



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV

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

SEP 24 1998

S. K. Gambhir, Division Manager
Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 399
Hwy. 75 - North of Fort Calhoun
Fort Calhoun, Nebraska 68023-0399

SUBJECT:

Dear Mr. Gambhir:

During our last plant performance review, conducted May 15, 1998, NRC perceived a potential decline in Fort Calhoun Station performance. In order for us to better understand the possible reasons for this perception, we conducted a review of identified instances of problematic or deficient performance as documented in NRC inspection reports and Licensee Event Reports. We attempted to identify common causes of this performance in all four Systematic Assessment of Licensee Performance functional areas. This letter is to inform you of the results of our analysis and to ask you to consider this information during your preparations for the public meeting we have scheduled to take place at Fort Calhoun Station on October 6, 1998.

One hundred twelve specific instances of deficient or poor performance dating from January 1, 1997, through July 31, 1998, were compared to failure mode charts which addressed Human Errors and Inappropriate Actions, Organizational and Programmatic Deficiencies, and Oversight and Corrective Actions. The major causes for Human Errors and Inappropriate Actions appeared to be inattention to detail and misjudgement. These two failure mode categories accounted for approximately 60 percent of the total human error failure modes identified. In the Organizational and Programmatic Deficiency chart, inadequate procedure scope and detail accounted for approximately 45 percent of the deficiencies identified. Oversight and Corrective Action deficiencies were more widely distributed, with failure modes related to inadequate corrective actions accounting for approximately 17 percent of the total. Inadequate feedback, variations in expectations, and inadequate attention to training each accounted for approximately 10 percent of the Oversight and Corrective Action failures.

Enclosed you will find charts representing the most significant failure modes identified from the three failure mode charts and supporting examples from the NRC Plant Issues Matrix. Also included is a chart indicating the functional area distribution of Human Error or Inappropriate Action failure modes and the number of failure mode hits in each functional area per hour of NRC inspection.

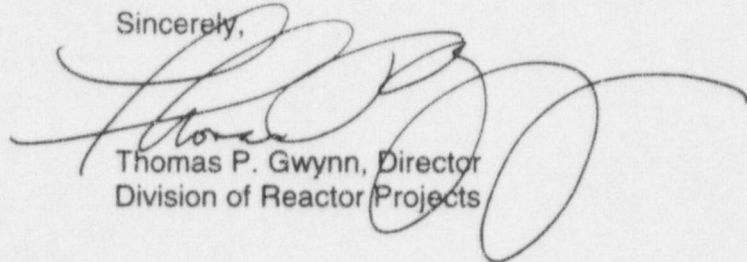
While we recognize that our evaluated sample data base was not inclusive of all deficiencies that have been identified at your facility, we believe that our independent review does provide

9809290295 980924
PDR ADCK 05000285
G PDR

insight into the causes for deficiencies that resulted in our perception of a performance decline at the station. We encourage you to consider this information as you prepare your October 6 presentation regarding the results of your own common cause analysis. We are particularly interested in any areas where our results differ significantly from your own.

If you have any questions concerning this matter, please contact me (817/860-8248) or Mr. W. D. Johnson (817/860-8148) of my staff.

Sincerely,



Thomas P. Gwynn, Director
Division of Reactor Projects

Docket No.: 50-285
License No.: DPR-40

Enclosure:
As stated

cc w/enclosure:
James W. Tills, Manager
Nuclear Licensing
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 399
Hwy. 75 - North of Fort Calhoun
Fort Calhoun, Nebraska 68023-0399

James W. Chase, Division Manager
Nuclear Assessments
Fort Calhoun Station
P.O. Box 399
Fort Calhoun, Nebraska 68023

J. M. Solymossy, Manager - Fort Calhoun Station
Omaha Public Power District
Fort Calhoun Station FC-1-1 Plant
P.O. Box 399
Hwy. 75 - North of Fort Calhoun
Fort Calhoun, Nebraska 68023

Perry D. Robinson, Esq.
Winston & Strawn
1400 L. Street, N.W.
Washington, D.C. 20005-3502

Omaha Public Power District

-3-

Chairman
Washington County Board of Supervisors
Blair, Nebraska 68008

Cheryl Rogers, LLRW Program Manager
Environmental Protection Section
Nebraska Department of Health
301 Centennial Mall, South
P.O. Box 95007
Lincoln, Nebraska 68509-5007

bcc to DCD (IE51)

bcc distrib. by RIV:

Regional Administrator

DRP Director

Branch Chief (DRP/B)

Project Engineer (DRP/B)

Resident Inspector

H. F. Bundy, DRS

DRP Directors, RI

DRP Director, RII

DRP Director, RIII

A. T. Howell, Director, DRS

DRS-PSB

MIS System

RIV File

Branch Chief (DRP/TSS)

W. B. Jones, DRS

E. G. Adensam, NRR (MS: 13E4)

B. A. Boger, NRR (MS: 14E4)

W. C. Walker, SRI, FCS

L. R. Wharton, Project Manager, NRR

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

RIV:SPE:DRP/B	C:DRP/B	D:DRP					
DNGraves;dfg	WDJohnson	TPGwynn					
9/22/98	9/27/98	9/27/98					

OFFICIAL RECORD COPY

bcc to DCD (IE51)

bcc distrib. by RIV:

Regional Administrator
 DRP Director
 Branch Chief (DRP/B)
 Project Engineer (DRP/B)
 Resident Inspector
 H. F. Bundy, DRS
 DRP Directors, RI
 DRP Director, RII
 DRP Director, RIII
 A. T. Howell, Director, DRS

DRS-PSB
 MIS System
 RIV File
 Branch Chief (DRP/TSS)
 W. B. Jones, DRS
 E. G. Adensam, NRR (MS: 13E4)
 B. A. Boger, NRR (MS: 14E4)
 W. C. Walker, SRI, FCS
 L. R. Wharton, Project Manager, NRR

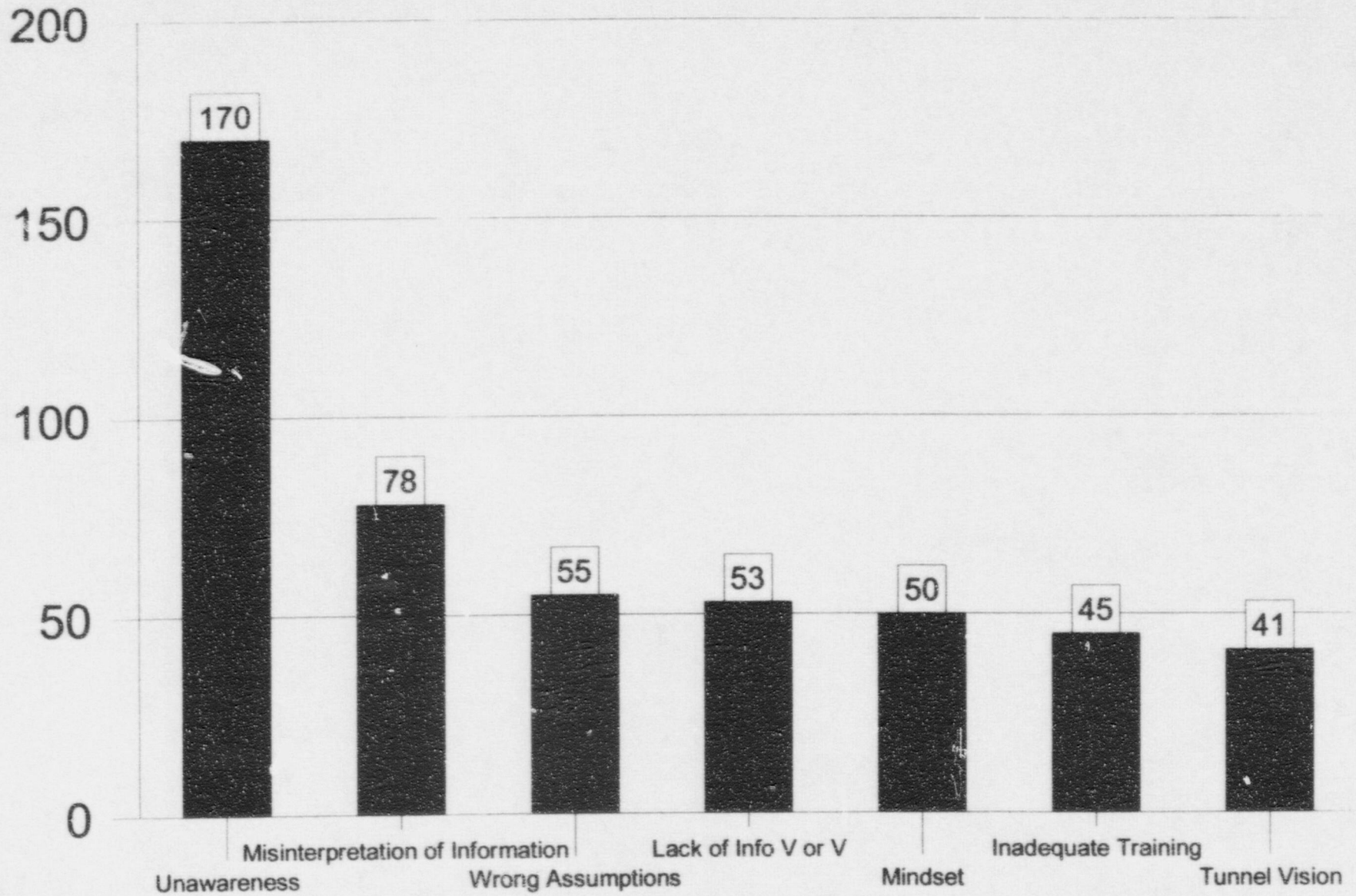
To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:SPE:DRP/B	C:DRP/B <i>J</i>	D:DRP			
DNGraves; <i>dfg</i>	WDJohnson	TPGwynn <i>M</i>			
9/22/98	9/22/98	9/24/98			

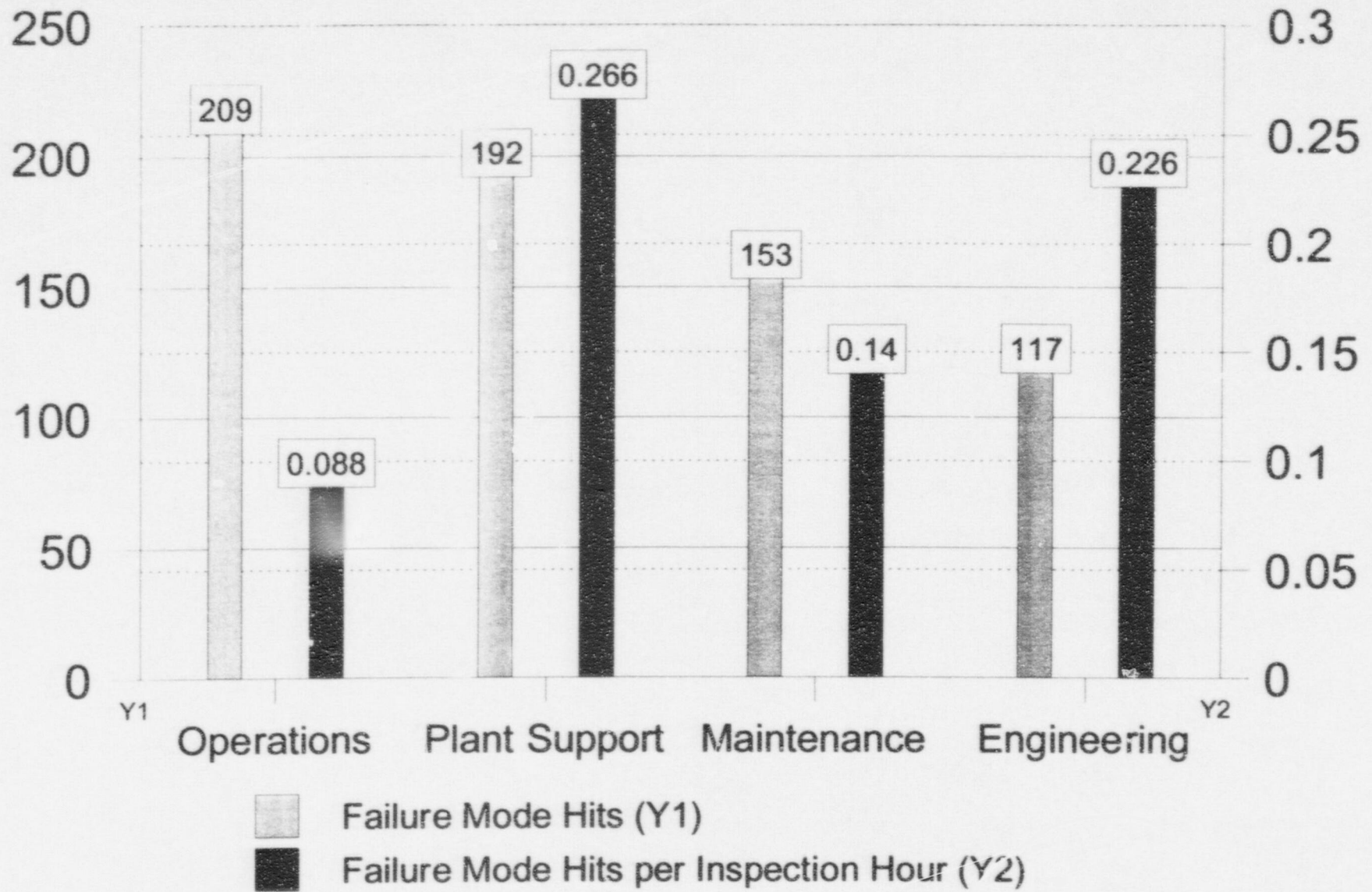
OFFICIAL RECORD COPY

200009

Human Errors or Inappropriate Actions



Human Errors or Inappropriate Actions



Failure Mode: Inattention to Detail - Unawareness

Common Causes:

- Inadequate Work Schedule
- Inadequate Work Practice
- Inadequate Communication

Description: Not paying attention to alarms, signals, precautions, or information that are not contained in procedures or guidelines

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
05/20/98	VIO SL IV	IR 98-11	NRC	MAINT	1B	5A	Operations personnel did not initiate a maintenance work document to document a deficiency with Alarm Test Valve FP-230 in accordance with Standing Order SO-O-1. This was a violation of 10 CFR Part 50, Appendix B, Criterion V.
05/05/98	NCV	IR 98-09	LICENSEE	PS	3A		The licensee failed to properly label 15 bags of radioactive material in the radioactive waste building as required by 10 CFR 20.1904. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.
04/02/98	VIO SL IV	IR 98-09 IR 98-05	LICENSEE	OPS	1A		Failure to adhere to 10 CFR 50, Appendix B, Criterion 5, resulted in inadequate procedure guidance during a plant cooldown. This, in conjunction with operations personnel confusion over wide range pressure instrumentation inaccuracies, resulted in the reactor coolant system pressure being lowered to the point where Reactor Coolant Pump RC-3C cavitated. This closed Unresolved Item 285/9805-02.
08/21/97	Weakness	IR 97-17	NRC	OPS			The operating crew had numerous opportunities to identify that the containment spray system was inoperable. Each of the control room operators involved with the event failed to demonstrate a questioning attitude concerning the lit annunciators. Crew supervision failed to provide adequate oversight during the performance of the surveillance test.
08/21/97	VIO SL III	IR 97-17	LICENSEE	OPS			The shift turnover was inadequate. Operators did not question the cause of the containment spray valve off-normal alarms and they did not verify the status of the containment spray system.
06/27/97	NCV	IR 97-12	LICENSEE	PS			A noncited violation was identified involving incomplete and inaccurate background investigations.
05/03/97	VIO SL IV	IR 97-07	NRC	ENG			A violation was identified when engineering personnel failed to initiate a work request tag to identify a steam leak on the steam trap inlet valve for the turbine-driven auxiliary feedwater pump. The same item was identified as an operations weakness for failing to identify the leak.
04/21/97	NCV	IR 97-09	LICENSEE	PS			The licensee identified that a fire watch was not established within the required time after placing the fire pumps in pull-to-lock during the extraction steam line rupture event. The sprinkler systems were out of service for approximately 2 hours. Fire watch was required within 1 hour.

Failure Mode: Misjudgement - Misinterpretation of Information

Common Causes:

- Inadequate Verbal or Written Communication
- Inadequate Man-machine Interface

Description: Information not used correctly in the decision-making process

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
04/24/98	VIO SL IV	IR 98-07	NRC	MAINT	3B		As a result of a misinterpretation of a regulatory requirement, a violation of 10 CFR 50.55a(g) was identified for the licensee's failure to submit in 1984 and 1994 relief requests following the first and second 10-year intervals for ASME Code Class welds that did not receive 100 percent full examination coverage.
03/10/98	Weakness	IR 98-01	NRC	ENG	4A		There was a failure to identify that cable qualification fire test criteria conducted in 1971 did not support a 10 minute response period for a cable spreading room fire. This was considered to be an engineering weakness in the fire protection program. Compensatory actions were implemented and modifications were planned to eliminate reliance on the cable qualification fire test criteria.
08/02/97	Weakness	IR 97-15	NRC	PS			Due to a procedural misunderstanding, the self-contained breathing apparatus regulator flow test records were not documented appropriately. Once pointed out by the inspectors, the test records were correctly documented.
06/10/97	VIO SL IV	IR 97-09 EA 97-280	NRC	MAINT			It was determined that the licensee had missed a potential opportunity to detect the degraded elbow by not considering the implications of an upstream pipe replacement of a similar large radius elbow that had occurred in 1985 and had not adequately considered industry operating experience in the selection process to determine inspection locations to identify pipe wall thinning. Additionally, the inspectors noted that the licensee's analytical model for predicting the relative wear rate of components (CHECWORKS) had not accurately predicted the actual observed wear rates associated with large radius elbows in the fourth stage extraction steam system. 10 CFR 50.65(a)2 violation.
05/10/97	VIO SL IV	IR 97-11	NRC	OPS			The licensed operators failed to follow procedures when they did not change the plant startup procedure to document the necessary adjustments made to the boron concentration and control rods to achieve criticality. This was a violation of Technical Specification 5.8.1.

Failure Mode: Misjudgement - Wrong Assumptions

Common Causes:

- Inadequate Training
- Inadequate Man-machine Interface

Description: Erroneous assumptions used in decision making

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
05/23/98	Negative	IR 98-09	LICENSEE	ENG	3A	4B	During the development of a modification package, design engineering personnel incorrectly interpreted the effect of removing power from certain electrical distribution panels. When power was removed from Electrical Distribution Panel AI-41B, the diesel-driven fire pump received an inadvertent start signal.
04/25/98	Negative	IR 98-09	LICENSEE	OPS	1A		During emergency diesel generator restoration following maintenance, operators overlooked the fact that the offsite low signal (low bus voltage) would cause the diesel to start. When operators moved the mode selector switch from off auto to emergency standby, the diesel generator started as designed. This was not anticipated by operations personnel.
03/31/98	NCV	IR 98-05	NRC	ENG	3B	4B	Failure to understand the requirements for use of engineering judgement and to properly document the use of engineering judgement resulted in a pipe vibrator being used on 3-inch piping when it had only been evaluated for use on 4-inch piping. This failure is being treated as a noncited violation consistent with Section IV of the NRC Enforcement Policy.
09/21/97	NCV	IR 97-18	LICENSEE	OPS			Reactor operators failed to perform necessary contingency actions in response to a low lube oil level alarm on Reactor Coolant Pump 3B.
09/13/97	NCV	IR 97-16	LICENSEE	MAINT			Inadequate maintenance rule scoping resulted in the fire protection system piping and the deluge valves not being considered within the scope of the maintenance rule.
02/24/97	Weakness	IR 97-03	N ¹	MAINT			A weakness was identified in that maintenance planning did not know how much water needed to be drained from the shutdown cooling cross connect piping. Additionally, the planners did not identify that the piping could not be completely drained without some disassembly. This resulted in individuals receiving unnecessary radiation dose.

Failure Mode: Misjudgement - Lack of Information Validation or Verification

Common Causes:

- Inadequate Verbal or Written Communications
- Inadequate Supervisory Methods

Description: Erroneous information used in decision making

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
12/06/97	VIO SL IV	IR 97-19	NRC	OPS	1C		The licensee's containment integrity operating instruction was inadequate in that all containment penetrations needed to establish containment integrity were not included in the operating instruction. Five penetrations (4 electrical and 1 piping) were omitted during the last procedure revision.
10/17/97	LER	LER 97-015 EN 33102	LICENSEE	ENG	2A	4A	The station batteries may not be capable of supplying the 8 hour design capacity in all accident scenarios. Compensatory measures involving operator actions to minimize loads under design basis accident conditions were implemented to restore battery operability concerns.
08/21/97	VIO SL III	EN 32799 IR 97-17	LICENSEE	MAINT			During the initial setup portion of a surveillance test, the test lead placed the control switches for the containment spray header isolation valves in the OVERRIDE position contrary to the surveillance test procedure. This action rendered the containment spray system inoperable.
06/14/97	LER	LER 97-007	LICENSEE	MAINT			The licensee failed to document RCS flow voltage measurements for one shift as required by technical specifications.
06/06/97	Weakness	IR 97-04	NRC	PS			Overall, the performance of the emergency operations facility staff was good. Emergency classifications, state and local notifications, and protective action recommendations were correct and timely. Briefings were frequent and included input from operations, protective measures, and state representatives. Field teams were effectively used to locate the plume and measure offsite consequences. Information control in the emergency operations facility was not always effective. Erroneous information concerning event classification times and radiological release start time was released offsite, and an incorrect protective action recommendation was reviewed and approved. Notifications to the NRC were not properly documented. An unresolved item was identified related to signatures on notification forms. The unresolved item was closed in IR 97-16.
05/02/97	VIO SL IV	IR 97-06	NRC	ENG			The licensee was effective in maintaining the design and operable status of the reviewed systems [auxiliary feedwater, component cooling water, and raw water], and engineers were knowledgeable of their assigned systems. However, weaknesses were identified where surveillance test procedure acceptance criteria for safety-related pumps were inadequate and where a design calculation was in error. An incorrect technical specification LCO involving the minimum water level for the emergency feedwater storage tank was identified.

Failure Mode: Misjudgement - Mindset

Common Causes:

- Inadequate Training
- Inadequate Supervisory Methods
- Inadequate Work Practice

Description: Decision-making without seeking the facts and evidence objectively

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
02/26/98	VIO SL IV	IR 98-05	NRC	OPS	1A	3A	The licensee conducted the safety-related activity of lowering the spent fuel pool level without a procedure containing precautions and instructions. This is a violation of 10 CFR Part 50, Appendix B, Criterion V.
01/17/98	VIO SL IV	IR 97-20	NRC	OPS	1C		Operations memorandums were being used, in effect, to implement procedure changes without being processed in accordance with administrative requirements.
04/07/97	VIO SL IV	IR 97-07	NRC	MAINT			A violation was identified when maintenance personnel failed to follow their procedure to document the blockage of the raw water supply header flow transmitter sensing lines while blowing down the lines. Licensee was only documenting blockage if it required the use of a large nitrogen bottle source to clear the line. Procedure states if nitrogen is used, document.
03/22/97	NCV	IR 97-06 IR 97-03	NRC	MAINT			Three instances in which maintenance personnel failed to properly follow configuration control procedures were identified (2 by NRC, 1 by licensee). 1. (NCV) AFW inverse derivative control relay missing spring 2. (NCV) SFP cooling pumps and demin water surge tank transfer pumps deflectors different
02/08/97	NCV	IR 96-18	LICENSEE	MAINT			The licensee identified 3 instances where maintenance personnel did not follow configuration control procedures. The items were: replacing springs and spiral pins on main steam line radiation monitor isolation valves; installing an actuator cylinder on a CCW outlet valve; and installing a gasket on the safety injection and refueling water tank vent.

Failure Mode: Inadequate Skills or Knowledge - Inadequate Training

Common Causes:

- Inadequate Managerial Methods

Description: No training for the needed skills; training not complete or detailed enough

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
02/25/98	Negative	IR 98-05	LICENSEE	ENG	3A	3B	The methods for qualifying new fuel receipt inspectors were inconsistent, resulting in a co-op student inspecting new fuel. New fuel receipt inspection by a co-op student did not meet licensee management's expectations and resulted in the reinspection of 24 new fuel bundles.
01/27/98	Negative	IR 98-04	NRC	PS	1C	3B	A firewatch was determined to be unsure of his duties and responsibilities. The guidance provided to the cable spreading room firewatchers regarding notification to the control room could not be performed as originally written.
01/17/98	NCV	IR 97-20	LICENSEE	PS	3A	3B	Two licensee personnel entered the radiological controlled area without proper dosimetry. This was determined to be due to lack of personnel accountability, training deficiencies, unclear expectations.
08/02/97	VIO SL IV	IR 97-15	NRC	MAINT			Ineffective corrective action resulted in a work request sticker not being removed from the control room panel as required by procedure. A second example of ineffective corrective action resulted in the lower disc wedge of the boric acid totalizer bypass valve being broken due to overtorquing.
05/06/97	Weakness	IR 97-01	NRC	OPS			Minor performance weaknesses and training deficiencies were identified for licensee and applicant consideration and corrective action as appropriate. Subject areas included containment spray interlocks, RCP lift oil pump interlock, definition of major fuel damage, and RWP restrictions for work in the overhead.

Failure Mode: Inadequate Skills or Knowledge - Tunnel Vision

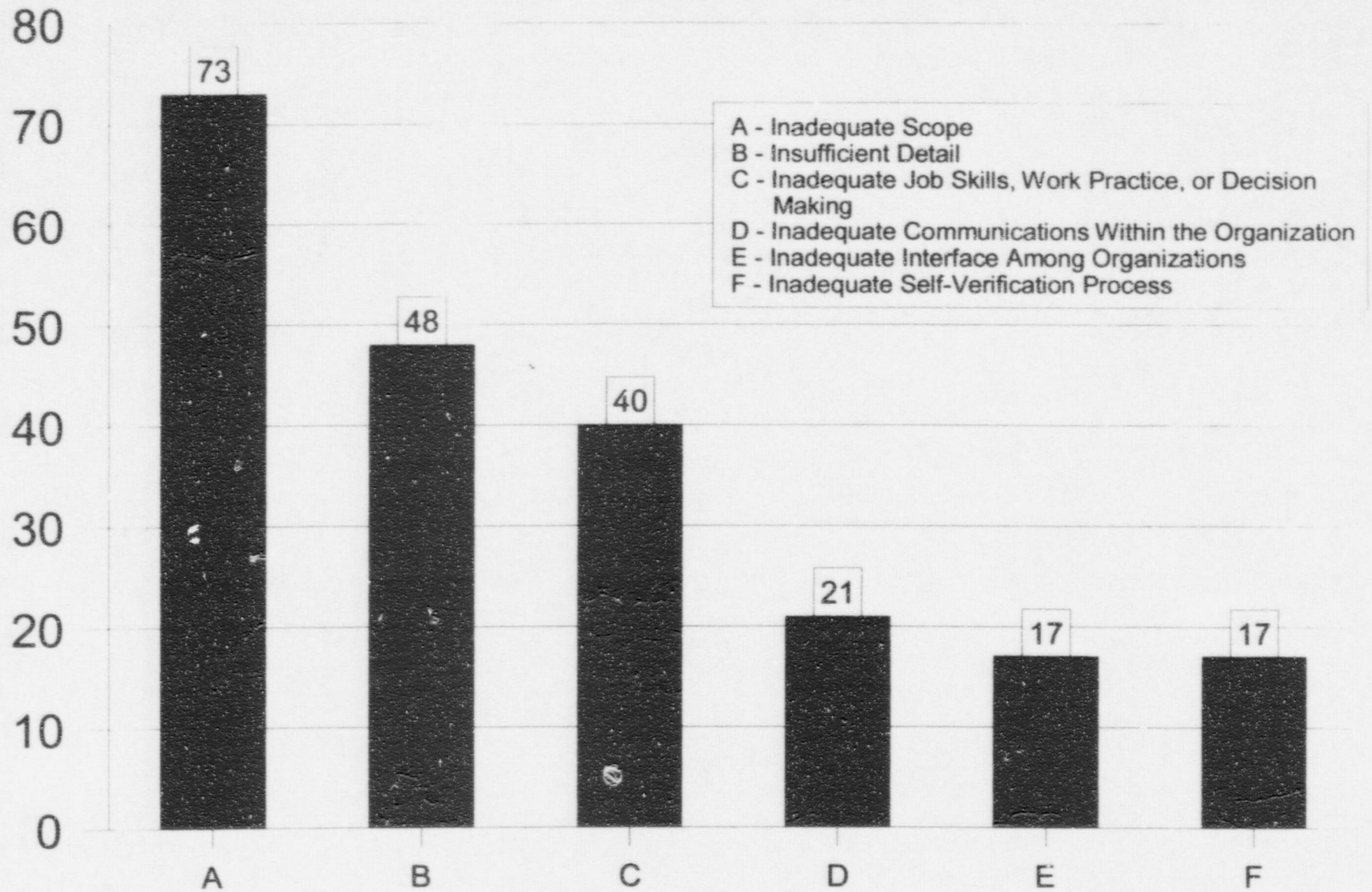
Common Causes:

- Inadequate Work Practice

Description: Actions or decisions without assessing the entire situation

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
04/25/98	Negative	IR 98-09	LICENSEE	OPS	1A		During emergency diesel generator restoration following maintenance, operators overlooked the fact that the offsite low signal (low bus voltage) would cause the diesel to start. When operators moved the mode selector switch from off auto to emergency standby, the diesel generator started as designed. This was not anticipated by operations personnel.
04/10/98	VIO SL IV NCV Weakness	IR 98-06	LICENSEE	PS	1A	1C	Declining radiation worker performance was noted. Problems involving improper entry into high radiation areas, dosimetry use, and contamination control were identified. A noncited violation was identified when individuals entered a high radiation area improperly. Discretion was exercised in accordance with Section VII.B.1 of the NRC Enforcement Policy. However, a violation of Technical Specification 5.11 was identified when another radiation worker entered a restricted high radiation area improperly. A noncited violation was identified when an individual entered the reactor containment building without a thermoluminescent dosimeter. Discretion was exercised in accordance with Section VII.B.1 of the NRC Enforcement Policy.
07/09/97	VIO SL IV	IR 97-15	NRC	PS			The inspectors identified that licensee personnel did not establish any compensatory measures prior to blocking the sprinkler system in the diesel generator room.
04/21/97	NCV	IR 97-09	LICENSEE	PS			The licensee identified that a fire watch was not established within the required time after placing the fire pumps in pull-to-lock during the extraction steam line rupture event. The sprinkler systems were out of service for approximately 2 hours. Fire watch was required within 1 hour.
02/19/97	Weakness	IR 97-03	NRC	MAINT			A weakness in maintenance planning when verifying the lower oil reservoir level on a reactor coolant pump resulted in a maintenance technician and a health physics technician being exposed to unnecessary radiation dose.

Organizational and Programmatic Deficiencies



Failure Mode: Programmatic Deficiencies - Inadequate Scope

Common Causes:

- Inadequate Program Design
- Inadequate Feedback from the Field Work Force

Description: Omission of necessary functions in procedures

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
05/20/98	Weakness	IR 98-11	LICENSEE	MAINT	2B		The root cause of the inadvertent deluge of House Service Transformer T1A-3 was determined to be the failure to perform preventive maintenance on the entire deluge system. This was considered a weakness in the preventive maintenance program.
02/26/98	VIO SL IV	IR 98-05	NRC	OPS	1A	3A	The licensee conducted the safety-related activity of lowering the spent fuel pool level without a procedure containing precautions and instructions. This is a violation of 10 CFR Part 50, Appendix B, Criterion V.
01/27/98	Negative	IR 98-04	NRC	PS	1C	3B	A firewatch was determined to be unsure of his duties and responsibilities. The guidance provided to the cable spreading room firewatches regarding notification to the control room could not be performed as originally written.
01/17/98	VIO SL IV	IR 97-20	NRC	OPS	1C		Operations memorandums were being used, in effect, to implement procedure changes without being processed in accordance with administrative requirements.
05/02/97	VIO SL IV	IR 97-06	NRC	ENG			The licensee was effective in maintaining the design and operable status of the reviewed systems [auxiliary feedwater, component cooling water, and raw water], and engineers were knowledgeable of their assigned systems. However, weaknesses were identified where surveillance test procedure acceptance criteria for safety-related pumps were inadequate and where a design calculation was in error. An incorrect technical specification LCO involving the minimum water level for the emergency feedwater storage tank was identified.
05/01/97	VIO SL III	EA 97-251 IR 97-06 EN 32510 LER 97-009	NRC	PS			The implementation of the fire protection program was poor, in that, the inspection identified five examples of the failure to properly implement the fire protection program. These included: (1) diesel generator control circuits that were not protected from a fire, (2) an inadequate alternate shutdown procedure, (3) an inadequate water curtain, (4) an inadequate reactor coolant pump motor lube oil collection system, and (5) inadequate control of fire pump operations. A 6th example involved failure to conduct required training on fire brigade equipment. Otherwise, the fire protection program was satisfactory (equipment, detection and alarm capability, procedures, staff, organization, administration, and audits). Additional weaknesses included knowledge weaknesses regarding the use of water to suppress cable fires. A \$55,000 CP was issued citing 5 violations as a Severity Level III problem. The water curtain issue was not identified as a violation in the final action.
04/21/97	NOUE	EN 32193 EN 32198 PN IV-97-021,-021A LER 97-003	SELF	MAINT			A steam line break on a 12" extraction steam line resulted in a manual reactor trip, declaration of a NOUE due to the abnormal event, and initiation of a significant asbestos hazard in the turbine building. Initial indications are that weaknesses in the erosion/corrosion program did not identify the susceptibility of this location to wall thinning.

Failure Mode: Programmatic Deficiencies - Insufficient Detail

Common Causes:

- Inadequate Program Design
- Inadequate Feedback from the Field Work Force

Description: Vagueness in procedures

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
					1A	1C	
04/10/98	Negative	IR 98-06	NRC	PS	1A	1C	Isolated weak ALARA program elements, involving the evaluation of the effects of dose gradients on dosimetry location and the procedural guidance for evaluating the need for respiratory protection equipment, were noted.
08/21/97	Negative	IR 97-17	NRC	MAINT			Surveillance procedure (containment spray) weaknesses included: multiple actions required by one step; equipment nomenclature which differed from component labels; and failure to address expected annunciators.
05/23/97	NCV	IR 97-11	NRC	OPS			Operating Procedure OP-2A [Plant Startup] had a weakness in that it did not provide guidance on actions to take if the reactor was not critical with all control rods fully withdrawn. A noncited, minor violation was identified for an inadequate plant startup procedure. The procedure did not provide operator instruction for addressing a noncritical reactor condition with all Group 4 rods fully withdrawn. The reactor was maintained in a safe condition, but operators delayed driving in Group 4 rods while discussing the situation of having all rods fully withdrawn without having reached criticality.
05/02/97	VIO SL IV	IR 97-06	NRC	ENG			A discrepancy between the plant configuration and the Updated Safety Analysis Report was identified involving the diesel-driven auxiliary feedwater pump fuel oil day tank level. The issue was whether the tank needed to be maintained full or not to meet the USAR description for 8 hours of operation.
05/02/97	VIO SL III	EA 97-251 IR 97-06 EN 32510 LER 97-009	NRC	PS			The implementation of the fire protection program was poor, in that, the inspection identified five examples of the failure to properly implement the fire protection program. These included: (1) diesel generator control circuits that were not protected from a fire, (2) an inadequate alternate shutdown procedure, (3) an inadequate water curtain, (4) an inadequate reactor coolant pump motor lube oil collection system, and (5) inadequate control of fire pump operations. A 6th example involved failure to conduct required training on fire brigade equipment. Otherwise, the fire protection program was satisfactory (equipment, detection and alarm capability, procedures, staff, organization, administration, and audits). Additional weaknesses included knowledge weaknesses regarding the use of water to suppress cable fires. A \$55,000 CP was issued citing 5 violations as a Severity Level III problem. The water curtain issue was not identified as a violation in the final action.

Failure Mode: Organizational Breakdowns - Inadequate Job Skills, Work Practice, or Decision Making

Common Causes:

- Punitive Management Style
- Inadequate Supervision
- Inadequate Training or Staff Qualification
- Inadequate Vertical Communication
- Conflicting or Unreasonable Organization Goals

Description: Excessive human error rate; low morale

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE	ITEM DESCRIPTION
03/25/98	NCV	IR 98-05	LICENSEE	PS	3A	Lack of proper posting by radiation protection personnel resulted in maintenance personnel entering into a high radiation area to erect scaffolding. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation consistent with Section VII B.1 of the NRC Enforcement Policy.
12/06/97	NCV	IR 97-19	LICENSEE	ENG	4B	In 1995, licensee personnel failed to perform an annual evaluation of nonfuel items in the spent fuel pool.
08/21/97	VIO SL III	IR 97-17 LER 97-012	LICENSEE	OPS		With all three containment spray pumps inoperable, Technical Specification 2.4 was not satisfied, and the unit was not placed in hot shutdown or in a subcritical condition with temperature <300 deg F within the required time intervals of Technical Specification 2.0.1.
08/21/97	VIO SL III	IR 97-17	LICENSEE	OPS		The shift turnover was inadequate. Operators did not question the cause of the containment spray valve off-normal alarms and they did not verify the status of the containment spray system.
07/18/97	VIO SL IV	IR 97-13	NRC	ENG		Engineering exhibited good performance in the disposition of the engineering assist requests reviewed by the inspectors. One example was identified where a condition adverse to quality was not reported on a condition report.

Failure Mode: Organizational Breakdowns - Inadequate Communications Within the Organization

Common Causes:

- Inadequate Information Path
- Lack of Teamwork Culture
- Inadequate Physical Settings

Description: Important issues not addressed; breakdown of normal work processes; low staff morale

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
01/28/98	Negative	IR 98-04	NRC	PS	3B		A weakness was identified in the thoroughness of a prejob briefing for movement of a radwaste container in that questions concerning actions to be taken if the waste container were dropped were not answered.
08/21/97	Weakness	IR 97-17	NRC	OPS			Several of the deficiencies identified in this event (disabling of containment spray) are similar to the identified causes for the March 18, 1996, event involving disabling the low temperature overpressure protection function.
08/21/97	VIO SL III	IR 97-17 LER 97-012	LICENSEE	OPS			With all three containment spray pumps inoperable, Technical Specification 2.4 was not satisfied, and the unit was not placed in hot shutdown or in a subcritical condition with temperature <300 deg F within the required time intervals of Technical Specification 2.0.1.
08/21/97	VIO SL III	IR 97-17	LICENSEE	OPS			The shift turnover was inadequate. Operators did not question the cause of the containment spray valve off-normal alarms and they did not verify the status of the containment spray system.
07/09/97	VIO SL IV	IR 97-15	NRC	PS			The inspectors identified that licensee personnel did not establish any compensatory measures prior to blocking the sprinkler system in the diesel generator room.

Failure Mode: Organization to Organization Interface Deficiencies - Inadequate Interface Among Organizations

Common Causes:

- Lack of Interface Formality
- Inadequate Teamwork or Trust Among Organizations
- Inadequate Physical Settings

Description: High human error rate in tasks requiring communication among organizations

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE			ITEM DESCRIPTION
05/20/98	VIO SL IV	IR 98-11	NRC	MAINT	1B	5A		Operations personnel did not initiate a maintenance work document to document a deficiency with Alarm Test Valve FP-230 in accordance with Standing Order SO-O-1. This was a violation of 10 CFR Part 50, Appendix B, Criterion V.
01/14/98	Negative	IF 93-04	LICENSEE	OPS	1A	3A	4B	Competing priorities and poor communications resulted in system engineering personnel not providing timely feedback to the control room operators regarding the operability of the postaccident sampling system. This resulted in the entire postaccident sampling system being declared inoperable when only the gaseous portion needed to be declared inoperable.
05/09/97	NCV	IR 97-02	LICENSEE	PS				Emergency events were correctly classified. A noncited violation was identified related to a late notification made to the state of Iowa regarding declaration of an emergency. NOUE related to a steam leak. Notification to Iowa in 17 minutes vice 15.
05/03/97	Weakness	IR 97-07	NRC	OPS				Although the maintenance work document to resolve an operator work around was ready to work, operations personnel did not ensure the operator work around was resolved in a timely manner. The work around involved a pulled annunciator card that required operators to verify the position of each valve, and its breaker, that fed into the annunciator every four hours.
02/08/97	OBS	IR 96-18	LICENSEE	PS				The licensee identified that sampling of an effluent release via the auxiliary building ventilation pathway was degraded because equipment necessary to sample the effluent had been relocated without the knowledge of chemistry personnel. Lack of communication among radiation protection, chemistry, and emergency preparedness personnel was the cause.

Failure Mode: Programmatic Deficiencies - Inadequate Self-Verification Process

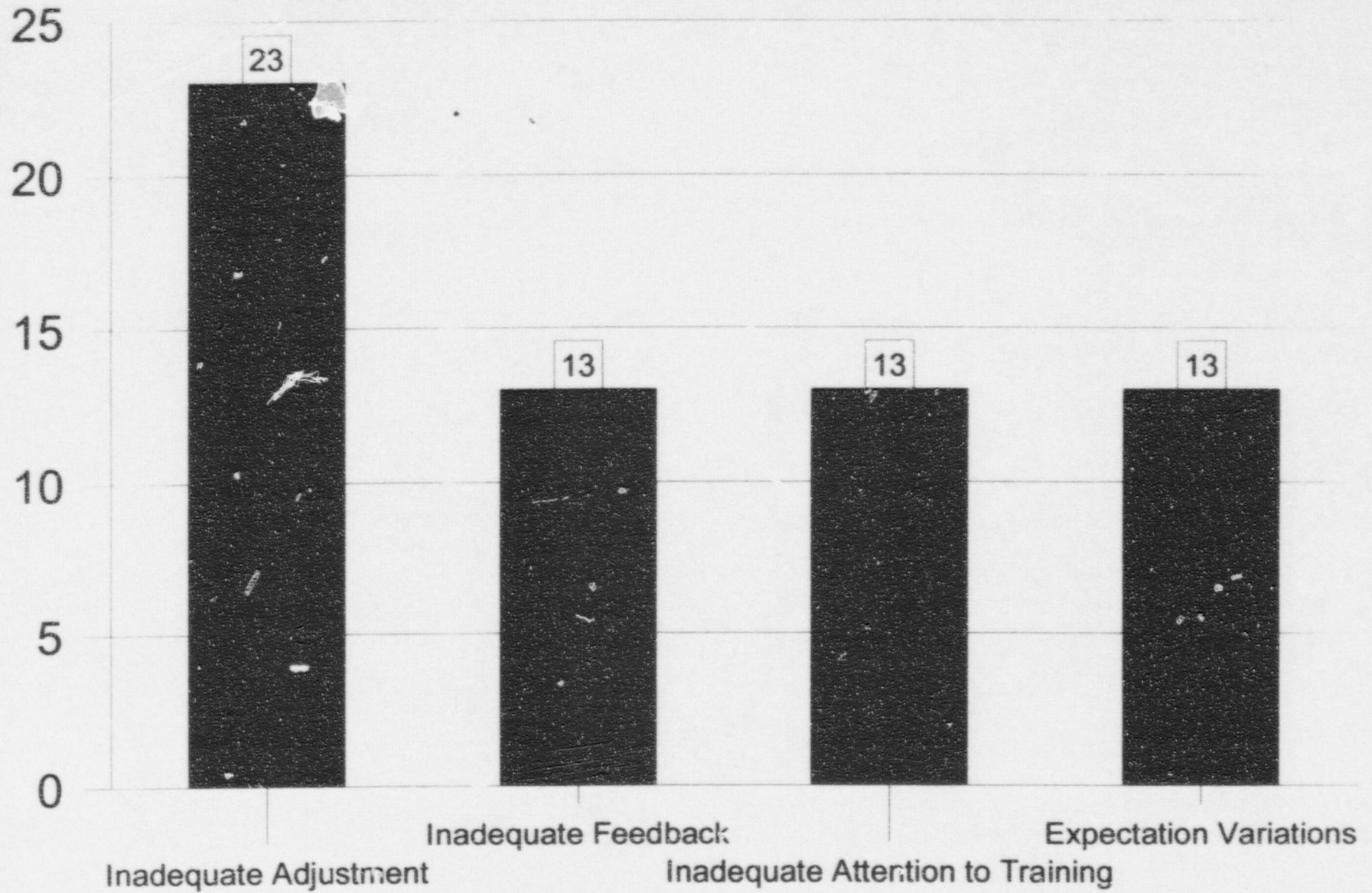
Common Causes:

- Inadequate Program Design

Description: Program breakdown by a single human error; high program failure rate; poor procedure quality

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE	ITEM DESCRIPTION
11/07/97	LER	LER 97-017 EN 33232	LICENSEE	ENG	2A	The low pressure safety injection system may be susceptible to water hammer loads in excess of piping support allowables. The licensee believes the current operating configuration ensures system operability, but the system may have been operating in an unanalyzed condition in the past.
08/21/97	Weakness	IR 97-17	NRC	OPS		The operating crew had numerous opportunities to identify that the containment spray system was inoperable. Each of the control room operators involved with the event failed to demonstrate a questioning attitude concerning the lit annunciators. Crew supervision failed to provide adequate oversight during the performance of the surveillance test.
08/02/97	Weakness	IR 97-15	LICENSEE	PS		The licensee determined that the criticality monitor in the new fuel receipt area was not sensitive enough to detect a criticality accident.
04/21/97	NOUE	EN 32193 EN 32198 PN IV-97-021, 021A LER 97-003	SELF	MAINT		A steam line break on a 12" extraction steam line resulted in a manual reactor trip, declaration of a NOUE due to the abnormal event, and initiation of a significant asbestos hazard in the turbine building. Initial indications are that weaknesses in the erosion/corrosion program did not identify the susceptibility of this location to wall thinning.
01/22/97	EN LER	EN 31632 LER 97-001	LICENSEE	ENG		Licensee determined that past operations with one or two main steam safety valves inoperable, as allowed by technical specifications, placed the unit in a condition outside its design basis regarding steam generator secondary side pressure following certain transients. Inadequate vendor review of code modeling was determined to be the cause.

Oversight and Corrective Action Failures



Failure Mode: Control Errors - inadequate Adjustment

Common Causes:

- Inadequate Accountability
- Inexperienced Management
- Lack of Technology-based Training
- Inadequate Scope of Adjustment
- Complacency

Description: Corrective actions not derived; inadequate corrective actions; no ownership

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
01/17/98	NCV	IR 97-20	LICENSEE	PS	3A	3B	Two licensee personnel entered the radiological controlled area without proper dosimetry. This was determined to be due to lack of personnel accountability, training deficiencies, unclear expectations.
08/21/97	Weakness	IR 97-17	NRC	OPS			Several of the deficiencies identified in this event (disabling of containment spray) are similar to the identified causes for the March 18, 1996, event involving disabling the low temperature overpressure protection function.
08/02/97	VIO SL IV	IR 97-15	NRC	MAINT			Ineffective corrective action resulted in a work request sticker not being removed from the control room panel as required by procedure. A second example of ineffective corrective action resulted in the lower disc wedge of the boric acid totalizer bypass valve being broken due to overtorquing.
07/18/97	VIO SL IV	IR 97-13	NRC	ENG			Engineering performance in the disposition of condition reports was good, though several problems were noted including: one instance where a precondition concern was not addressed; three instances where generic implications were not adequately considered; and one instance where the cause of an event was not determined. A concern related to the manner in which the licensee and the vendor handled a butterfly valve overtorquing event was also identified.
06/10/97	VIO SL IV	IR 97-09 EA 97-280	NRC	MAINT			It was determined that the licensee had missed a potential opportunity to detect the degraded elbow by not considering the implications of an upstream pipe replacement of a similar large radius elbow that had occurred in 1985 and had not adequately considered industry operating experience in the selection process to determine inspection locations to identify pipe wall thinning. Additionally, the inspectors noted that the licensee's analytical model for predicting the relative wear rate of components (CHECWORKS) had not accurately predicted the actual observed wear rates associated with large radius elbows in the fourth stage extraction steam system. 10 CFR 50.65(a)2 violation.
06/06/97	Weakness	IR 97-04	NRC	PS			Overall, the performance of the emergency operations facility staff was good. Emergency classifications, state and local notifications, and protective action recommendations were correct and timely. Briefings were frequent and included input from operations, protective measures, and state representatives. Field teams were effectively used to locate the plume and measure offsite consequences. Information control in the emergency operations facility was not always effective. Erroneous information concerning event classification times and radiological release start time was released offsite, and an incorrect protective action recommendation was reviewed and approved. Notifications to the NRC were not properly documented. An unresolved item was identified related to signatures on notification forms. The unresolved item was closed in IR 97-16.

Failure Mode: Control Errors - Inadequate Feedback

Common Causes:

- Inadequate Feedback Mechanism
- Complacency
- Inadequate Format to Cover Management, Supervision, and Workers

Description: Root common causes not known by the right people

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
05/20/98	VIO SL IV	IR 98-11	NRC	MAINT	1B	5A	Operations personnel did not initiate a maintenance work document to document a deficiency with Alarm Test Valve FP-230 in accordance with Standing Order SO-O-1. This was a violation of 10 CFR Part 50, Appendix B, Criterion V.
03/03/98	LER	LER 98-001	LICENSEE	MAINT	2B		During a self-assessment, the licensee identified that the In-Service Test Program did not provide a test to verify satisfactory operation of the remote position indication function of several passive, safety-related valves.
07/18/97	NCV	IR 97-05	NRC	PS			A good radiological environmental monitoring program was implemented. Environmental monitoring stations were properly maintained with operable and calibrated equipment. A non-cited violation was identified regarding the failure to initiate a condition report when an environmental sample was lost.
06/06/97	Weakness	IR 97-04	NRC	PS			Overall, the performance of the operations support center staff was generally good. The operations support center was activated in a timely manner. Teams were dispatched promptly and generally able to perform assigned tasks, however, several areas for improvement were identified related to documentation and briefings. An exercise weakness was identified related to the failure to demonstrate the ability to staff emergency response facilities on a prolonged basis. An exercise weakness was identified related to protective measures (potassium iodide) for onsite personnel.
05/06/97	Weakness	IR 97-01	NRC	OPS			Minor performance weaknesses and training deficiencies were identified for licensee and applicant consideration and corrective action as appropriate. Subject areas included containment spray interlocks, RCP lift oil pump interlock, definition of major fuel damage, and RWP restrictions for work in the overhead.

Failure Mode: People Cultivation Errors - Inadequate Attention to Training

Common Causes:

- Inadequate Resources Allocation
- Inadequate Management Expectations
- Inadequate Demand for Self-Training and Improvements

Description: Low knowledge and skills

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
02/13/98	VIO SL IV	IR 98-02	NRC	OPS	3B	5A	The failure to ensure that a quality assurance lead auditor had completed the quality assurance auditor qualification manual prior to conducting quality-related audits was a violation of Technical Specification 5.8.1.
01/17/98	NCV	IR 97-20	LICENSEE	PS	3A	3B	Two licensee personnel entered the radiological controlled area without proper dosimetry. This was determined to be due to lack of personnel accountability, training deficiencies, unclear expectations.
08/21/97	Weakness	IF: 97-17	NRC	OPS			Several of the deficiencies identified in this event (disabling of containment spray) are similar to the identified causes for the March 18, 1996, event involving disabling the low temperature overpressure protection function.
06/06/97	Weakness	IR 97-04	NRC	PS			Overall, the performance of the operations support center staff was generally good. The operations support center was activated in a timely manner. Teams were dispatched promptly and generally able to perform assigned tasks, however, several areas for improvement were identified related to documentation and briefings. An exercise weakness was identified related to the failure to demonstrate the ability to staff emergency response facilities on a prolonged basis. An exercise weakness was identified related to protective measures (potassium iodide) for onsite personnel.
05/02/97	VIO SL III	EA 97-251 IR 97-06 EN 32510 LER 97-009	NRC	PS			The implementation of the fire protection program was poor, in that, the inspection identified five examples of the failure to properly implement the fire protection program. These included: (1) diesel generator control circuits that were not protected from a fire, (2) an inadequate alternate shutdown procedure, (3) an inadequate water curtain, (4) an inadequate reactor coolant pump motor lube oil collection system, and (5) inadequate control of fire pump operations. A 6th example involved failure to conduct required training on fire brigade equipment. Otherwise, the fire protection program was satisfactory (equipment, detection and alarm capability, procedures, staff, organization, administration, and audits). Additional weaknesses included knowledge weaknesses regarding the use of water to suppress cable fires. A \$55,000 CP was issued citing 5 violations as a Severity Level III problem. The water curtain issue was not identified as a violation in the final action.

Failure Mode: Management Expectation Errors - Expectation Variations

Common Causes:

- Inadequate Enforcement Motivation
- Inadequate Supervision
- Too Many Expectations
- Poor Communication of Expectations

Description: Procedure non-compliance; low job performance

DATE	TYPE	SOURCE	ID	SFA	TEMPLATE CODE		ITEM DESCRIPTION
11/21/97	VIO SL IV	IR 97-19	NRC	OPS	1A	3A	In general, the conduct of operations was professional and safety-conscious. However, the inspectors identified an atmosphere which was nonprofessional in that breakfast was being cooked in the main control room.
08/21/97	VIO SL IV	IR 97-17	LICENSEE	OPS			Failure to document the changes in the operational status of safety equipment in the official control room logs, as required, was indicative of a lack of attention-to-detail in the conduct of control room operations.
07/18/97	NCV	IR 97-05	NRC	PS			A non-cited violation was identified for the failure to submit a permanent shielding request. Engineering department's review of temporary shielding installations did not meet management's 6 month expectation on a number of occasions.
07/18/97	Weakness	IR 97-05	NRC	PS			The hot spot reduction program did not meet management's expectation for timely evaluation and prioritization for removal of some hot spots.
07/18/97	VIO SL IV	IR 97-13	NRC	ENG			Engineering exhibited good performance in the disposition of the engineering assist requests reviewed by the inspectors. One example was identified where a condition adverse to quality was not reported on a condition report.
05/02/97	VIO SL IV	IR 97-06	NRC	ENG			A discrepancy between the plant configuration and the Updated Safety Analysis Report was identified involving the diesel-driven auxiliary feedwater pump fuel oil day tank level. The issue was whether the tank needed to be maintained full or not to meet the USAR description for 8 hours of operation.
02/08/97	VIO SL IV	IR 97-10 IR 96-18	NRC	MAINT			The flinger ring on the outboard thrust bearing of a CCW pump was not installed during maintenance on the pump, and the condition was not documented by the technician or communicated to station management.