0	24	0	630720.0	4.8E-06*
DR3	26280.0	24	0	630720.0	4.8E-06*
EN1	26280.0	44	0	1156320.0	2.6E-06*
EN2	4296.0	30	0	128880.0	2.3E-05*
FP1	26280.0	8	0	210240.0	1.4E-05*
MI1	26280.0	9	1	236520.0	4.2E-06
MO1	26280.0	33	0	867240.0	3.5E-06*
NM1	26280.0	25	0	657000.0	4.6E-06*
OC1	26280.0	23	0	604440.0	5.0E-06*
PB2	26280.0	50	0	1314000.0	2.3E-06*
PB3	26280.0	50	0	1314000.0	2.3E-06*
PI1	26280.0	9	0	236520.0	1.3E-05*
QC1	26280.0	26	0	683280.0	4.4E-06*
QC2	26280.0	26	0	683280.0	4.4E-06*
VY1	26280.0	35	0	919800.0	3.3E-06*
		TOTALS	1	15454656.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK EXTERNALLY
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	46	0	1064256.0	2.8E-06*
DC1	26280.0	56	0	1471680.0	2.0E-06*
DC2	7080.0	56	0	396480.0	7.6E-06*
HN1	26280.0	35	0	919800.0	3.3E-06*
IP2	26280.0	54	0	1419120.0	2.1E-06*
IP3	23952.0	68	0	1628736.0	1.8E-06*
JF1	12192.0	59	0	719328.0	4.2E-06*
KE1	26280.0	43	0	1130040.0	2.7E-06*
NA1	6456.0	47	0	303432.0	9.9E-06*
PR1	26280.0	39	0	1024920.0	2.9E-06*
PR2	26280.0	39	0	1024920.0	2.9E-06*
PT1	26280.0	47	0	1235160.0	2.4E-06*
PT2	26280.0	47	0	1235160.0	2.4E-06*
RG1	26280.0	33	0	867240.0	3.5E-06*
RO2	26280.0	35	0	919800.0	3.3E-06*
SA1	17976.0	55	0	988680.0	3.0E-06*
SO1	26280.0	30	0	788400.0	3.8E-06*
SU1	26280.0	48	0	1261440.0	2.4E-06*
SU2	26280.0	48	0	1261440.0	2.4E-06*
TR1	26280.0	43	0	1130040.0	2.7E-06*
TU3	26280.0	41	0	1077480.0	2.8E-06*
TU4	26280.0	41	0	1077480.0	2.8E-06*
YR1	26280.0	21	0	551880.0	5.4E-06*
ZI1	26280.0	69	0	1813320.0	1.7E-06*
ZI2	26280.0	69	0	1813320.0	1.7E-06*
		TOTALS	0	27123552.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK EXTERNALLY
FINAL STATISTICS

	STANDBY HOUR RATE
	3.1
BAB.CWIL.	2.9E-07
	5.6
COMB.ENG.	3.6E-07*
	4.7
GEN.ELEC.	6.5E-08
	19.5
WESTINGH.	1.1E-07*
	3.1
PWR'S	4.7E-08
	5.6
	2.6
OVERALL	5.2E-08
	3.7

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK INTERNALLY

<u>PLANT</u>	<u>CONI. NO.</u>	<u>EVENT DATE</u>	<u>SYSTEM</u>	<u>COMP</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLASS</u>	<u>CON NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
G BF2	021094	032578	H CV	804	D					CHECK VLV. 2-73-603, IN HIGH-PRESS. CI. SYS, FOUND OPEN	DIMEN. ERR. IN VLV. INTERFERENCE CLEARANCE
G BR2	023033	111778	L CV	804	D					RHR CHECK VALVE E11-F031 WILL NOT FULLY SEAT	DESIGN ERROR/VLV. DOESN'T WORK ON LOW DP.
G FP1	020570	030278	L CV	800	U					A RHR PUMP CHECK VALVE STUCK OPEN	CAUSE UNKNOWN
G FP1	023358	122478	L CV	800	U					RHR LOOP CHECK VALVE FAILED TO CLOSE	NO REASON FOUND FOR STICKING, REASSEMBLED
G VY1	015623	082576	F CV	808	D					CHECK VALVE (SERVICE H2O PUMP OUTLET) FAIL TO CLOSE	WEAR BETWEEN DISC & DISC ARM/SHIM INSTALL
B DB1	020989*	031678	B CV	E00	U 02					CHECK VLVS AF39672 LEAKED INTERNALLY	CAUSE OF REVERSE LEAKAGE NOT GIVEN
C CC2	022246*	090778	H CV	E00	U 02 V					#218622B SI. TANK OUTLET CHECK VLVS LEAKING	CAUSE OF REVERSE LEAKAGE NOT GIVEN
C FC1	022472	110178	B CV	E05	D					AUX FEED CHECK VALVE FOUND INSTALLED WRONG	CONSTRUCTION ERROR
C MI2	017620	040777	H CV	E01	R U					INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN
C MI2	018740	072177	H CV	E00	R U					S-I. HEADER CHECK VLV. 2-SI-648 LEAKING INTERNALLY	NO CAUSE GIVEN
C MI2	018971	081677	H CV	E00	R U					INT LEAK OF CV BETW INJECT TK 4 AND PRI COOLANT	CAUSE UNKNOWN
G CD1	017071	012177	H CV	E10	U					HPCI TESTABLE CHECK VALVE LEAKING INTERNALLY	A 14 IN PROBE JAMED BETW. DISK+SEAT
G DR2	014420	032976	H CV	E25	T					HPCI VALVE 2-2301-45 LEAKING INTERNALLY	CORROSION, PITTING OF LOWER SEATING AREA
G DR3	016163	100776	L CV	E10	T					ISOLATION CHECK VALVE 3-1501-25B LEAKING INTERNALLY	DIRT AND SMALL SCRATCHES ON VALVE SEAT
G DR3	016454	110176	L CV	E10	T					ISOLATION CHECK VALVE 3-205-2-7 LEAKING INTERNALLY	DIRT IN SEATING AREA & ON DISK PIVOT PIN
G FP1	016176	101476	L CV	E07	T					CHECK VALVE 428 LEAKING INTERNALLY	NORMAL WEAR ON VALVE SEAT
G MI1	020722B	032078	U CV	E00	U 04					FEED WTR. CK. (1-FW-9A, 9B, 10A, 10B) LEAK. EXCESS OF T.S	CAUSE OF LEAKAGE NOT GIVEN
G PB2	022916	102178	H CV	E12	T					CHECK VALVE 2-23-131 LEAKING INTERNALLY, GLAND SEAL	INTERNALS OF CHECK VALVE WORN OUT
G PB3	014033	010776	H CV	E25	T					HPCI EXHAUST LINE CHECK VLV 23-65-EXCESSIVE LEAK.	POOR MATING BETWEEN FLAPPER & SEATING SUR
G QC1	014059	010576	H CV	E13	U					HPCI EXHAUST CHECK VLV. LEAKING INTERNALLY	DEFECT. GASKET BETWEEN VLV. SEAT AND BODY
G QC2	023943	030578	L CV	E10	T					REVERSE FLOW THRU CHECK VALVE 2-220-67A / TESTING	DIRT ACCUMULATED IN VALVE INTERNALS
W DC2	020978	031878	B CV	E00	D					AUX FEED SYS CHECK VALVE FROM S/G 1 STUCK OPEN	UNKNOWN (VALVE 2-FW138-11ATWOOD & MORRILL
W HN1	015218	070576	B CV	E00	U					CHECK VALVE IN FEED LINE HAD REVERSE LEAKAGE	NO CAUSE GIVEN FOR REVERSE LEAKAGE
W HN1	018777	080177	B CV	E00	U					CHECK VALVE ON AUX FEED PUMP LEAKING INTERNALLY	UNKNOWN
W IP2	021653	052378	H CV	E12	D					4 IN SWING CV D.S. OF PUMP 22 LEAKING INTERNALLY	TWC HANGER BRACKET BOLTS MISSING
W RG1	018247	071377	H CV	E00	U					SI PUMP 1A CHECK VALVE REVERSE FLOW TO RWST	UNKNOWN/ VEL 3 INCH 1500 PSIG CHECK VAL
W RO2	014822	012876	H CV	E00	U					B ACCUMULATOR CHECK VALVE 875E LEAKED THRU	REASON NOT STATED
W RO2	019351	081777	B CV	E05	D					DISCH CK VAL FOR AUX FEED PUMP, C STM GEN FAILED	CK VAL HAS BURR ON HINGE JOINT, OPEN POSIT
W SU1	015522*	070276	H CV	E00	U 02					TWC CHECK VLV (1-SI-128/130) LEAKED THRU	UNKNOWN
W SU2	019744	110877	H CV	E00	U					CHECK VALVE 2-SI-127 LEAKING THRU	UNKNOWN
W Z11	015162*	062376	H CV	E00	U 02 V					LEAKAGE THRU CHECK VALVES/ACCUMULATOR OVERFILL	UNKNOWN/DARLING 10 INCH TYPE 10-C48Z

VALVE--CHECK--LEAK INTERNALLY

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	29	0	762120.0	3.9E-06*
CR3	17184.0	40	0	687360.0	4.4E-06*
DB1	11424.0	39	2	445536.0	4.5E-06
DE1	26280.0	29	0	762120.0	3.9E-06*
DE2	26280.0	30	0	788400.0	3.8E-06*
DE3	26280.0	30	0	788400.0	3.8E-06*
RS1	26280.0	56	0	1471680.0	2.0E-06*
T11	26280.0	38	0	998640.0	3.0E-06*
T12	6648.0	41	0	272568.0	1.1E-05*
TOTALS			2	6976824.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK INTERNALLY

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	69	0	41400.0	7.2E-05*
CC1	26280.0	53	0	1392840.0	2.2E-06*
CC2	18264.0	53	2	967992.0	2.1E-06
FC1	26280.0	49	1	1287720.0	7.8E-07
MI2	26280.0	51	3	1340200.0	2.2E-06
MY1	26280.0	57	0	1497960.0	2.0E-06*
PA1	26280.0	27	0	709560.0	4.2E-06*
SL1	23592.0	49	0	1156008.0	2.6E-06*
TOTALS			6	8393760.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK INTERNALLY
GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	35	0	919800.0	3.3E-06*
BF2	26280.0	35	1	919800.0	1.1E-06
BF3	20976.0	35	0	734160.0	4.1E-06*
BR1	19512.0	38	0	741456.0	4.0E-06*
BR2	26280.0	38	1	998640.0	1.0E-06
CO1	26280.0	12	1	315360.0	3.2E-06
DA1	26280.0	21	0	551880.0	5.4E-06*
DR2	26280.0	24	1	630720.0	1.6E-06
DR3	26280.0	24	2	630720.0	3.2E-06
EN1	26280.0	44	0	1156320.0	2.6E-06*
EN2	4296.0	30	0	128880.0	2.3E-05*
FP1	26280.0	8	3	210240.0	1.4E-05
MI1	26280.0	9	4	236520.0	1.7E-05
MO1	26280.0	33	0	867240.0	3.5E-06*
NM1	26280.0	25	0	657000.0	4.6E-06*
OC1	26280.0	23	0	604440.0	5.0E-06*
PB2	26280.0	50	1	1314000.0	7.6E-07
PB3	26280.0	50	1	1314000.0	7.6E-07
PI1	26280.0	9	0	236520.0	1.3E-05*
QC1	26280.0	26	1	683280.0	1.5E-06
QC2	26280.0	26	1	683280.0	1.5E-06
VY1	26280.0	35	1	919800.0	1.1E-06
		TOTALS	18	15454056.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK INTERNALLY
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	46	0	1064256.0	2.8E-06*
DC1	26280.0	56	0	1471680.0	2.0E-06*
DC2	7080.0	56	1	396480.0	2.5E-06
HN1	26280.0	35	2	919800.0	2.2E-06
IP2	26280.0	54	1	1419120.0	7.0E-07
IP3	23952.0	68	0	1628736.0	1.8E-06*
JF1	12192.0	59	0	719328.0	4.2E-06*
KE1	26280.0	43	0	1130040.0	2.7E-06*
NA1	6456.0	47	0	303432.0	9.9E-06*
PR1	26280.0	39	0	1024920.0	2.9E-06*
PR2	26280.0	39	0	1024920.0	2.9E-06*
PT1	26280.0	47	0	1235160.0	2.4E-06*
PT2	26280.0	47	0	1235160.0	2.4E-06*
RG1	26280.0	33	1	867240.0	1.2E-06
RD2	26280.0	35	2	919800.0	2.2E-06
SA1	17976.0	55	0	988680.0	3.0E-06*
SD1	26280.0	30	0	788400.0	3.8E-06*
SU1	26280.0	48	2	1261440.0	1.6E-06
SU2	26280.0	48	1	1261440.0	7.9E-07
TR1	26280.0	43	0	1130040.0	2.7E-06*
TU3	26280.0	41	0	1077480.0	2.8E-06*
TU4	26280.0	41	0	1077480.0	2.8E-06*
YR1	26280.0	21	0	551880.0	5.4E-06*
ZI1	26280.0	69	2	1813320.0	1.1E-06
ZI2	26280.0	69	0	1813320.0	1.7E-06*
		TOTALS	12	27123552.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--CHECK--LEAK INTERNALLY
FINAL STATISTICS

	STANDBY HOUR RATE
	3.1
BAB.&WIL.	2.9E-07
	5.6
	2.0
COMB.ENG.	7.1E-07
	2.3
	1.5
GEN.ELEC.	1.2E-06
	1.5
	1.6
WESTINGH.	4.4E-07
	1.7
	1.5
PWR'S	4.7E-07
	1.5
	1.3
OVERALL	6.6E-07
	1.3

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX X

RESULTS OF THE LER RATE ESTIMATES FOR
PWR SAFETY VALVES

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CODES USED IN LER ONE-LINE DESCRIPTIONS	843
VALVE--PWR PRIMARY SAFETY--FAIL TO OPEN	845
VALVE--PWR PRIMARY SAFETY--PREMATURE OPEN	849

CODES USED IN LER ONE-LINE DESCRIPTIONS

CODE	DESCRIPTION
A	FAILED TO OPEN
B	FAILED TO CLOSE
C	INTERNAL LEAKAGE
D	EXTERNAL LEAKAGE (CHECK VALVES)
E	PLUGGED (FAILS TO REMAIN OPEN)
F	PREMATURE OPEN (RELIEF VALVES)
G	MAINTENANCE/REPLACEMENT
H	TECHNICAL SPECIFICATION VIOLATION
V	IMPROPER VALVE CONFIGURATION

COMPONENT

CODE	DESCRIPTION
MV	MOTOR OPERATED VALVE (ELEC.)
AV	PNEUMATIC OPERATED VALVE
SV	SOLENOID OPERATED VALVE
HV	HYDRAULIC OPERATED VALVE
RV	REMOTE OPERATED VALVE
XV	MANUAL OPERATED VALVE
CV	CHECK VALVE
DV	DAMPING VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED

TYPE OF EVENT

CODE	DESCRIPTION
B	RECURRING COMMON CAUSE
C	COMMON CAUSE
R	RECURRING
S	COMMAND FAULT
V	RECURRING COMMAND FAULT

FAILURE MECHANISM

CODE	DESCRIPTION
00	UNKNOWN
01	PERSONNEL (OPERATION)
02	PERSONNEL (MAINTENANCE)
03	PERSONNEL (TESTING)
04	DESIGN ERROR
05	FABRICATION/CONSTRUCTION/QUALITY CONTROL
06	PROCEDURAL DISCREPANCY
07	NORMAL WEAR
08	EXCESSIVE WEAR
09	CORROSION
10	FOREIGN MATERIAL CONTAMINATION
11	EXCESSIVE VIBRATION
12	Mech. CONTROLS/PARTS; FAILED/CUT OF ADJUST.
13	SEAL/GASKET FAILURE/PROBLEM
14	PACKING FAILURE/PROBLEM
15	BELOW/BOOD FAILURE/PROBLEM
16	ELECTRICAL INPUT FAILURE/PROBLEM
17	BEARING/BUSHING FAILURE/PROBLEM
18	WELD FAILURE
19	LACK OF LUBRICATION
20	ELECTRIC MOTOR OPERATOR FAILURE/PROBLEM
21	ELECTRIC FAILURE/PROBLEM
22	LEAKING/CRACKED DIAPHRAGM
23	PROGURE SWITCH FAILURE/PROBLEM
24	FAILURE OF COMPONENT SUPPLY SYSTEM
25	HEAT/DISC FAILURE/PROBLEM
26	PILOT VALVE FAILURE/PROBLEM

NUMERICAL KEY WORDS

CODE	DESCRIPTION
V	VALVES
A	SOME
R	VARIOUS
S	SEVERAL
E	OTHER

EVENT CLASSIFICATION

CODE	DESCRIPTION
D	CHANGE OF STATE
T	SAFE
U	UNKNOWN

ACTIVITY RESULTING IN DISCOVERY

CODE	DESCRIPTION
D	DEMAND ON COMPONENT
M	MAINTENANCE
N	NORMAL OPERATION
R	RECORDS REVIEW
T	TESTING
U	UNKNOWN

NSSS VENDOR

CODE	DESCRIPTION
B	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING
G	GENERAL ELECTRIC
M	WESTINGHOUSE

 CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE ----	PWR ---	CODE ----	BWR ---
A		A	AUTOMATIC DEPRESSURIZATION
B		B	CONTAINMENT ISOLATION (INCL PENETRATIONS)
C		C	LOW PRESSURE CORE SPRAY
D		D	ELECTRIC POWER
E		E	CONTAINMENT SPRAY INJECTION
F		F	CHEMICAL VOLUME CONTROL (MAKE-UP)
G		G	HIGH PRESSURE COOLANT INJECTION
H		H	COMPONENT COOLING WATER
I		I	REACTOR COOLANT
J		J	LOW PRESSURE COOLANT INJECTION (RHR)
K		K	LOW PRESSURE COOLANT INJECTION (RHR)
L		L	REACTOR PROTECTION (CONTROL RCD)
M		M	NONSAFETY-RELATED
N		N	SYSTEM UNKNOWN/NOT APPLICABLE
O		O	REACTOR CORE ISOLATION COOLING
P		P	CONTAINMENT FAN COOLING SYSTEM
Q		Q	SERVICE WATER
R		R	SERVICE WATER
S		S	STANDBY GAS TREATMENT
T		T	CONDENSATE AND FEED
U		U	CONDENSATE AND FEED
V		V	CONDENSATE AND FEED
W		W	MAIN STEAM
X		X	REACTOR PROTECTION (PPS)
Y		Y	CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
Z		Z	CONTAINMENT AIR/EFFLUENT; PURIF./SAMPLE.
			FAILED FUEL ELEMENT DETECTION

VALVE---PWR PRIMARY SAFETY---FAIL TO OPEN

PLANT	CONT. NO.	EVENT DATE	SYS	COMP	FAIL CODE	Y/P	U/S	FAILURE MODE	FAILURE MECHANISM
C FC1	019551	102677	K	RV	A00	R	U	VALVE RC-142 RELIEF PRESSURE OUT SPEC HIGH	COULD NOT BE DETERMINED
C MY1	022141	081578	K	RV	A00	U	U	PRESSURIZER RV PR-S-13 SETPOINT OUT OF SPEC	CAUSE UNKNOWN/SETPOINT ADJUSTED
W IP2	618788A	091377	K	RV	A00	R	U	RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT
W SU1	016882	111376	K	RV	A00	R	U	PRESS SAFETY VLV (SV15518) OPENED AT HI PRESS	UNKNOWN/ SETPOINT DRIFT UP
W YR1	018419*	062777	K	RV	A00	U	02	PRESSURIZER SAFETY VALVES (181/182) FAILED TO OPEN	UNKNOWN/SETPOINT DRIFTED HIGH/DRESSER INC

VALVE--PWR PRIMARY SAFETY--FAIL TO OPEN

BABCOCK&WILCOX

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR1	26280.0	2	5	0	52560.0	10	5.7E-05*	2.6E-01*
CR3	17184.0	2	6	0	34368.0	12	8.7E-05*	2.2E-01*
DB1	11424.0	2	5	0	22848.0	10	1.3E-04*	2.6E-01*
DE1	26280.0	2	12	0	52560.0	24	5.7E-05*	1.2E-01*
DE2	26280.0	2	5	0	52560.0	10	5.7E-05*	2.6E-01*
DE3	26280.0	2	6	0	52560.0	12	5.7E-05*	2.2E-01*
RS1	26260.0	2	5	0	52560.0	10	5.7E-05*	2.6E-01*
TI1	26280.0	2	1	0	52560.0	2	5.7E-05*	7.8E-01*
TI2	6648.0	2	1	0	13296.0	2	2.3E-04*	7.8E-01*
TOTALS				0	385872.0	92		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--FAIL TO OPEN

COMBUSTION ENGINEERING

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
AR2	600.0	3	1	0	1800.0	3	1.7E-03*	6.3E-01*
CC1	26280.0	2	10	0	52560.0	20	5.7E-05*	1.4E-01*
CC2	18264.0	2	5	0	36528.0	10	8.2E-05*	2.6E-01*
FC1	26280.0	2	5	1	52560.0	10	1.9E-05	1.0E-01
MI2	26280.0	2	16	0	52560.0	32	5.7E-05*	8.9E-02*
MY1	26280.0	3	6	1	78840.0	18	1.3E-05	5.6E-02
PA1	26280.0	3	15	0	78840.0	45	3.8E-05*	6.4E-02*
SL1	23592.0	3	8	0	70776.0	24	4.2E-05*	1.2E-01*
TOTALS				2	424464.0	162		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--FAIL TO OPEN
WESTINGHOUSE

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BV1	23136.0	3	41	0	69408.0	123	4.3E-05*	2.4E-02*
FC1	26280.0	3	11	0	78840.0	33	3.8E-05*	8.7E-02*
DC2	7080.0	3	3	0	21240.0	9	1.4E-04*	2.8E-01*
HN1	26280.0	3	6	0	78840.0	18	3.8E-05*	1.5E-01*
IP2	26280.0	3	17	1	78840.0	51	1.3E-05	2.0E-02
IP3	23952.0	3	10	0	71856.0	30	4.2E-05*	9.5E-02*
JF1	12192.0	3	14	0	36576.0	42	8.2E-05*	6.9E-02*
KE1	26280.0	2	11	0	52560.0	22	5.7E-05*	1.3E-01*
NA1	6456.0	3	2	0	19368.0	6	1.5E-04*	3.9E-01*
PR1	26280.0	2	8	0	52560.0	16	5.7E-05*	1.7E-01*
PR2	26280.0	2	7	0	52560.0	14	5.7E-05*	1.9E-01*
PT1	26280.0	2	3	0	52560.0	6	5.7E-05*	3.9E-01*
PT2	26280.0	2	3	0	52560.0	6	5.7E-05*	3.9E-01*
RG1	26280.0	2	2	0	52560.0	4	5.7E-05*	5.3E-01*
RO2	26280.0	3	11	0	78840.0	33	3.8E-05*	8.7E-02*
SA1	17976.0	3	10	0	53928.0	30	5.6E-05*	9.5E-02*
SC1	26280.0	2	7	0	52560.0	14	5.7E-05*	1.9E-01*
SU1	26280.0	3	10	1	78840.0	30	1.3E-05	3.3E-02
SU2	26280.0	3	8	0	78840.0	24	3.8E-05*	1.2E-01*
TR1	26280.0	3	13	0	78840.0	39	3.8E-05*	7.4E-02*
TU3	26280.0	3	12	0	78840.0	36	3.8E-05*	8.0E-02*
TU4	26280.0	3	17	0	78840.0	51	3.8E-05*	5.7E-02*
YR1	26280.0	2	5	2	52560.0	10	3.8E-05	2.0E-01
ZI1	26280.0	3	12	0	78840.0	36	3.8E-05*	8.0E-02*
ZI2	26280.0	3	12	0	78840.0	36	3.8E-05*	8.0E-02*
			TOTALS	4	1560096.0	719		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--FAIL TO OPEN
 FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
BAB.6WIL.	7.8E-06*	3.2E-02*
	3.1	3.1
COMB.ENG.	4.7E-06	1.2E-02
	5.6	5.6
	2.3	2.3
WESTINGH.	2.6E-06	5.6E-03
	2.9	2.9
	2.0	2.0
PWR'S	2.5E-06	6.2E-03
	2.3	2.3
	2.0	2.0
OVERALL	2.5E-06	6.2E-03
	2.3	2.3

* DENGTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--PREMATURE OPEN

<u>VE</u>	<u>PLANT</u>	<u>CONT.NO.</u>	<u>EVENT DATE</u>	<u>OPER</u>	<u>FAIL CODE</u>	<u>TYPE</u>	<u>CLAS</u>	<u>CON</u>	<u>NUM</u>	<u>KEY</u>	<u>FAILURE MODE</u>	<u>FAILURE MECHANISM</u>
C	FC1	016334*	111076	K RV	H06	R D	02				VALVES RC-141+RC-142 LIFTING PRESS OUT OF SPEC	LIFTING PRESS SET WITH NITROGEN
W	IP2	021028	031478	K RV	H00	R U					RV PCV-468 DID NOT OPEN AT SETPOINT PRESSURE	SET POINT DRIFT
W	SU1	016882A	111376	K RV	H01	R U					PRESSURIZER SAFETY VLV (SV1991A) PREMATURE OPEN	UNKNOWN/ "SETPOINT DRIFT" DOWN
W	SU2	019212*	092077	K RV	H01	R U	03				3 PRESSURIZER SAFETY VALVES OPENED PREMATURELY	UNKNOWN/PCB WIDE VARYING TEMPERATURE

VALVE--PWR PRIMARY SAFETY--PREMATURE OPEN

BABCOCK&WILCOX

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR1	26280.0	2	0	52560.0	5.7E-05*
CR3	17184.0	2	0	34368.0	8.7E-05*
DB1	11424.0	2	0	22848.0	1.3E-04*
DE1	26280.0	2	0	52560.0	5.7E-05*
DE2	26280.0	2	0	52560.0	5.7E-05*
DE3	26280.0	2	0	52560.0	5.7E-05*
RS1	26280.0	2	0	52560.0	5.7E-05*
TI1	26280.0	2	0	52560.0	5.7E-05*
TI2	6648.0	2	0	13296.0	2.3E-04*
TOTALS			0	385872.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--PREMATURE OPEN

COMBUSTION ENGINEERING

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
AR2	600.0	3	0	1800.0	1.7E-03*
CC1	26280.0	2	0	52560.0	5.7E-05*
CC2	18264.0	2	0	36528.0	8.2E-05*
FC1	26280.0	2	2	52560.0	3.8E-05
MI2	26280.0	2	0	52560.0	5.7E-05*
MY1	26280.0	3	0	78840.0	3.8E-05*
PA1	26280.0	3	0	78840.0	3.8E-05*
SL1	23592.0	3	0	70776.0	4.2E-05*
TOTALS			2	424464.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--PREMATURE OPEN
WESTINGHOUSE

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BV1	23136.0	3	0	69408.0	4.3E-05*
DC1	26280.0	3	0	78840.0	3.8E-05*
DC2	7080.0	3	0	21240.0	1.4E-04*
HN1	26280.0	3	0	78840.0	3.8E-05*
IP2	26280.0	3	1	78840.0	1.3E-05
IP3	23952.0	3	0	71856.0	4.2E-05*
JF1	12192.0	3	0	36576.0	8.2E-05*
KE1	26280.0	2	0	52560.0	5.7E-05*
NA1	6456.0	3	0	19368.0	1.5E-04*
PR1	26280.0	2	0	52560.0	5.7E-05*
PR2	26280.0	2	0	52560.0	5.7E-05*
PT1	26280.0	2	0	52560.0	5.7E-05*
PT2	26280.0	2	0	52560.0	5.7E-05*
RG1	26280.0	2	0	52560.0	5.7E-05*
RD2	26280.0	3	0	78840.0	3.8E-05*
SA1	17976.0	3	0	53928.0	5.6E-05*
SD1	26280.0	2	0	52560.0	5.7E-05*
SU1	26280.0	3	1	78840.0	1.3E-05
SU2	26280.0	3	3	78840.0	3.8E-05
TR1	26280.0	3	0	78840.0	3.8E-05*
TU3	26280.0	3	0	78840.0	3.8E-05*
TU4	26280.0	3	0	78840.0	3.8E-05*
YR1	26280.0	2	0	52560.0	5.7E-05*
ZI1	26280.0	3	0	78840.0	3.8E-05*
ZI2	26280.0	3	0	78840.0	3.8E-05*
		TOTALS	5	1560096.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--PWR PRIMARY SAFETY--PREMATURE CPEN
FINAL STATISTICS

	STANDBY HOUR RATE
BAB.&WIL.	7.8E-06*
	3.1
COMB.ENG.	4.7E-06
	5.6
	2.1
WESTINGH.	3.2E-06
	2.5
	1.9
PWR'S	3.0E-06
	2.1
	1.9
OVERALL	3.0E-06
	2.1

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

APPENDIX Y

RESULTS OF THE LER RATE ESTIMATES FOR BWR RELIEF VALVES

CONTENTS

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VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN	869

CODES USED IN LER ONE-LINE DESCRIPTIONS

<u>CODE</u>	<u>FAILURE MODE</u>	<u>DESCRIPTION</u>
A	FAIL TO OPEN	TO OPEN
B	FAIL TO CLOSE	TO CLOSE
C	FAIL TO STAY OPEN	TO STAY OPEN
D	FAIL TO STAY CLOSED	TO STAY CLOSED
E	FAIL TO OPERATE	TO OPERATE
F	FAIL TO REMAIN OPEN	TO REMAIN OPEN
G	FAIL TO REMAIN CLOSED	TO REMAIN CLOSED
H	FAIL TO OPERATE AS REQUIRED	TO OPERATE AS REQUIRED
I	FAIL TO OPERATE AS REQUIRED (CHECK VALVES)	TO OPERATE AS REQUIRED (CHECK VALVES)
J	FAIL TO OPERATE AS REQUIRED (RELIEF VALVES)	TO OPERATE AS REQUIRED (RELIEF VALVES)
K	FAIL TO OPERATE AS REQUIRED (PLACEMENT VIOLATION)	TO OPERATE AS REQUIRED (PLACEMENT VIOLATION)
L	FAIL TO OPERATE AS REQUIRED (CONFIGURATION)	TO OPERATE AS REQUIRED (CONFIGURATION)

<u>CODE</u>	<u>COMPONENT</u>	<u>DESCRIPTION</u>
MV	MOTOR OPERATED VALVE (ELEC.)	MOTOR OPERATED VALVE (ELEC.)
SV	PNEUMATIC OPERATED VALVE	PNEUMATIC OPERATED VALVE
AV	SOLENOID OPERATED VALVE	SOLENOID OPERATED VALVE
RV	HYDRAULIC OPERATED VALVE	HYDRAULIC OPERATED VALVE
OV	MANUAL OPERATED VALVE	MANUAL OPERATED VALVE
CV	CHECK VALVE	CHECK VALVE
DV	ORBITAL VALVE	ORBITAL VALVE
UV	OPERATOR TYPE OR FUNCTION NOT STATED	OPERATOR TYPE OR FUNCTION NOT STATED

<u>CODE</u>	<u>TYPE OF EVENT</u>	<u>DESCRIPTION</u>
B	RECURRING COMMON CAUSE	RECURRING COMMON CAUSE
A	COMMON CAUSE	COMMON CAUSE
R	RECURRING	RECURRING
C	COMMAND FAULT	COMMAND FAULT
T	RECURRING COMMAND FAULT	RECURRING COMMAND FAULT

<u>CODE</u>	<u>FAILURE MECHANISM</u>	<u>DESCRIPTION</u>
00	UNKNOWN	UNKNOWN
01	OPERATIONAL (OPERATION)	OPERATIONAL (OPERATION)
02	MAINTENANCE (MAINTENANCE)	MAINTENANCE (MAINTENANCE)
03	CONSTRUCTION (CONSTRUCTION)	CONSTRUCTION (CONSTRUCTION)
04	QUALITY CONTROL (QUALITY CONTROL)	QUALITY CONTROL (QUALITY CONTROL)
05	DISCREPANCY (DISCREPANCY)	DISCREPANCY (DISCREPANCY)
06	WEAR	WEAR
07	MATERIAL CONTAMINATION	MATERIAL CONTAMINATION
08	VIBRATION	VIBRATION
09	CONTROL PARTS FAILED/CUT OF ADJUST.	CONTROL PARTS FAILED/CUT OF ADJUST.
10	GASKET FAILURE/PROBLEM	GASKET FAILURE/PROBLEM
11	BACKLASH FAILURE/PROBLEM	BACKLASH FAILURE/PROBLEM
12	BOOT FAILURE/PROBLEM	BOOT FAILURE/PROBLEM
13	CAL INPUT FAILURE/PROBLEM	CAL INPUT FAILURE/PROBLEM
14	SHIPPING FAILURE/PROBLEM	SHIPPING FAILURE/PROBLEM
15	WELD FAILURE	WELD FAILURE
16	LUBRICATION	LUBRICATION
17	ACTUATOR OPERATOR FAILURE/PROBLEM	ACTUATOR OPERATOR FAILURE/PROBLEM
18	DIAPHRAGM FAILURE/PROBLEM	DIAPHRAGM FAILURE/PROBLEM
19	SWITCH FAILURE/PROBLEM	SWITCH FAILURE/PROBLEM
20	COMPONENT FAILURE/PROBLEM	COMPONENT FAILURE/PROBLEM
21	PLUMBING FAILURE/PROBLEM	PLUMBING FAILURE/PROBLEM
22	SMIT FAILURE/PROBLEM	SMIT FAILURE/PROBLEM
23	VALVE FAILURE/PROBLEM	VALVE FAILURE/PROBLEM

<u>CODE</u>	<u>EVENT CLASSIFICATION</u>	<u>DESCRIPTION</u>
D	CHANGE OF STATE	CHANGE OF STATE
A	AGE	AGE
U	UNKNOWN	UNKNOWN

<u>CODE</u>	<u>ACTIVITY RESULTING IN DISCOVERY</u>	<u>DESCRIPTION</u>
D	DEMAND ON COMPONENT	DEMAND ON COMPONENT
M	MAINTENANCE	MAINTENANCE
N	NORMAL OPERATION	NORMAL OPERATION
R	RECORD REVIEW	RECORD REVIEW
U	UNKNOWN	UNKNOWN

<u>CODE</u>	<u>NUMERICAL KEY WORDS</u>	<u>DESCRIPTION</u>
V	VALVES	VALVES
A	SOME	SOME
R	VARIOUS	VARIOUS
M	SEVERAL	SEVERAL
Z	OTHER	OTHER

<u>CODE</u>	<u>NSSS VENDOR</u>	<u>DESCRIPTION</u>
B	BABCOCK & WILCOX	BABCOCK & WILCOX
C	COMBUSTION ENGINEERING	COMBUSTION ENGINEERING
G	GENERAL ELECTRIC	GENERAL ELECTRIC
W	WESTINGHOUSE	WESTINGHOUSE

 CODES USED IN LER ONE-LINE DESCRIPTIONS (CONTINUED)

SYSTEMS

CODE ----	PWR ---
A	-
B	-
C	-
D	-
E	-
F	-
G	-
H	-
I	-
J	-
K	-
L	-
M	-
N	-
O	-
P	-
Q	-
R	-
S	-
T	-
U	-
V	-
W	-
X	-
Y	-
Z	-

CODE ----	BWR ---
A	-
B	-
C	-
D	-
E	-
F	-
G	-
H	-
I	-
J	-
K	-
L	-
M	-
N	-
O	-
P	-
Q	-
R	-
S	-
T	-
U	-
V	-
W	-
X	-
Y	-
Z	-

VALVE--BWR PRIMARY RELIEF--FAIL TO OPEN
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	11	33	0	289080.0	363	1.0E-05*	8.3E-03*
BF2	26280.0	11	34	0	289080.0	374	1.0E-05*	8.0E-03*
BF3	20976.0	11	36	0	230736.0	396	1.3E-05*	7.6E-03*
BR1	19512.0	9	26	0	175608.0	234	1.7E-05*	1.3E-02*
BR2	26280.0	9	52	0	236520.0	468	1.3E-05*	6.4E-03*
CD1	26280.0	8	9	1	210240.0	72	4.8E-06	1.4E-02
DA1	26280.0	6	17	6	157680.0	102	3.8E-05	5.9E-02
DR2	26280.0	5	20	1	131400.0	100	7.6E-06	1.0E-02
DR3	26280.0	5	13	1	131400.0	65	7.6E-06	1.5E-02
EN1	26280.0	9	49	7	236520.0	441	3.0E-05	1.6E-02
EN2	4296.0	11	1	0	47256.0	11	6.3E-05*	2.4E-01*
FP1	26280.0	9	29	0	236520.0	261	1.3E-05*	1.1E-02*
MI1	26280.0	3	18	0	78840.0	54	3.8E-05*	5.4E-02*
MD1	26280.0	4	16	0	105120.0	64	2.9E-05*	4.6E-02*
NM1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
OC1	26280.0	4	6	1	105120.0	24	9.5E-06	4.2E-02
PB2	26280.0	11	18	0	289080.0	198	1.0E-05*	1.5E-02*
PB3	26280.0	11	16	0	289080.0	176	1.0E-05*	1.7E-02*
PI1	26280.0	3	23	0	78840.0	69	3.8E-05*	4.2E-02*
QC1	26280.0	5	23	5	131400.0	115	3.8E-05	4.3E-02
QC2	26280.0	5	20	4	131400.0	100	3.0E-05	4.0E-02
VY1	26280.0	4	11	4	105120.0	44	3.8E-05	9.1E-02
			TOTALS	30	3843720.0	3803		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

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VALVE--BWR PRIMARY RELIEF--FAIL TO OPEN

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.4	1.4
GEN.ELEC.	7.8E-06	7.9E-03
	1.4	1.4
	1.4	1.4
OVERALL	7.8E-06	7.9E-03
	1.4	1.4

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO OPEN (COMMAND FAULTS INCLUDED)

GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	11	33	0	289080.0	363	1.0E-05*	8.3E-03*
BF2	26280.0	11	34	0	289080.0	374	1.0E-05*	8.0E-03*
BF3	29976.0	11	36	0	230736.0	396	1.3E-05*	7.6E-03*
BR1	19512.0	9	26	0	175608.0	234	1.7E-05*	1.3E-02*
BR2	26280.0	9	52	0	236520.0	468	1.3E-05*	6.4E-03*
CO1	26280.0	8	9	1	210240.0	72	4.8E-06	1.4E-02
DA1	26280.0	6	17	6	157680.0	102	3.8E-05	5.9E-02
DR2	26280.0	5	20	1	131400.0	100	7.6E-06	1.0E-02
DR3	26280.0	5	13	1	131400.0	65	7.6E-06	1.5E-02
EN1	26280.0	9	49	7	236520.0	441	3.0E-05	1.6E-02
EN2	4296.0	11	1	0	47256.0	11	6.3E-05*	2.4E-01*
FP1	26280.0	9	29	0	236520.0	261	1.3E-05*	1.1E-02*
MI1	26280.0	3	18	0	78840.0	54	3.8E-05*	5.4E-02*
MO1	26280.0	4	16	1	105120.0	64	9.5E-06	1.6E-02
NM1	26280.0	6	12	3	157680.0	72	1.9E-05	4.2E-02
OC1	26280.0	4	6	1	105120.0	24	9.5E-06	4.2E-02
PB2	26280.0	11	18	0	289080.0	198	1.0E-05*	1.5E-02*
PB3	26280.0	11	16	0	289080.0	176	1.0E-05*	1.7E-02*
PI1	26280.0	3	23	2	78840.0	69	2.5E-05	2.9E-02
QC1	26280.0	5	23	6	131400.0	115	4.6E-05	5.2E-02
QC2	26280.0	5	20	5	131400.0	100	3.8E-05	5.0E-02
VY1	26280.0	4	11	4	105120.0	44	3.8E-05	9.1E-02
TOTALS				38	3843720.0	3803		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO OPEN (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	DEMAND HOOR RATE	DEMAND RATE
	1.3	1.3
GEN.ELEC.	9.9E-06	1.0E-02
	1.3	1.3
	1.3	1.3
OVERALL	9.9E-06	1.0E-02
	1.3	1.3

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO RESEAT
GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	11	33	1	289080.0	363	3.5E-06	2.8E-03
BF2	26280.0	11	34	2	289080.0	374	6.9E-06	5.3E-03
BF3	20976.0	11	36	2	230736.0	396	8.7E-06	5.1E-03
BR1	19512.0	9	26	1	175608.0	234	5.7E-06	4.3E-03
BR2	26280.0	9	52	0	236520.0	468	1.3E-05*	6.4E-03*
CO1	26280.0	8	9	0	210240.0	72	1.4E-05*	4.1E-02*
DA1	26280.0	6	17	0	157680.0	102	1.9E-05*	2.9E-02*
DR2	26280.0	5	20	1	131400.0	106	7.6E-06	1.0E-02
DR3	26280.0	5	13	0	131400.0	65	2.3E-05*	4.5E-02*
EN1	26280.0	9	49	3	236520.0	441	1.3E-05	6.8E-03
EN2	4296.0	11	1	0	47256.0	11	6.3E-05*	2.4E-01*
FP1	26280.0	9	29	0	236520.0	261	1.3E-05*	1.1E-02*
MI1	26280.0	3	18	0	78840.0	54	3.8E-05*	5.4E-02*
MO1	26280.0	4	16	0	105120.0	64	2.9E-05*	4.6E-02*
NM1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
OC1	26280.0	4	6	0	105120.0	24	2.9E-05*	1.2E-01*
PB2	26280.0	11	18	3	289080.0	198	1.0E-05	1.5E-02
PB3	26280.0	11	16	2	289080.0	176	6.9E-06	1.1E-02
PI1	26280.0	3	23	1	78840.0	69	1.3E-05	1.4E-02
QC1	26280.0	5	23	0	131400.0	115	2.3E-05*	2.6E-02*
QC2	26280.0	5	20	1	131400.0	100	7.6E-06	1.0E-02
VY1	26280.0	4	11	0	105120.0	44	2.9E-05*	6.6E-02*
			TOTALS	17	3843720.0	3803		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO RESEAT

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.5	1.5
GEN.ELEC.	4.4E-06	4.5E-03
	1.6	1.6
	1.5	1.5
OVERALL	4.4E-06	4.5E-03
	1.6	1.6

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO RESET (COMMAND FAULTS INCLUDED)

GENERAL ELECTRIC

PLANT	COMPONENT				POPULATION		DEMAND HOUR RATE	DEMAND RATE
	HOURS	POPULATION	DEMANDS	FAILURES	HOURS	DEMANDS		
BF1	26280.0	11	33	1	289080.0	363	3.5E-06	2.8E-03
BF2	26280.0	11	34	2	289080.0	374	6.9E-06	5.3E-03
BF3	20976.0	11	36	2	230736.0	396	8.7E-06	5.1E-03
BR1	19512.0	9	26	1	175608.0	234	5.7E-06	4.3E-03
BR2	26280.0	9	52	1	236520.0	468	4.2E-06	2.1E-03
CO1	26280.0	8	9	0	210240.0	72	1.4E-05*	4.1E-02*
DA1	26280.0	6	17	0	157680.0	102	1.9E-05*	2.9E-02*
DR2	26280.0	5	20	1	131400.0	100	7.6E-06	1.0E-02
DR3	26280.0	5	13	0	131400.0	65	2.3E-05*	4.5E-02*
EN1	26280.0	9	49	3	236520.0	441	1.3E-05	6.8E-03
EN2	4296.0	11	1	0	47256.0	11	6.3E-05*	2.4E-01*
FP1	26280.0	9	29	0	236520.0	261	1.3E-05*	1.1E-02*
MI1	26280.0	3	18	0	78840.0	54	3.8E-05*	5.4E-02*
MO1	26280.0	4	16	0	105120.0	64	2.9E-05*	4.6E-02*
NM1	26280.0	6	12	0	157680.0	72	1.9E-05*	4.1E-02*
OC1	26280.0	4	6	0	105120.0	24	2.9E-05*	1.2E-01*
PB2	26280.0	11	18	3	289080.0	198	1.0E-05	1.5E-02
PB3	26280.0	11	16	2	289080.0	176	6.9E-06	1.1E-02
PI1	26280.0	3	23	1	78840.0	69	1.3E-05	1.4E-02
QC1	26280.0	5	23	0	131400.0	115	2.3E-05*	2.6E-02*
QC2	26280.0	5	20	1	131400.0	100	7.6E-06	1.0E-02
VY1	26280.0	4	11	0	105120.0	44	2.9E-05*	6.6E-02*
TOTALS				18	3843720.0	3803		

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--FAIL TO RESEAT (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	DEMAND HOUR RATE	DEMAND RATE
	1.5	1.5
GEN.ELEC.	4.7E-06	4.7E-03
	1.5	1.5
	1.5	1.5
OVERALL	4.7E-06	4.7E-03
	1.5	1.5

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN

VEN	PLAN	CONT. NO.	EVENT DATE	S	COMP	FAIL CODE	TYPE	CLASS	CON	NUM	PH	REMARK	FAILURE MODE	FAILURE MECHANISM
G BF3	022126*	081778	W RV H27	R	D	03							MN.5TH RVS MSRV1-41, 30, 634 OPENED BELOW SETPOINTS	VLV FAILURES WERE CAUSED BY PILOT VLV. PRB
G BF3	022125	082278	W RV H12	R	D								DURING STARTUP MSRV 1-4 OPENED BELOW SETPOINT	PREMATURE OPEN. DUE TO EXCESS. 2ND. STG. LEAK
G BR2	015421	070778	A RV H00	U									ADS SAFE. RELIEF VLV R-821-F013G OPENED PREMATURELY	CAUSE NOT GIVEN
G BR2	015419	071576	W RV H27	D									SAFE. RELIEF 2-821-F013K(S/N 105) LIFTED PRIOR TO SP	PILOT VLV HAD POPPET. & SEAT STEAM CUT
G EN1	013045*	072976	A RV H03	D	07								ALL SEVEN ADS VALVES OPENED INADVERTANTLY ON TEST	PERSONNEL ERRCRUSED WRONG PROCEDURE
G EN1	017190	020477	A RV H27	R	T								RELIEF VALVE 821-F0133 OPENED PREMATURELY	LEAKAGE BY VALVES PILOT SEAT
G FP1	015241	072176	A RV H00	U									SAFTEY RELIEF VALVE OPENED PREMATURELY	CAUSE UNDER INVESTIGATION
G FP1	016373	111976	A RV H00	U									RELIEF VALVE 02-RV-71F INADVERTENTLY OPENED	CAUSE UNKNOWN
G FP1	016415	112276	W RV H00	U									SAFTEY/RELIEF VALVE 02-RV-71B OPENED PREMATURELY	CAUSE UNDER INVESTIGATION
C M11	018157	061777	W RV H27	R	T								VALVE 1-MS-3D LIFTED BELOW SET PRESSURE	EXCESSIVE LEAKAGE PAST PILOT SEAT
G M11	019031	111877	K RV H27	T									RV LIFTED BELOW SET PRESSURE	EXCESSIVE PILOT SEAT LEAKAGE
G M11	019962	112977	A RV H16	S	D								A TARGET ROCK SAFETY/RELIEF VLV ACTUATED PREMATURE	CABLE FALLT CAUSED ACTUATION SOL. TO ENERG
G M11	020698A	031078	K RV H27	T									RV LIFTED PREMATURELY DURING A SHUT DOWN	LEAKAGE IN PILOT VALVE/STEAM CUT
G P11	014942	052876	W RV H00	U									CROSBY RELIEF VALVE OPENING AT TOO LOW PRESSURE	CAUSE UNKNOWN

VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN
GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	11	0	289080.0	1.0E-05*
BF2	26280.0	11	0	289080.0	1.0E-05*
BF3	20976.0	11	4	230736.0	1.7E-05
BR1	19512.0	9	0	175608.0	1.7E-05*
BR2	26280.0	9	2	236520.0	8.5E-06
CD1	26280.0	8	0	210240.0	1.4E-05*
DA1	26280.0	6	0	157680.0	1.9E-05*
DR2	26280.0	5	0	131400.0	2.3E-05*
DR3	26280.0	5	0	131400.0	2.3E-05*
EN1	26280.0	9	8	236520.0	3.4E-05
EN2	4296.0	11	0	47256.0	6.3E-05*
FP1	26280.0	9	3	236520.0	1.3E-05
MI1	26280.0	3	3	78840.0	3.8E-05
MD1	26280.0	4	0	105120.0	2.9E-05*
NM1	26280.0	6	0	157680.0	1.9E-05*
QC1	26280.0	4	0	105120.0	2.9E-05*
PB2	26280.0	11	0	289080.0	1.0E-05*
PB3	26280.0	11	0	289080.0	1.0E-05*
PI1	26280.0	3	1	78840.0	1.3E-05
QC1	26280.0	5	0	131400.0	2.3E-05*
QC2	26280.0	5	0	131400.0	2.3E-05*
VY1	26280.0	4	0	105120.0	2.9E-05*
		TOTALS	21	3843720.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN
FINAL STATISTICS

	STANDBY HOUR RATE
	1.4
GEN.ELEC.	5.5E-06
	1.5
	1.4
OVERALL	5.5E-06
	1.5

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN (COMPAND FAULTS INCLUDED)

GENERAL ELECTRIC

PLANT	COMPONENT			POPULATION HOURS	STANDBY HOUR RATE
	HOURS	POPULATION	FAILURES		
BF1	26280.0	11	0	289080.0	1.0E-05*
BF2	26280.0	11	0	289080.0	1.0E-05*
BF3	20976.0	11	4	230736.0	1.7E-05
BR1	19512.0	9	0	175608.0	1.7E-05*
BR2	26280.0	9	2	236520.0	8.5E-06
CO1	26280.0	8	0	210240.0	1.4E-05*
DA1	26280.0	6	0	157680.0	1.9E-05*
DR2	26280.0	5	0	131400.0	2.3E-05*
DR3	26280.0	5	0	131400.0	2.3E-05*
EN1	26280.0	9	8	236520.0	3.4E-05
EN2	4296.0	11	0	47256.0	6.3E-05*
FP1	26280.0	9	3	236520.0	1.3E-05
MI1	26280.0	3	4	78840.0	5.1E-05
MO1	26280.0	4	0	105120.0	2.9E-05*
NM1	26280.0	6	0	157680.0	1.9E-05*
OC1	26280.0	4	0	105120.0	2.9E-05*
PB2	26280.0	11	0	289080.0	1.0E-05*
PB3	26280.0	11	0	289080.0	1.0E-05*
PI1	26280.0	3	1	78840.0	1.3E-05
QC1	26280.0	5	0	131400.0	2.3E-05*
QC2	26280.0	5	0	131400.0	2.3E-05*
VY1	26280.0	4	0	105120.0	2.9E-05*
TOTALS			22	3843720.0	

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

VALVE--BWR PRIMARY RELIEF--PREMATURE OPEN (COMMAND FAULTS INCLUDED)

FINAL STATISTICS

	STANDBY HOUR RATE
	1.4
GEN.ELEC.	5.7E-06
	1.5
	1.4
OVERALL	5.7E-06
	1.5

* DENOTES UPPER 95 PERCENT CONFIDENCE BOUND WHEN NO FAILURES RECORDED

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Warren H. Hubble
Charles F. Miller

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16. ABSTRACT (200 words or less)

This report describes the results of an analysis of nuclear plant valve failures. The data used for this analysis were the Licensee Event Reports (LERs). The LERs are written reports filed with the NRC whenever certain failures or incidents occur concerning nuclear plant safety systems. The valve failures or incidents contained in the LERs were used to calculate summary valve failure rate statistics. The report includes a variety of different statistics calculated to highlight or show important failure modes or other failure information. In addition to the quantitative failure rate information, there is also considerable qualitative information tabulated to allow the user to make additional valve failure rate calculations or inferences.

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