PDR 100184
ACRS-2210

CERTIFIED COPY
DATE ISSUED: August 8, 1984

MINUTES OF THE MAY 17, 1984 MEETING OF THE ACRS SUBCOMMITTEE ON FORT SAINT VRAIN NUCLEAR GENERATING STATION PLATTEVILLE, COLORADO

The ACRS Subcommittee on the Fort Saint Vrain Nuclear Generating Station met on May 17, 1984 at the plant site near Platteville, Colorado. The purpose of the meeting was to review the operating experience at Fort St. Vrain for the past two or three years. The Subcommittee heard presentations from the NRC Staff, Public Service Company of Colorado and their consultants. Notice of this meeting was published in the Federal Register on May 2, 1984 (Attachment A). A list of persons attending the meeting and signing the attendance sheet is attached (Attachment B). A copy of the schedule of discussion is attached (Attachment C). A list of printed material distributed to the ACRS members during the meeting is attached (Attachment D). Copies of these documents are on file in the ACRS office. The entire meeting was open to public attendance. No written statements were received from members of the public and no one requested an opportunity to make an oral statement. About four members of the public attended the meeting.

Opening Statement

Dr. Siess, Subcommittee Chairman, opened the meeting at 8:30 a.m., Thursday, May 17, 1984 with a statement regarding the conduct of the meeting in accordance with the Federal Advisory Committee Act and the Government in the Sunshine Act. Mr. J. C. McKinley was the Designated Federal Official for this meeting.

Introduction

Mr. Don Warembourg (PSC of C), Manager of Nuclear Production, introduced the various staff members and consultants that Public Service Company of Colorado (PSC of C) had brought in for this meeting. Mr. Oscar R. Lee, Vice President of Electrical Production welcomed the Subcommittee to the plant. He discussed the utility's view of the Systematic Appraisal of Licensee Performance (SALP) performed by the NRC. He objected to being presented with a report that was essentially final and being asked to comment when there was little likelihood of any changes being made in the report. He also thought that regionalization of the Fort St. Vrain project was good in that it provided the utility with one point of contact with the NRC but he noted that major licensing decisions still had to be made in Washington. Mr. Lee noted that PSC of C was making an economic viability analysis to determine if operation of Fort St. Vrain should continue. In response to a question from Mr. Ebersole, Mr. Lee stated that PSC of C does spend capital funds to improve plant reliability that are not required for public safety reasons.

Plant Description

Mr. Warembourg described the development of Fort St. Vrain from the three-party agreement in 1965. He showed a diagram of the plant site which encompasses over 2,000 acres, only 80 of which are utilized for the plant and the balance of which has been restored to farming or cattle grazing. He pointed out the locations of the 230-kv transmission lines that carry power to the Denver area. He described the plant and pointed out the prestressed concrete reactor vessel (PCRV), the fuel handling crane, the main turbine-generator, and other key features. He described the fuel and fuel management program as well as the helium circulation system. There are 37 control rod pairs that operate on a cable system that utilizes DC motors for withdrawal and normal run-in but depend on gravity for the scram function. The rods are designed to accommodate up to two inches of misalignment between the drive mechanism and the core penetration. In addition to the control rods there is a reserve shutdown system of boron carbide balls that can be dropped into the core independent of the rods and scram system.

Mr. Warembourg pointed out the location of the steam generators and helium circulators within the PCRV but below the reactor core. The design of the PCRV is such that each penetration has a double closure.

The design includes provisions for steam generator replacement but the plant staff expects that such replacement would be difficult and time consuming. The helium circulators are replaceable and have been individually replaced (rotated) several times, including one at this most recent refueling.

At Mr. Ebersole's request, Mr. Warembourg described how heat would be removed from the reactor core if all forced circulation was lost. First he described all of the energy sources available to drive the circulators. If all forced circulation is lost, decay heat can be removed by radiant heat transfer from the core to the PCRV liner which has its own cooling system. The accident analysis shows that the core temperature would peak at about 5400°F in 83 hours and then start to drop. The fuel would be damaged but the fission products would be expected to be contained in the PCRV. The plant has suffered losses of forced circulation of up to 15 minutes without any fuel damage. The plant has up to five hours to restore circulation before any core damage is expected to occur.

Fort St. Vrain generates steam at 2400 psi and 1000°F passes it through the high pressure turbine and circulator drives and then reheats it back to 1000°F and sends it to the intermediate and low pressure turbine sections. The water treatment for the steam generators produces feedwater with impurity levels measured in parts per billion.

In response to Mr. Ebersole's question, Mr. Warembourg stated that, as far as accident scenerios go, the plant is very forgiving regarding operator response but in terms of transient response it is heavily weighted toward shutdown and drops off the line with very minimal effort on the part of the operator. He went on to list many of the things that have shut the plant down. Problems with the helium circulation system resulted in the most lost time, about 11.73% of the total capacity factor. Refueling was second at 9.68% of the capacity factor. Interestingly, it is the complex control system on the helium circulators that gives the problem, the circulators themselves are not problem machines. He presented a chart which ranked the causes of plant outages and loss of capacity factor (see Figure 1).

Mr. Warembourg discussed the financial problems PSC of C has with the Colorado Public Utilities Commission (PUC) and the economic penalties levied against Fort St. Vrain for failing to meet the PUC's goals. An objective is to operate Fort St. Vrain at as high a power level as possible consistent with operational and regulatory conditions. Currently the plant is limited to 85% of full power because not all of the startup test program has been completed. The uncompleted portion is primarily transient tests and the utility is not anxious to take the unit up to 85% and then purposely trip the circulators. The current intent is to operate at 80-85% power since all required tests have been made for operation up to 85% power. To operate above 85%, additional transient testing will be required unless credit is given for a trip that was not part of the planned test series. There is little doubt that the plant will shut down as planned from 100% power without risk to the health and safety of the public but it may take two months to remove the moisture that enters the core during the transient. The same thing can happen with an operational trip from 85% but the operators don't want to deliberately do something that may take them two months to recover from.

In response to Mr. Ebersole, Mr. Warembourg described the feedwater control system which is unique in that it is unrelated to boiler level; in fact there is no boiler water level detector. Feedwater is controlled by reheat temperature and first stage turbine pressure.

Mr. Reed inquired about helium circulator overspeed potential. He was told that normal speed is 9,000 rpm with an overspeed trip at 10,000 rpm, the circulators have been tested to 13,000 or 14,000 rpm and destructive speed is calculated to be above 15,000 rpm. The utility has a program to periodically make detailed inspections of a circulator.

Mr. Warembourg discussed potential future problems with plant equipment. These are problems that have occurred or been identified and are presently under control but which could worsen with continued operation. They include: steam generator interspace leakage, core support floor cooling tube/liner leakage, service water/heat exchanger cooling capabilities, tendon corrosion, fuel element integrity, and PGX graphite performance. Mr. Warembourg also identified a number of potential problems with regulatory requirements, such as; a plant simulator, emergency response, fitness for duty, college degrees for shift supervisors, Appendix R, and equipment qualification. The Fort St. Vrain management continues to oppose the degree requirement for shift supervisors. They argue that such a requirement will result in a much higher rate of turnover at the shift supervisor position and would provide no additional benefits. Dr. Remick characterized the problem as being something new and inconsistent with traditional utility personnel structure. Mr. Warembourg said that Fort St. Vrain had not had much success with degreed persons being interested in the Shift Supervisor's job. He further commented that he believed the current staff has equivalent education.

It was noted that Fort St. Vrain continues to have administrative and material difficulties because it is first-of-a-kind, only-one of-its-kind, HTGR in a water reactor industry.

Fuel Performance

Mr. Fuller described the refueling just completed. There were a few minor problems with the refueling machine but overall the refueling went well. No damaged or degraded fuel elements were detected this time. There was no evidence of oxidation or mechanical interaction. No cracks were found in fuel removed during this, the third, refueling.

Two cracked fuel blocks were observed at the second refueling and these were extensively examined at both GA and Los Alamos. The cracks were in the fuel block and did not extend into the fuel rods and did not violate the integrity of the fuel particles. The cracks are believed to have resulted from temperature and power/fluence gradients across the fuel elements. The utility concluded that the cracks were essentially of no consequence to the safe operation of the reactor. Dr. Siess noted, to put things in perspective, that water reactors operate with defects in the fuel rods.

Mr. Ireland reported that the NRC study of the fuel block cracks is not quite complete. Los Alamos National Laboratory (LANL) is analyzing the cracks to determine their cause and potential effects. Preliminary conclusions are that there are no safety consequences.

Mr. Ireland also noted that regionalization of this project has worked quite well and that NRC headquarters had been very cooperative in arranging LANL support on the fuel block crack issue. He concluded that a project such as Fort St. Vrain can be managed equally well from the field or from headquarters.

Prestressed Concrete Reactor Vessel Performance

Dr. Siess suggested that this topic be very abbreviated since the recently discovered tendon wire failures are currently being investigated and a report will be submitted later. The failed wires were discovered by observing that the button head on the end of the wire was no longer seated against the anchor. This was part of the inservice inspection program and the first time after installation that the button heads were examined. All of the failed wires failed near the top within inches of the upper anchor assembly. These tendons are unique in that they are coated with a protective grease rather than having the grease pumped into and completely filling the conduit. In this case, it appears the protective grease was removed from the upper portion of the wire by some mechanism. The PCRV was completed before it was completely enclosed. Moisture may have entered the tendon anchors as a result of exposure to the weather. The utility has a vigorous program in its engineering department to determine the cause and nature of the corrosion that has led to these failed wires. Surveillance of the tendons will be increased to assure that any additional failures are promptly detected. Currently the prestressing system has sufficient redundancy to accommodate the known failures and there is no public safety concern.

Mr. McBride also reported on the problem with two of the liner cooling tubes that leaked water. An epoxy was pumped into the tube to go through the leak and into the concrete to seal off the leak. The remaining epoxy was removed from the tube and its cooling function was restored.

Moisture Ingress Problems

Public Service Company of Colorado formed a moisture ingress committee in early 1983 to identify short-term fixes in terms of equipment modifications and long term fixes. The moisture comes from the circulator bearing water system (System 21). One problem in evaluating the system was the lack of recorded parametric data. One action is to obtain more data on transient performance, another was to define operator actions to prevent or mitigate moisture ingress.

In addition, a plant transient committee was set up to review transients and make recommendations of actions that would prevent or mitigate future occurrences.

There ar accumulators in the bearing water system to provide water when the balance of the system fails. The actuation of these high pressure accumulators almost inevitably caused water to go up the circulator shafts, past the seals, and into the reactor. It doesn't appear that much can be done with this system to prevent water ingress.

The utility and GA are looking at the possibility of relaxing the moisture limits for various operating conditions. Operation at higher temperatures might facilitate more rapid moisture removal or at least permit some power generation while moisture is being removed.

Mr. Warembourg described some system modifications that may make the bearing water system more reliable and less likely to inject moisture into the reactor. These modifications are planned for the next refueling outage.

TMI Issues

Mr. Fuller described the problems the utility has had in developing emergency procedures and guidelines that would be acceptable to the NRC. At one time the procedures were being reviewed by Oak Ridge National Laboratory (ORNL) but that was terminated and now the utility doesn't know who is working on it for the NRC. The NRC has not yet decided if the plans are acceptable.

The utility believes the requirement for a noble gas monitor capable of measuring up to 10^5 microcuries per cc is totally inapplicable to Fort St. Vrain since the design basis accident only produces up to 10^{-2} microcuries per cc. An Oak Ridge study suggests a capability of 10^3 microcuries per cc but Mr. Fuller didn't know what the utility would use the monitor for, since Fort St. Vrain doesn't have a containment. There is also a requirement for a 10^8 rad per hour monitor in containment which appears inappropriate for Fort St. Vrain. The utility has provided a monitor that can read up to 10^4 rad per hour and it appears that this may be accepted by the NRC Staff.

Mr. Niehoff discussed the Safety Parameter Display System (SPDS), control room design review, and post accident monitoring instrumentation. The SPDS is due to go into service by the end of the next refueling. The control room review is scheduled to be completed by the next refueling. With regard to post accident monitoring instrumentation, the utility is essentially having to write a new Table 3 for Reg. Guide 1.97 to establish the requirements for HTGRs (Mr. Wagner of the NRC agreed).

Fire Protection (10 CFR 50 Appendix R)

Mr. Reesy reviewed the history of the fire protection efforts at Fort St. Vrain since about 1975. He touched on the cable separation issue and the use of Flamastic coatings to protect exposed cable. He touched on the Halon and water deluge systems installed in the "three-room" complex of the plant. Appendix R is designed for water reactors and uses the terms "hot shutdown" and "cold shutdown" which have to be interpreted differently for HTGRs.

Mr. Wagner (NRC) pointed out that the utility proceeded to meet the intent of the regulations as expressed in Appendix R whereas they were expected to meet the letter of the regulation which was the first big misunderstanding. In addition, requirement 3.L of Appendix R is written prescriptively for water reactors and the NRC Staff has to develop counterpart requirements for Fort St. Vrain. Currently it appears that the NRC will give considerable credit for the Alternate Cooling Mode and accept the proposed fire protection system.

Dr. Kerr took exception to the concept of meeting the letter of the regulation rather than the intent. He did not believe the regulations were an end in themselves but were a guide to accomplish something. The responsibility of the NRC is to make reactors safe; not to abide by interpretations made by some legal staff. Mr. Ebersole agreed.

Occuptional Radiation Exposure

Mr. Borst (PSC of C) compared the operational radiation exposure at Fort St. Vrain with that at PWRs and BWRs between 1977 and 1981. In that interval, the exposure at BWRs ranged between 600 and 1100 man rems per reactor year, at PWRs it ranged between 450 and 600 man rems per reactor year, and at Fort St. Vrain it was between 1-1/2 and 6 man rems per reactor year. In 1982 the exposure at Fort St. Vrain was 0.44 man rem, in 1983 it was 0.95 man rem and thus far in 1984 it is about 0.67 man rem. A similar comparison was made in terms of exposure per megawatt year. In the five year period studied, the exposure at Fort St. Vrain was 28 times less than in the water-cooled plants. The highest individual exposure was to a health physics technician which resulted from instrument calibration to meet NRC requirements.

Emergency Preparedness

Mr. Fuller (PSC of C) stated that emergency plans are developed, in place, and have been tested with state and local participation. This plant has a five-mile emergency planning zone compared to the ten-mile zone required for water-cooled reactors. The plant's emergency facilities are operational and have been used for exercises. Fort St. Vrain does not utilize sirens or whistles. Public Service Company of Colorado purchased tone alert radios for all households and businesses within the five mile emergency planning zone. There are about 1100 radios to serve about 5000 people. The system is tested once a week.

The utility has made dose calculations for its worst case accident using "realistic' assumptions and the best estimate peak dose rate at the exclusion area boundary is 5 mr per hr. This raised the philosophical question of whether decisions with regard to moving people, evacuating schools. sheltering children, etc. should be based on ultra-conservative FSAR accident analyses or on a true best estimate?

The plant is able to augment its staff within 90 minutes. An unannounced off-hours drill will be held this year to demonstrate that capability.

The utility is currently preparing a submittal to eliminate the "General Emergency" category from it emergency plan since it does nothing different than for a site emergency. The utility plans to submit that proposal by the end of June 1984.

Closing Remarks

Dr. Siess pointed out that this meeting was not related to any licensing action but simply to an updating of information. He recognized that Fort St. Vrain is unique and expressed satisfaction with the way things were going relative to public safety. He recognized that there are still problems but few that relate to safety.

The meeting was adjourned at 2:45 p.m. to be followed by a plant tour.

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NOTE: A complete transcript of the meeting is on file at the NRC Public Document Room at 1717 H St. NW., Washington, D.C. or can be obtained from Free State Reporting Inc. Court Reporting Depositions D.C. Area 261-1902 Balt. & Annap. 269-6236

Committee Management Officer, National Endowment for the Humanities, Washington, D.C. 20506, or call (202) 786-0322.

Stephen J. McCleary,

Advisory Committee Management Officer.

[FR Doc. 84-11556 Filed 4-27-84; 8:45 am]

BILLING CODE 7536-01-M

NATIONAL SCIENCE FOUNDATION

Advisory Panel for Developmental Biology; Meeting

In accordance with the Federal Advisory Committee Act, as amended, Pub. L. 92-463, the National Science Foundation announces the following meeting:

Name: Advisory Panel for Developmental Biology.

Date and Time: May 17, 18, 19, 1984, starting at 9:00 a.m. to 5:00 p.m.

Place: Room 338, National Science Foundation, 1800 G Street, NW, Washington, D.C. 20550.

Type of meeting: Closed.

Contact Person: Dr. Clifton A. Poodry, Program Director, Developmental Biology Program, Room 332-H, National Science Foundation, Washington, D.C., 20550, telephone 202/357-7989.

Purpose of advisory panel: To provide advice and recommendations concerning support of research in developmental biology.

Agenda: To review and evaluate research proposals as part of the selection process for awards.

Reason for closing: The proposals being reviewed include information of a proprietary or confidential nature, including technical information; financial data, such as salaries; and personal information concerning individuals associated with the proposals. These matters are within exemptions (4) and (6) of U.S.C. 552(c), Government in the Sunshine Act.

Authority to close meeting: This determination was made by the Committee Management Officer pursuant to provisions of Section 10(d) of Pub. L. 92-463. The Committee Management Officer was delegated the authority to make determinations by the Director, NSF, July 6, 1979.

Dated: April 25, 1984.

M. Rebecca Winkler,

Committee Management Coordinator.

[FR Doc. 84-11580 Filed 4-27-84; 8:45 am]

BILLING CODE 7555-01-M

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards, Subcommittee on Fort St. Vrain; Meeting

The ACRS Subcommittee on Fort St. Vrain will hold a meeting on May 17, 1984, Vistors Center, at the Public Service Company of Colorado, 16805 WCR 19½, Platteville, CO. The Subcommittee will review plant operating experience including the performance of major plant components, research support, and licensee performance.

In accordance with the procedures outlined in the Federal Register on September 26, 1983 (48 FR 44291), oral or written statements may be presented by members of the public, recordings will be permitted only during those portions of the meeting when a transcript is being kept, and questions may be asked only by members of the Subcommittee, its consultants, and Staff. Persons desiring to make oral statements should notify the Cognizant Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

The entire meeting will be open to public attendance.

The agenda for subject meeting shall be as follows:

Thursday, May 17, 1984—8:30 a.m. Until the Conclusion of Business

During the initial portion of the meeting, the Subcommittee, along with any of its consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the Public Service of Colorado, NRC Staff, their consultants, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the Cognizant Designated Federal Employee, Mr. John C. McKinley (telephone 202/634-1413) between 8:15 a.m. and 5:00 p.m., EST.

Dated: April 24, 1984.

John C. Hoyle,

Advisory Committee Management Officer.

[FR Doc. 84-11614 Filed 4-27-84; 8:45 am]

BILLING CODE 7590-01-M

Advisory Committee on Reactor Safeguards, Subcommittee on Metal Components; Meeting

The ACRS Subcommittee on Metal Components will hold a meeting on May 17 and 18, 1984, Room 1046, 1717 H Street, NW, Washington, DC.

In accordance with the procedures outlined in the Federal Register on September 28, 1983 (48 FR 44291), oral or written statements may be presented by members of the public, recordings will be permitted only during those portions of the meeting when a transcript is being kept, and questions may be asked only by members of the Subcommittee and its Staff. Persons desiring to make oral statements should notify the cognizant Designated Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

The entire meeting will be open to public attendance except for those sessions which will be closed to protect proprietary information (Sunshine Act Exemption 4). One or more closed sessions may be necessary to discuss such information. The the extent practicable, these closed sessions will be held so as to minimize inconvenience to members of the public in attendance.

The agenda for subject meeting shall be as follows:

Thursday, May 17, 1984—8:30 a.m. Until the Conclusion of Business

Friday, May 18, 1984—8:30 a.m. Until the Conclusion of Business

The Subcommittee will discuss reactor coolant water chemistry and its effects on material behavior, review the status of pressurized thermal shock, BWR pipe cracking matters and NRR/RES programs in these areas.

During the initial portion of the meeting, the Subcomittee, along with any of its consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the NRC Staff, its consultants, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the cognizant Designated Federal Employee, Mr. Elpidio Igne (telephone 202/634-1414) between 8:15 a.m. and 5:00 p.m., EST.

I have determined, in accordance with Subsection 10(d) of the Federal Advisory Committee Act, that it may be

ATTACHMENT A

J. C. MCKINLEY

ATTACHMENT B

SUBCOMMITTEE MEETING: FORT ST. VRAIN

LOCATION: VISITORS CENTER, PUBLIC SERVICE CO. OF COLORADO, 16805 WCR 19-1/2
PLATTEVILLE, COLORADO

ATTENDANCE LIST

PLEASE PRINT

NAME	AFFILIATION
C. P. SIESS	CHAIRMAN, ACRS SUBCOMMITTEE
J. EBERSOLE	ACRS
W. KERR	"
G. REED	"
F. REMICK	"
M. CARBON	"
S. SETH	ACRS FELLOW
J McKINLEY	ACRS STAFF
G.L. Plumlee, III	NRC Senior Resident Inspector FSV
P.C. Wagner	NRC Senior Project Manager
[illegible]	Weld County Office of Emerg Mgt.
L. Milton McBride	Station Manager Fort Saint Vrain
FRED GILLIES	DENVER POST
[illegible]	[illegible]
Richard E. IRELAND	NRC/Region IV
CHARLES A. ANDERSON	LOS ALAMOS NATIONAL LABORATORY
[illegible]	PSCo
[illegible]	Chief [illegible] B#3 NRR, DL
[illegible]	Los Alamos National Laboratory
[illegible]	Public Service Co. of Colorado
[illegible]	" " " "
MICHAEL H. HOLMES	" " " "
[illegible]	Greeley Tribune
[illegible] P. [illegible]	Public Service Co of Colo

J. C. MCKINLEY

COMMITTEE MEETING: FORT ST. VRAIN

LOCATION: VISITORS CENTER, PUBLIC SERVICE CO. OF COLORADO, 16805 WCR 19-1/2
PLATTEVILLE, COLORADO

ATTENDANCE LIST

PLEASE PRINT

NAME	AFFILIATION
Michael E. Niehoff	Public Service Co of Colorado
Charles H. Fuller	PSC of Colorado
Frederick J. Borst	PSC of Colorado
Don Vowel	GA Technologies
David Hoverstein	GA Technologies
H. L. Brey	Public Service Co. of Colorado
[illegible]	" " " "
Hai Warembourg	" " " "
Jaye [illegible]	Longmont Daily Times Call
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ATTACHMENT C

FORT ST. VRAIN SUBCOMMITTEE
TENTATIVE SCHEDULE
MAY 17, 1984

8:30 a.m.	I.	Opening Statement by Dr. Siess	10 min.
8:40 a.m.	II.	Introductory Remarks by Public Service Co. of Colorado (PSC of C) including comments on NRC Regionalization	10 min.
8:50 a.m.	III.	Brief Description of Ft. St. Vrain (FSV) (PSC of C)	25 min.
9:15 a.m.	IV.	Current Status of the plant and future plans (PSC of C)	15 min.
9:30 a.m.	V.	Fuel Performance	
		A. Fuel handling experience during the third refueling. Preliminary comments on observed fuel condition (PSC of C)	10 min.
		B. Results of examination of two cracked fuel blocks removed during the second refueling (PSC of C/GA)	15 min.
		C. NRC Evaluation of the significance of the cracks found in two fuel blocks removed during the second refueling (NRC/LANL)	15 min.
10:10 a.m.	VI.	Prestressed Concrete Reactor Vessel (PCRV) Performance	
		A. PCRV liner cooling system leakage and repair (PSC of C)	10 min.
		B. PCRV tendon surveillance and wire failure detection and significance (PSC of C)	15 min.
		C. Safety significance of tendon wire failures (NRC Region IV)	10 min.
10:45 a.m.		****** BREAK ******	
11:00 a.m.	VII.	NRC Region IV Comments on the Regionalization of this Project	15 min.
11:15 a.m.	VIII.	Water Ingress/buffer seal - behavior, control, and moisture removal (PSC of C)	30 min.
11:45 a.m.	IX.	A. Applicability of TMI items to FSV and the status of the more difficult ones such as the Safety Parameter Display System, plant simulator, etc. (PSC of C)	20 min.
		B. NRC Evaluation (NRC)	10 min.

12:15 p.m.		****** LUNCH ******	
12:45 p.m.	X.	Steam Generator Performance 1. Steam leaks & corrective action (attention given by operator to condensate/ feedwater quality) 2. Helium leaks & corrective action	15 min. 10 min.
1:10 p.m.	XI.	Fire Protection (Appendix R) A. Utility actions and status (PSC of C) B. NRC Evaluation of compliance (NRC)	15 min. 5 min.
1:30 p.m.	XII.	Occupational Radiation Exposure Experience	10 min.
1:40 p.m.	XIII.	Status of Emergency Plans, Facilities and Exercises	15 min.
1:55 p.m.	XIV.	Systematic Appraisal of Licensee Performance (SALP) A. NRC Summary of SALP results (NRC) B. Utility Response to SALP (PSC of C)	 15 min. 15 min.
2:25 p.m.	XV.	Other significant aspects of operation	35 min.
3:00 p.m.	XVI.	Closing Remarks	
3:30 p.m.		Commence Plant Tour (including Control Room Mock-up & Emergency Operations spaces)	
5:00 p.m.		Complete Plant Tour	

DOMINANT CONTRIBUTORS TO FORT ST. VRAIN LOST OUTPUT

CATEGORY	EQUIVALENT FULL POWER HOURS LOST						CF LOSS % TOTAL
	1979	1980	1981	1982	1983	TOTAL	
Helium Circ System	692.6	2,827.1	710.8	152.8	756.2	5,139.5	11.73
Refueling	2,927.9	-----	1,312.9	-----	-----	4,240.8	9.68
Feedwater System	1,265.5	1,095.4	275.4	61.7	1,212.7	3,910.7	8.92
Helium Loop Split	-----	-----	1,267.4	2,328.0	-----	3,595.4	8.20
Moisture Unknown	-----	324.1	139.3	-----	3,012.1	3,475.4	7.93
70% Power Limit	73.4	355.8	766.2	981.8	290.4	2,467.6	5.63
Plant Protect Sys	35.5	108.8	152.3	1,458.6	81.8	1,837.0	4.19
Turbine/Generator	387.3	154.9	668.9	420.2	98.8	1,730.1	3.95
Rtr Bldg/Seismic	759.9	825.4	-----	18.5	-----	1,603.8	3.66
Region Constraints	1,461.2	-----	-----	-----	-----	1,461.2	3.33
Misc Systems	15.5	698.7	58.8	299.8	43.6	1,116.4	2.55
Electrical System	108.9	72.0	47.0	24.0	630.6	882.5	2.01
PCRV Penetrations	-----	0.0	717.6	120.0	-----	837.6	1.91
Steam Generators	-----	107.7	-----	684.3	25.8	817.8	1.87
Main Steam System	230.2	2.0	78.8	4.0	304.6	619.6	1.41
Control Rod Drives	3.0	-----	-----	342.3	-----	345.3	0.79
Operator Training	56.0	56.0	72.0	48.0	-----	232.0	0.53
Testing	56.4	91.4	62.4	-----	-----	210.2	0.48
Fires	-----	-----	130.5	-----	-----	130.5	0.30
Grid/System Demand	-----	17.2	12.0	30.5	-----	59.7	0.14
TOTAL	8,073.3	6,736.5	6,472.3	6,974.5	6,456.6	34,713.1	79.21
UNIT OUTAGE HOURS	7,112.5	4,072.9	4,545.0	5,493.8	4,131.1	25,331.3	----

$$\text{CF Loss \%} = \frac{\text{Total Equivalent Full Power Hours Lost}}{(4 \times 8{,}760) + 8{,}784}$$

FIGURE 1