

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Systematic Assessment of Licensee Performance

Report: 50-267/82-28

Docket: 50-267

Licensee: Public Service Company of Colorado
P. O. Box 840
Denver, Colorado 80201


Facility Name: Fort St. Vrain Nuclear Generation Station

Appraisal Period: September 1, 1981 - August 31, 1982

Licensee Meeting: December 14, 1982

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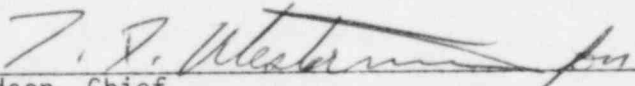
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I. Introduction

The NRC established a Systematic Assessment of Licensee Performance (SALP) program. This SALP program is an integrated NRC staff effort to collect available observations and data on an annual basis and to evaluate licensee performance based on these observations and data. Emphasis is placed upon NRC understanding the licensee's performance in the 10 functional areas listed in the body of the report and discussion and sharing this understanding with the licensee. SALP is an integrated part of the regulatory process used to assure licensee's adherence to the NRC rules and regulations. SALP is oriented toward furthering NRC's understanding of the manner in which: (1) the licensee management directs, guides, and provides resources for assuring plant safety; and (2) such resources are used and applied. The integrated SALP assessment is intended to be sufficiently diagnostic to provide meaningful guidance to licensee management related to quality and safety of plant operation, modifications, and new construction.

The NRC SALP Board composed of NRC personnel who are knowledgeable of the licensee activities, met on November 2, 1982, to review the collection of data and observations to assess the licensee's performance in the 10 selected functional areas.

This SALP report is the SALP Board's assessment of the licensee's safety performance at the Fort St. Vrain site during the period of September 1, 1981, to August 31, 1982.

The results of the SALP assessments in the selected functional areas were discussed with the licensee at a meeting held on December 14, 1982.

II. Criteria

Licensee performance is assessed in 10 selected functional areas. Each of these functional areas represents an area significant to nuclear safety and its related environment and is a programmatic area for the NRC inspection program.

Evaluation criteria as listed below were used, as appropriate, in each of the functional area assessments:

1. Management involvement in assuring quality
2. Approach to resolution of technical issues from safety standpoint
3. Responsiveness to NRC initiatives
4. Enforcement history
5. Reporting and analysis of reportable events

6. Staffing (including management)
7. Training effectiveness and qualification

In addition, SALP Board members considered other criteria, as appropriate.

Based upon the SALP Board assessment, each functional area evaluated is classified in one of the three performance categories. The definition of these performance areas is:

Category 1: Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2: NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3: Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

III. Summary of Results

In summary, the licensee's performance is shown in the following table:

<u>SUMMARY OF RESULTS</u>		<u>1981</u>	<u>1982</u>
1.	Plant Operations	3	3
2.	Radiological Controls		
	a. Radiation Protection	2	2
	b. Radioactive Waste Management, Transportation, Effluent Control and Monitoring	2	2
3.	Maintenance	2	1

4.	Surveillance	2	2	
5.	Fire Protection	2	1	
6.	Emergency Preparedness	2	2	
7.	Security and Safeguards	2	2	
8.	Refueling	2	NA*	
9.	Licensing Activities	2	1	//
10.	Others			
	a. Training, Requalification	1	1	
	b. Auditing	2	1	
	c. Quality Assurance Program	1	1	
	d. Receipt Storage and Handling	-	1	
	e. Housekeeping, Cleanliness	2	2	
	f. Organization and Administration	2	2	
	g. Procedures	2	2	
	h. Design, Design Changes and Modifications	2	2	

- Evaluated in 1981 as part of Plant Operations and QA Program.

* No refueling activities during this evaluation period.

IV. Performance Analysis

A. Plant Operations

1. Analysis

Twelve inspections were made by the NRC resident inspectors, each covering inspections of plant operations for a one month period. These inspections resulted in 10 violations. Four of the violations can be considered as failure to follow procedures, three as Technical Specification violations, and three as due to personnel errors. However, one of the violations is a two part violation, part of which has been assigned to functional area of Others - Quality Assurance. The violations were:

- a. Severity Level IV Violation (8120). MM1117 and MM1121 Trip Settings were observed to be improperly set. //

- b. Severity Level V Violation (8124). V-22184, Loop 1 Main Steam Electromatic Relief Valve Shutoff Valve, was not sealed in the open position.
- c. Severity Level III Violation (8124). Contrary to the requirements of LCO 4.6.1.e, the 1A station battery was placed on overcharge with the 1B diesel generator unit out of service.
- d. Severity Level III Violation (8126). Emergency diesel generator sets A and B were alternately removed from service for maintenance without demonstrating the operability of the alternate diesel generator set immediately prior to their removal from service.
- e. Severity Level IV Violation (8205).
 - (1) Duplicate samples for a radioactive liquid release had not been taken prior to release and the gross concentration of radioactivity in the undiluted effluent from the radioactive liquid waste tank ($1.24E-5 \mu\text{c/ml}$) exceeded the $2.06E-6 \mu\text{c/ml}$ limit specified by LCO 4.8.2, Part C.
 - (2) Waste release #518 was signed off by the test conductor verifying that V-6297 was closed. However, during the transfer of the contents of 1A receiver to the monitor tank, the licensee discovered that V-6297 was open. This resulted in the inadvertent release of approximately 250 gallons of radioactive liquid to an unrestricted area.
- f. Severity Level IV Violation (8206). No laboratory test conducted on charcoal filters following a fire which occurred August 26, 1981.
- g. Severity Level IV Violation (8208). The licensee determined that on March 6, 1982, even though the surveillance SR 5.8.1abc-M had been signed off verifying proper valve lineup prior to radioactive

gaseous release, a valve was found to be improperly positioned. This caused over-pressurization of vacuum tank T-6301, rupturing the tank's rupture disk. The resultant excessive gas pressure was relieved through the associated relief valve and resulted in an inadvertent release, including gaseous and airborne particulate effluents for which an isotopic analysis had not been made.

- h. Severity Level V Violation (8208). On March 12, 1982, at 6:30 a.m. MST, the NRC inspector determined that recorder RR 93256, "Effluent Activity Monitors," had not been reading properly since approximately 6:45 p.m. MST, March 11, 1982.
- i. Severity Level V Violation (8209). Two auxiliary tags for clearance #3155, dated April 28, 1982, and placed on Valves V-11119 and V-11319, were not numbered as required.
- j. Severity Level IV Violation (8126). Part (2) of this violation for failure to follow procedures is included under the category of Other and assigned to Quality Assurance.
 - (1) The equipment clearance for a modification performed on the helium penetration inter-space for B-2-3 steam generator module was returned and the system returned to normal operation without meeting the system's seismic requirements necessary to classify the system as operational.

The 11 licensee event reports (LER's) listed below can be attributed to plant operations:

- a. Improper blowdown adjustment resulted in exceeding Technical Specification limits for the plant non-radioactive liquid effluent total dissolved solids (TDS). (LER 81-050)
- b. The 1A station battery was taken out of service for overcharging while the 1B emergency diesel generator unit was out of service for maintenance. (LER 81-058)

- c. During a plant startup, each emergency diesel generator set was taken out of service without previously verifying operability of the other emergency diesel generator set. (LER 81-066)
- d. With the plant operating at power, the Loop 2 Steam Generator Penetration Interspace Helium Pressurization Block Valve was found closed. (LER 81-067)
- e. During steady state power operations, the volume of liquid nitrogen in the liquid nitrogen storage tank was lower than the Technical Specification limit. (LER 81-071)
- f. An improper valve position resulted in an unauthorized radioactive liquid waste release. (LER 82-004)
- g. A Loop 2 Steam Generator Penetration Pressure Switch was found isolated, which could have allowed pressure between the Steam Generator Penetration Rupture Disk and the associated relief valve to be in excess of Technical Specification limits. (LER 82-005)
- h. An improper valve position resulted in an unsampled radioactive gas waste release. (LER 82-009)
- i. Control rod group axial position separation Technical Specification limitation was exceeded. (LER 82-013)
- j. Improper valve positioning resulted in unauthorized radioactive gas waste releases on two separate occasions. (LER 82-022)
- k. One of the two diesel generator sets was taken out of service without previously verifying the operability of the other diesel generator set. (LER 82-033)

2. Conclusion

The licensee is considered to be in performance Category 3 in this area.

Significant improvement has been made in the number of overall violations and those attributed to failure to follow procedures since the previous performance analysis. However, a significant increase in the number of violations due to personnel errors has occurred and there are a considerable number (12) of LER's which are also attributable to personnel error. However, four of the LER's are the same event as four of the violations.

In general, it appears that increased management attention is required to reduce the number of violations and LER's due to personnel error, and to reduce the number of violations due to failure to follow procedures and Technical Specification violations.

3. Board Recommendations

Licensee management should maintain emphasis on adherence to procedures and Technical Specification, and should place increased emphasis on the reduction of personnel errors. NRC's attention will be maintained at a high level in this area to assure licensee's attention is directed at improving performance in this area.

B. Radiological Controls - Radiation Protection

1. Analysis

This area was inspected on a continuous basis by the NRC resident inspector. Three violations resulted from the inspection. The violations were:

- a. Severity Level V Violation (8124). Sources numbered 92 and 184 were left unattended outside of their assigned storage room.
- b. Severity Level V Violation (8126). A health physics technician failed to log into a radiation work permit (RWP) control area and was not wearing a pocket dosimeter as required by the RWP.
- c. Severity Level IV Violation (8208). Controlled area established March 4, 1982, on level 5½ of the reactor building at the area around B-5 penetration, was not adequately surveyed; a control point was not established; and posting of the area was not in accordance with approved procedures.

2. Conclusion

In spite of the licensee's enhanced attention in this area, the violations which occurred are an indication that continued management attention is required in this area.

The licensee is considered to be in a performance Category 2 in this area.

3. Board Recommendations

The licensee should maintain a high level of attention in this area.

C. Radiological Controls - Radioactive Waste Management, Transportation, Effluent Control and Monitoring

1. Analysis

Each of these areas were inspected by the NRC Facilities Radiation Protection Section. Additionally, the areas were continually inspected by the NRC resident inspector. One violation was identified. The violation was:

Severity Level V Violation (8128). Contrary to the requirements of LCO 4.8.1c, the titanium sponge in the helium purification system has not been in operation since April 1980.

2. Conclusion

There were several problems during the evaluation period during which liquid waste releases exceeded release limits. These required a modification to the liquid waste system to correct the problem. Some problems have also been noted by the NRC inspectors in the areas of transportation and environmental surveillance.

The licensee is considered to be in performance Category 2 in all of the above areas.

3. Board Recommendations

The licensee should maintain a high level of attention in this area.

D. Maintenance

1. Analysis

Fourteen inspections of maintenance activities were made. Twelve of the inspections were made by the NRC resident inspectors and two were made by the Reactor Projects Branch. These inspections resulted in one violation. The violation was:

Severity Level V Violation (8120). Five hold points for work previously performed had not been signed by the maintenance quality control technician.

The one LER listed below can be attributed to maintenance:

Failure to return the 480 Volt bus 2 and 3 tie breaker spring charging motor ON - OFF switch to the correct position following breaker maintenance resulted in the breaker's failure to close during performance of the "loss of outside power and turbine trip" surveillance test. (LER 82-018)

2. Conclusion

The licensee has improved his performance in this area. This improvement is attributed to new and recently revised maintenance procedures and a good maintenance quality control program.

The licensee is considered to be in performance Category 1 in this area.

3. Board Recommendations

The licensee should maintain their present level of attention in this area.

E. Surveillance

1. Analysis

Thirteen inspections were made in the surveillance area. Twelve inspections were made by the NRC resident inspectors and one was made by the Reactor Projects Branch. Three

violations resulted from the inspections, one of which had three examples. The violations were:

- a. Severity Level V Violation (8125).
 - (1) Diesel engine for diesel driven fire pump was not inspected during the May 1981 refueling shutdown. Previously inspected in September 1980.
 - (2) The annual actuation test of the heating and ventilation dampers and fans in the three-room control complex was not performed for an interval of 16 months.
 - (3) Halon storage cylinder weight and pressure checks were not performed between February 20, 1981, and July 1, 1981, an interval of 19 weeks.
- b. Severity Level V Violation (8206). The conduct of surveillances (six) between November 3, 1981, and December 31, 1981, were accomplished using out-of-date procedural revisions.
- c. Severity Level V Violation (8218). Data for steps 1, 7, and 10 were not being taken during Surveillance SR 5.2.3.X, "Tendon load cell check." Also, the 200 psi increment requirement in step 5 and the 70 Kips requirement in step 6 were not adhered to. Additionally, test equipment had not been identified, Section 4.0 had not been signed/dated by the shift supervisor, and page 5 of 22 had not been signed by the test conductor.

2. Conclusion

The number of violations did not significantly change from that for the previous evaluation period. However, a review and rewrite of surveillance tests is continuing. As a result of the violations, the licensee's management has revised their surveillance management group.

The licensee is considered to be in performance Category 2 in this area.

3. Board Recommendations

The licensee should continue the review and rewrite of surveillance procedures and should maintain a high level of attention in this area.

F. Fire Protection

1. Analysis

One inspection was made in this area, by the Reactor Projects Branch. However, it should be noted that this area is inspected on a continuous basis by the NRC resident inspector. As a result of these inspections, one violations resulted. The violation was:

Severity Level V Violation (8217). An unattended can of combustible material found, by the NRC inspector, in the reactor building was not controlled since the licensee had not authorized its use and was not aware of who was or had been using it.

2. Conclusion

Although there was one violation in this area, the licensee's attention in this area has been greatly improved. Additionally, their fire fighting training program is considered excellent and part of the program is utilized to train the fire department of nearby Platteville.

The licensee is considered to be in performance Category 1 in this area.

3. Board Recommendations

The licensee should maintain their present level of attention in this area.

G. Emergency Preparedness

1. Analysis

Inspections of emergency preparedness are made periodically by the NRC resident inspectors. Additionally, an appraisal of the emergency preparedness program was conducted by the Region IV office during the period January 4-15, 1982. The appraisal results indicated that significant weaknesses existed in the areas of emergency action levels, respiratory protection, radiation monitoring, emergency plan implementing procedures, and emergency coordinator authority.

On June 3, 1982, the licensee conducted their annual emergency response exercise. The inspection team, headed by Region IV, found no violations or deviations.

2. Conclusion

Despite the significant appraisal deficiencies, the licensee is considered to be in performance Category 2 in this area due primarily to the performance during the emergency response exercise which adequately demonstrated the licensee's capability to protect the health and safety of the public.

3. Board Recommendations

The licensee should maintain a high level of attention in this area.

H. Security and Safeguards

1. Analysis

Five inspections were made in the area of security and safeguards by the NRC Physical Security Section of the Technical Programs Branch. Continuous inspections were made by the NRC resident inspectors. As a result of the inspections, two violations were identified. The violations were:

- a. Severity Level IV Violation (8130). Safeguards information withheld.
- b. Severity Level V Violation (8207). Safeguards information withheld.

2. Conclusions

During this evaluation period, major violations have been absent, and those minor violations previously mentioned which did occur were symptomatic of minor programmatic breakdowns.

There has been a substantial improvement in attention to the security program during the past year. The revised security management onsite has addressed the program in a progressive manner and the impact is visible. Hopefully, this trend away from adversarial contacts with NRC will continue for the benefit of the site security program. Other longstanding efforts related to the physical security systems of the protective program are coming to fruition. Corporate security does not, but should, serve as an advocate for Fort St. Vrain security management at the corporate level.

The licensee is considered to be in a Category 2 in this performance area.

3. Board Recommendations

The licensee's corporate security should actively participate in the security and safeguards program.

I. Refueling

1. Analysis

No inspections of refueling activities were made since no refueling activities occurred during the evaluation period.

2. Conclusion

Since there were no activities in this functional area during this period of evaluation, no assessment was made.

3. Board Recommendations

The licensee should maintain a normal level of attention in this area.

J. Licensing Activities

1. Analysis

The evaluation of the performance in this functional area was based on considerations of the five attributes: management involvement; resolution of technical issues; responsiveness to NRC; staffing and training; and NRR's review of licensing activities. (See Attachment A)

2. Conclusions

Based on the evaluation of five attributes of Public Service Company of Colorado's performance for a number of significant activities in the functional area of licensing, an overall performance Category 1 is determined. Specifically, management attention and involvement with matters of safety is usually evident, resources are adequate although staffing in certain areas could be improved, and satisfactory performance is being achieved.

3. Board Recommendations

The licensee should be more assertive in their response and interaction with the NRC staff. The PSC licensing personnel should try to anticipate LWR-type questions in generic letters, IE Bulletins, and keep abreast of policy matters at the Commission so that PSC may respond and present their point of view as the various NRC actions affect the operation of their FSV plant well in advance of official transmittal of material from NRC to PSC.

K. Others

1. Analysis

Ten inspections were made by the Reactor Projects Branch in areas other than those considered previously. Periodic inspections were also made in the areas by the NRC resident inspectors. The inspections were in the areas of training - requalification; auditing; housekeeping/cleanliness; quality assurance program; organization and administration; procedures; design, design changes and modifications; and receipt, storage and handling. There were three violations. However, one of the violations is a two part violation, part of which has been assigned to the functional area of plant operations.

The violations were:

- a. Severity Level IV Violation (8120). The licensee did not reply within the specified time of 25, 30, and 30 days, respectively, for Notices of Violation for NRC reports 50-267/81-11 dated June 25, 1981, 50-267/81-12 dated June 15, 1981, and 50-267/81-13 dated July 23, 1981.
- b. Severity Level IV Violation (8219). The licensee had no documentation of functional testing of the design change performed per CN 653 - Install Key Switch on Radiation Monitoring Circuit.
- c. Severity Level IV Violation (8126). Part (1) of this violation was for failure to follow procedures and is included under the functional area of plant operations, and in part (2) a quality control technician initialed and dated the verification for the correct installation of a pipe support shown on Sketch 5 (SK-5) for a modification performed on helium penetration interspace B-2-3, which had not been installed as required.

2. Conclusion

The areas of training - requalification; auditing; quality assurance program; and receipt, storage and handling are considered to be performance Category 1 areas. Housekeeping/cleanliness; organization and administration; procedures; and design, design changes and modifications are considered to be performance Category 2 areas.

a. Housekeeping/Cleanliness

During the report period, the NRC resident inspector has periodically noted problems with housekeeping/cleanliness, however, the licensee's performance in this area appears to be improving.

b. Organization and Administration

During this evaluation period the licensee's management organization was changed so that the nuclear engineering division now reports to the vice president electric production. Below the level of manager, nuclear production division, the organization was also changed and some functions, such as training, now report to the station

manager instead of the technical/administrative services manager. Overall, these changes have improved the lines of communication with the NRC.

As indicated above, a violation was issued because of failure to reply to violations in the time specified and as indicated in the areas of security and safeguards; plant operations; surveillance; and radiological controls, management attention appears to be required. Of particular note, management attention is also required to reduce the number of personnel errors that have occurred during the evaluation period.

c. Design, Design Changes and Modifications

This functional area requires considerable coordination between the nuclear engineering division and the nuclear production division on a day-to-day basis. While the onsite engineering staff has been reorganized and increased, there remains problems such as those encountered during the loop split and the temporary modification to the loop 2 steam generator pressurization system. Problems encountered were such as lack of adequate hanger support, wrong valve numbering, inadequate work procedures, and poor communications between engineering and plant forces.

It is apparent from the foregoing discussion that better and closer coordination is required between the two divisions.

3. Board Recommendations

Increased management attention in the areas of organization and administration, and design control and modifications is required by the licensee.

V. Supporting Data and SummariesA. Violations

Functional Areas	Violations Severity Levels					Deviation
	I	II	III	IV	V	
<u>Operating Reactors</u>						
(1) Plant operations			2	5	3	
(2) Radiological Controls						
(a) radiation protection				1	2	
(b) radioactive waste management						
(c) transportation						
(d) effluent control and monitoring					1	
(3) Maintenance					1	
(4) Surveillance - includes inservice and preoperational testing					3	
(5) Fire protection					1	
(6) Emergency preparedness						
(7) Security and Safeguards				1	1	
(8) Refueling - includes initial fuel loading						
(9) Licensing activities						
(10) Others (as needed)				3		
TOTALS	0	0	2	10	12	0

B. Licensee Event Reports (LER's)

The regional SALP Board reviewed the LER's which had event dates during the period of September 1, 1981, through August 31, 1982. The review included LER's 50-267/81-047 through 81-075, and 82-001 through 82-035. The previous evaluation period of 1980-1981 was reviewed for causally-linked LER's.

The cause category and number of LER's per category during this report period are as follows:

<u>Cause Category</u>	<u>Number</u>
A - Personnel Error	12
B - Design, Manufacturing, Construction/ Installation	1
C - External Cause	-
D - Defective Procedure	2
E - Component Failure	30
X - Other	19
Total	<u>64</u>

The SALP Board identified a significant variance in their classification of the proximate cause for LER's relating to personnel error versus the licensee's classification. This is reflected in the following table. The 12 LER's identified by the SALP Board are discussed under the appropriate functional area of the performance analysis.

<u>CAUSE CATEGORY</u>	<u>LICENSEE CLASSIFIED</u>	<u>INSPECTOR CLASSIFIED</u>
A	8	12
B	-	1
C	-	-
D	2	2
E	27	30
X	<u>27</u>	<u>19</u>
TOTAL	64	64

There were 22 causally-linked items identified during this period as listed below:

	DESCRIPTION	CAUSALLY - LINKED LER's
1.	Hydraulic Class I Snubbers Found Inoperable	82-032, 82-016, 82-008, 82-001, 81-074, 81-064, 81-043, 81-040, 81-032, 80-54, 80-47
2.	Hydraulic Class I Snubbers Taken Out-of-Service Individually for Modifications/ Inspection	81-064, 81-059, 81-056, 80-051, 81-038, 81-026, 80-65, 80-61
3.	Inadvertant Radioactive Waste Releases	82-022, 82-009, 82-004, 80-63
4.	Emergency Feedwater to Circulator Pelton Drives Isolated (Unscheduled Maintenance)	82-034, 82-031, 82-029, 82-028, 82-015, 81-060, 81-054, 81-046, 81-019, 80-53
5.	Non-Radiological TDS Limit Exceeded	81-061, 81-050, 81-022
6.	D/G Set Not Verified Operable Prior to Taking the Other D/G Set Out-of-Service	82-033, 81-066
7.	Total Primary Coolant Oxidants Out-of-Specifications	82-030, 82-026, 82-023, 82-017, 82-011, 82-006, 81-069, 81-049, 81-027, 81-020, 81-015, 81-009, 80-75, 80-66, 80-59, 80-43, 80-36
8.	LN ₂ Storage Tank Level Out-of-Specification	81-071, 81-025, 81-021, 81-011, 80-39
9.	PCRV System 46 Outlet Temperature Out-of-Specification	81-062, 81-048, 81-001, 80-46

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|-----|--|------------------------|
| 10. | S/G Penetration Pressure
Less Than Primary Coolant
Pressure | 82-020, 81-067, 80-57 |
| 11. | S/G Penetration Leakage
in Excess of Limit | 82-010, 81-068 |
| 12. | Circulator Bearing Water
Drain Δ P Switch Out-of-
Tolerance | 82-003, 81-073 |
| 13. | Circulator Loss of Bearing
Water Δ P Switches Out-of-
Tolerance | 82-025, 82-002, 81-005 |
| 14. | PCR V Rupture Disk Setpoint
Out-of-Tolerance | 81-072, 80-49 |
| 15. | Bearing Water Makeup Pump
Out-of-Service
(Unscheduled Maintenance) | 81-052, 80-77 |
| 16. | Primary Coolant Pressure
Transmitter Out-of-
Calibration | 81-055, 81-030, 81-008 |
| 17. | Primary Coolant Moisture
Flow Elements Out-of-
Tolerance | 81-075, 81-010 |
| 18. | Number of Operable Instru-
ment Air Compressors Less
Than Limit | 82-012, 81-014 |
| 19. | System 46 Subheader Isolated | 82-014, 80-37 |
| 20. | 480 Volt Bus Tie Breaker
Inoperable | 82-018, 80-53 |
| 21. | Circulator Speed Trip
Switches Out-of-Calibration | 82-019, 80-69, 80-71 |
| 22. | Primary Coolant Moisture
Monitor Sample Flow
Alarms Out-of-Tolerance | 82-027, 81-018 |

C. Licensee Activities

1. Major Outages

The licensee had two scheduled major outages during this appraisal period. One outage occurred during the period November 9, 1981, to March 9, 1982. Major modifications during this outage were made to the circulator auxiliaries as well as segregation of the buffer helium system into separate loops. Work on main turbine inspection, realignment, and repairs during this outage resulted in removal of the last stage of the low pressure turbine for modification/repair by the vendor. The second outage (NRC required downtime) occurred during the period April 20 - May 7, 1982, and consisted of the change-out of the control rod drive in Region 19 and verification of the operability of the reserve shutdown system as required by the NRC due to primary coolant moisture problems.

The major unscheduled (greater than 48 hours) outages (forced downtime) consisted of the following:

<u>OUTAGE PERIOD</u>	<u>REASON</u>
October 13 - 16, 1981	Main steam desuperheater temperature control valves repair.
October 25 - 31, 1981	Steam generator penetration leak.
November 1 - 3, 1981	Loop 2 steam generator penetration pressurization piping modification.
March 10 - 31, 1982 April 1 - 14, 1982	Core chemistry cleanup and plant readiness operations following major maintenance outage.
June 4 - 14, 1982	Loop 1 shutdown due to a spurious PPS trip and on June 6, 1982, the reactor was manually scrammed due to a 480 volt bus upset followed by undervoltage relay repairs.

2. Power Limitations

The reactor power was limited to 70 percent during this appraisal period primarily due to core temperature fluctuation problems encountered during initial rise to power testing.

3. Significant Modifications

The licensee has completed the "Loop Split" modification and modifications due to NUREG 0737 requirements are still continuing.

D. Major Inspection Activities

The NRC performed the following major inspection activities during this appraisal period:

1. An inspection was conducted during the period of January 4 - 15, 1982. The inspection included an appraisal to evaluate the licensee's overall adequacy and effectiveness of emergency preparedness and to identify areas of weakness that needed to be strengthened. Six areas were identified which had significant deficiencies for which commitments were obtained from the licensee for corrective action. In addition to the significant appraisal deficiencies, 137 items were identified as needing improvement in order to achieve an adequate emergency preparedness program. The NRC inspectors concluded that the licensee appeared to be capable of responding to and managing responses to events of limited scope and duration. No violations or deviations were identified. (50-267/82-01)
2. An inspection was conducted during the period of June 1 - 4, 1982. The inspection included the annual emergency exercise and coordinated meetings with the licensee, the Federal Emergency Management Agency, state, and local agencies. During this exercise, the NRC inspectors concluded that the licensee's emergency response organization demonstrated the capability to protect the health and safety of the public. No violations or deviations were identified. Six open items were discussed in Section 7 of the report. (50-267/82-14)

E. Escalated Enforcement Actions

1. Civil Penalties

There were no civil penalties issued during this evaluation period.

2. Orders

There were no "Letters of Orders" modifying the license issued during this evaluation period.

3. Confirmatory Action Letters

January 21, 1982, letter relating the results of the NRC Emergency Preparedness Appraisal of Fort St. Vrain.

F. Investigations and Allegations

The NRC conducted one investigation during this appraisal period. A summary of the investigation is as follows:

The investigation was conducted on April 13 to May 19, 1982. The investigation was conducted to substantiate allegations by an individual that he suspected that certain Public Service Company employees were using drugs. The investigation disclosed one former contract health physicist (HP) working at the Fort St. Vrain Nuclear Power Station was observed using cocaine on the job, and three utility employees were identified as suspected users of drugs. Contact with federal, state, and local law enforcement agencies having jurisdiction over drug-related offenses resulted in all three declining investigative jurisdiction. The management of Fort St. Vrain was apprised of the three suspected utility drug users, and subsequently reported to the NRC that two of the three utility employees admitted to the use of marijuana and enrolled into the utility drug rehabilitation program. The third utility employee denied any drug involvement but agreed to undergo drug screening tests. Investigation further disclosed that the former contract HP is presently working at the North Anna Nuclear Power Plant. Region II investigative staff apprised the North Anna management personnel and reported they are taking appropriate action and will keep Region II advised of their results.

G. Summary of Strengths and Weaknesses

1. Strengths

Management controls in the areas of maintenance, fire protection, quality assurance (includes auditing and receipt; storage and handling), and in training/requalification are accomplished in a competent manner. Responsiveness to the NRC in correcting minor problems has been excellent.

2. Weaknesses

Management controls in the area of plant operations need to be maintained in an increased level of attention and should be particularly strengthened in the areas of the following procedures and in reducing, to a minimum, the number of personnel errors.

Tighter management controls are also needed in the areas of surveillance, design controls, and emergency preparedness. Closer cooperation between offsite engineering and plant forces is desirable as indicated by problems such as those encountered in the loop split and the temporary modification to the Loop 2 steam generator pressurization system.

H. Unplanned Trips and Safety System Challenges

There were 21 unplanned trips and safety system challenges which occurred during the evaluation. In all 21, the systems responded in a manner for which they were designed and either reduced power, tripped the reactor, or provided compensation where required, such as, an increase in circulator speed when another circulator in that loop trips off.

The 21 unplanned trips and safety system challenges were:

10/8/81 The Loop 2 Main Steam Desuperheater Valve (TCV-5208) failed open at 0415 hours when the air supply line broke. The sudden decrease in reheat steam pressure caused both "A" and "D" circulators to trip on speed and feedwater mismatch. The power was reduced to 30% to return these circulators to service, and the plant was at 70% again at 1400 hours.

- 10/19/81 A reactor scram on two loop trouble, due to low fixed feedwater flow trips on all four circulators, was received at 1725 hours. This occurred when the reactor power was being reduced to return the normal feedwater header to service. The plant was subsequently restarted.
- 10/21/81 The plant was stabilized at 40% at 1000 hours on October 21 and data gathering for RT-500K, (the rise-to-power test) began. The power was increased according to the test requirements to 67% on October 22. However, a circulator speed instrument failed at 1306 hours and this caused a loop shutdown when the Loop 2 circulators tripped on speed/flow mismatch. The power was reduced to 2% to recover Loop 2, and the turbine was again synchronized at 0715 hours on October 23.
- 11/9/81 The "B" helium circulator tripped at 0155 hours due to a buffer system upset. The resultant reheat steam pressure transient caused "A" circulator 2 to trip on overspeed. A Loop 2 shutdown then followed because of the two circulator trips, and the power was ramped down to about 30%. The power was then reduced further, and the turbine generator taken off at 0436 hours. The reactor was eventually scrammed, and the scheduled shutdown activities were commenced.
- 2/18/82 A spurious trip of the plant protective system dewpoint moisture monitors caused a scram and a Loop 2 shutdown with a steam/water dump. The reactor had previously been operating at 1% power. The reactor was again critical five hours later following an investigation into the cause.
- 2/22/82 High primary coolant moisture began presenting a problem in meeting the Technical Specification limit of less than a 67 degrees fahrenheit dewpoint, and an LCO 24-hour grace period was initiated on February 21. An unexpected upset in the circulator auxiliaries during the loss of outside electrical power surveillance test introduced some additional moisture and further increased the moisture indications. The reactor was manually scrammed on February 22, according to the Technical Specifications, because of being unable to meet the specified maximum dewpoint of 67 degrees fahrenheit. Power level was less than 2%.

- 6/4/82 On June 4, at 1925 hours, Loop 1 steam generator tripped due to high reactor building temperature in conjunction with spurious ultrasonic detector trips. The high building temperature was due to a trip of 1D reactor building chiller which in turn was caused by failure of an air compressor supplying control air in the chiller building. The redundant air compressor had been previously cleared for maintenance.
- Following the recovery of Loop 1 steam generator, and with reactor power at about 8%, an under-voltage relay on the reserve auxiliary transformer tripped due to an incorrect setpoint. This initiated 480 volt essential bus load shedding and power source switch to the diesel generators. The resulting momentary loss of bearing water supply caused three of the four circulators to trip. The reactor was manually scrammed.
- 7/13/82 Reactor power continued at the 70% level until 1734 hours. At that time, 1B circulator tripped spuriously from programmed low speed. Extensive investigation revealed no cause, so power was reduced to 30%, the circulator was put back in service, and generator output was increased back up to 215 MWe by 0700 hours on July 14.
- 7/15/82 1B bearing water supply pump tripped on overload. Since the backup bearing water was in service, the circulators continued to operate. 1C bearing water pump automatically started and plant load remained constant.
- 7/16/82 1B circulator again tripped spuriously from programmed low speed. This time the hot reheat temperature increased enough to cause a reactor scram. Investigation revealed a faulty chip in a relay driver which was replaced. The reactor was brought critical, and the turbine generator was subsequently synchronized at 1421 hours on July 17.
- 8/13/82 A faulty reheat temperature sensing element caused a brief reduction of power (approximately 4 minutes duration) to 60% power.

- 8/17/82 A faulty relay in the main steam pressure controller caused a turbine runback and a rod runback of the reactor to 50% power. The plant was brought back to 70% power manually and the relay was repaired.
- 8/27/82 1D helium circulator tripped due to a faulty speed signal to the circulator speed controller. Power was reduced to 30%, the malfunction was corrected, and 70% power operation resumed.
- 8/27/82 The turbine generator was tripped while repairing a master trip indicating light receptacle. The turbine generator was placed on line, and 70% power attained at approximately 0700 hours the following morning. This resulted in a brief reduction to 5% power followed by an increase to 30%, where reactor power remained for some time. It was then brought back to 70% after the turbine generator was placed on line at 0700 hours on August 28, 1982. The total time involved was approximately 8½ hours.

I. Inadvertent Radioactivity Releases and Significant Onsite Spills

There were no significant onsite spills during the evaluation period. There were, however, six inadvertent releases of radioactivity. No releases resulted in a release in excess of the Technical Specifications, nor did any excessive exposures to individuals occur.

The six inadvertent releases were:

- 2/2/82 An error in a valve lineup following a liquid waste release resulted in about 250 gallons being inadvertently released to the cooling tower blowdown lines from 1A liquid waste receiver. This 1A receiver had not been previously sampled for release. The subsequent analysis on the receiver revealed that the Technical Specification limit for liquid waste discharge had been exceeded, but that permissible concentrations offsite had not been exceeded.
- 3/6/82 An error in a valve lineup at the beginning of a gas waste release resulted in the rupture of a rupture disc on the gas waste vacuum tank. Although the gas was to be released, the contents of the vacuum tank was not sampled and the incident was considered as an unplanned release. It was determined that the release, which had been made, did not exceed minimum detectable activity.

- 4/3/82 Early on April 3 a continuous air monitor, in the reactor building, alarmed. An investigation revealed leaks from the bellows of the moisture monitor sample return valve in B-2 and B-4 penetrations. The tertiary covers, which had been removed for work on the moisture monitors, were replaced, and the tertiary space vented to the gas waste system. Subsequently, leaks were found in B-3 and B-5 penetrations resulting in four of the six low level moisture monitors being inoperable.
- 5/21 &
5/26/82 An unusual event (82-022) was reported on May 21 and again on May 26. Both of these events occurred during work on 1A gas waste compressor. Radioactive gas escaped from the compressor containment tank while it was open. The May 21 event was due to a valving error and resulted in three workers receiving minor contamination. A stack release also occurred, which contained 52 microcuries of Cs 138 and Rb 88, well below the MPC of $1E-6$ microcuries per milliliter. The maximum contamination in the reactor building, which had been evacuated, was $5.6E-7$ microcuries per milliliter.
- The release on May 26, 1982, resulted in evacuation of personnel from the reactor building and a release from the stack. Personnel were evacuated as a precautionary measure. Measurements from stack monitors indicated approximately $6.4E+3$ microcuries noble gas. MPC limits were not exceeded.
- 6/82 Some airborne activity above normal background was experienced in the reactor building for most of the month. This was fairly continuous at a low level which did not require limiting reactor building access. The leak was determined to be emanating from moisture monitor penetrations through the nitrogen pressurization system and thus to the reactor building. This was corrected by increasing the nitrogen pressure in the system.

ATTACHMENT A

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Licensee: Public Service Company of Colorado
Facility: Fort St. Vrain
Docket No.: 50-267
NRR Project Manager: George Kuzmycz
Performance Interval: September 1, 1981-August 31, 1982

I. Introduction

This report represents the results of an evaluation of the licensee, Public Service Company of Colorado, in the functional area of licensing activities. It is intended to provide NRR's input to the SALP review process as described in the NRC Manual, Chapter 0516. The review covers the period September 1, 1981 through August 31, 1982.

The basic approach used for this evaluation was to select a number of licensing issues which involved a significant amount of staff manpower and apply the evaluation criteria as specified in the NRC Manual Chapter 0516.

II. Summary of Results

NRC Manual Chapter 0516 specifies that each functional area evaluated will be assigned a performance category based on a composite of a number of attributes, the single final rating to be tempered with judgment as to the significance of the industrial elements.

Based on this approach, the performance of Public Service Company of Colorado in the functional area - Licensing Activities-is rated Category 1.

III. Criteria

Applicable evaluation criteria, as given in NRC Manual Chapter 0516 Appendix Table 1, were used for this evaluation.

IV. Performance Analysis

The licensee's performance evaluation is based on a consideration of seven attributes as given in the NRC Manual Chapter. For most of the licensing actions considered in this evaluation, only five of the attributes were considered applicable in the case of Licensing Activities. The composite rating, therefore, is heavily based on the following evaluation criteria:

1. Management involvement
2. Resolution of technical issues
3. Responsiveness to NRC
4. Staffing
5. Training

The evaluation was based on our review of the following licensing activities:

- Responses to NUREG-0737 items
- Appendix R activities
- Inservice inspection
- Degraded Grid Voltage
- Adequacy of Station Electric Distribution System Voltage
- ESF Reset
- Control of Heavy Loads
- Masonry Wall Design
- Station Blackout Procedures
- Contingency Plan
- Guard Training
- RETS
- Plant Hot Spots
- Graphite Corrosion and Surveillance
- Fluctuations

A. Management Involvement

The overall rating for this attribute is category 2. There is evidence of planning and assignment of priorities and decision making seems to be at a level that ensures management review. The rating might have been higher except that management involvement is segmented. One manager has overall responsibility in one area and the other managers are not kept as up to date as they may be on the other areas not their responsibility.

B. Approach to Resolution of Technical Issues From a Safety Standpoint

The overall rating for this attribute is category 1. PSC is in a unique position where they must interpret most of the technical issues of a generic nature for applicability to their unique plant, a gas-cooled reactor. The NRC has not provided separate requests for HTGRs since there is only one operating HTGR in the country.

C. Responsiveness to NRC

The overall rating for this attribute is category 1. PSC has been patient with NRC staff not familiar with HTGRs and FSV but are performing reviews on FSV. With each review item a certain amount of learning is involved along with reorientation of thinking from water reactors to gas reactors. PSC has patiently provided the pertinent information in terms of background and relevancy.

D. Staffing

The overall rating for this attribute is category 2 based on a limited basis for evaluation only. The turnover of personnel at PSC is small reflecting a satisfied cadre of employees. The number of PSC staff assigned to various positions is, however, on the just adequate side with all "fat" trimmed off. This is reflected by multiple positions being held by one person.

E. Training

During our review period, two sets of operator examinations were given at Fort St. Vrain. Overall, eleven out of twelve reactor operators and three out of six senior reactor operators passed the examination.

The overall rating for this attribute is category 2. A defined training program is implemented for a large portion of the staff. In many instances operators get hands on training. PSC installed a sophisticated computer system that keeps track of many plant parameters as well as Technical Specification limits. This computer system is very useful as a training tool for operators. The procedures for training are written in a concise manner.

V. Conclusions

Based on the evaluation of five attributes of Public Service Company of Colorado's performance for a number of significant activities in the functional area of licensing an overall performance of 1 - is determined. Specifically management attention and involvement with matters of safety is usually evident, resources are adequate although staffing in certain areas could be improved, and satisfactory performance is being achieved.

I would recommend that PSC be more assertive in their response and interaction with the NRC staff. The PSC licensing personnel should try to anticipate LWR type questions in generic letters, I&E bulletins and keep abreast of policy matters at the Commission, so that PSC may respond and present their point of view as the various NRC actions affect the operation of their FSV plant well in advance of official transmittal of material from NRC to PSC.