Public Service

Public Service
Company of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

May 3, 1985
Fort St. Vrain
Unit No. 1
P-85152

Regional Administrator
Attn: Mr. E. H. Johnson
Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Docket No. 50-267

SUBJECT: FOSAVEX-85 Scenario Package

REFERENCE: Letter, Gahm to Johnson, dated 04/01/85 (P-85114)

Dear Mr. Johnson:

Attached please find the detailed scenario package for the 1985 Fort St. Vrain Radiological Emergency Exercise (FOSAVEX-85). This is being submitted according to the schedule set forth in G-84049 (Collins to Lee, dated February 9, 1984).

The exercise is to be full-scale, with participation by the licensee and state and local governments. The scenario involves a radiological release which will be of such a magnitude that a General Emergency is declared. Please note, however that primary coolant inventories have been increased by several orders of magnitude to attain such a release, and that no such release can feasibly occur with the actual primary coolant activity available in the Fort St. Vrain primary coolant system.

The scenario is described in the following attachments to this letter:

Scope and Objectives	Attachment A
Conduct of the Exercise	Attachment B
Narrative Summary and Sequence of Events	Attachment C
Observer/Prompter Packages	Attachment D

H005 1/1
RETURN ORIGINAL
TO RIV

85-285

If you have any comments or questions regarding this submittal, please contact Mr. Frank Novachek of my staff at (303) 785-2223, extension 201 as soon as possible.

Sincerely,

J. W. Gahm by

J. W. Gahm
Manager, Nuclear Production
Fort St. Vrain Nuclear
Generating Station

JWG:SMS/dr

Attachments

Attachment A

SCOPE AND OBJECTIVES

FORT ST. VRAIN

FOSAVEX-85

PURPOSE:

The purpose of FOSAVEX-85 is to test the Radiological Emergency Response Plan and Implementing Procedures as tools for use by Public Service Company of Colorado personnel when responding to a radiological emergency at Fort St. Vrain. A concurrent purpose is to test the offsite response of state and local agencies in the event of such an occurrence at Fort St. Vrain.

DATE:

FOSAVEX-85 has been scheduled as a one-day exercise to be initiated at or after 1800 hours on June 18, 1985.

SCOPE:

1. The exercise will be an unannounced off-hours emergency exercise, with participation by the licensee and state and local authorities.

2. The scenario begins as a non-radiological initiating event which will require activation of the emergency organization. A second event, involving the release of radioactive material, occurs and increases in severity to a "GENERAL EMERGENCY". Actual meteorological conditions will be used for simulated radiological assessment during the exercise.

3. All Emergency Response Facilities will be activated by the licensee and state and local authorities.

4. Personnel not participating in the exercise shall report to normal work locations and shall perform normal duties.

OBJECTIVES:

1. Demonstrate that response center personnel can be alerted and notified during non-working hours to man the emergency response centers.

2. Demonstrate, by use of the new notification fanout, the emergency response facilities can be manned and operational in a timely fashion.

3. Demonstrate that direction and supervision at the response centers is sufficient to ensure that overall facility response is adequate and that each facility runs smoothly. Demonstrate that Directors keep their staffs informed of the emergency classification and plant status.

4. Demonstrate that personnel accountability of those personnel on-site at the onset of the exercise can be accurately determined in a timely fashion.

5. Demonstrate that the incident assessment staff can perform the assigned tasks related to assessment and that timely decisions and appropriate response can be made concerning the incident category.

6. Demonstrate that the telecommunications system can be manned and operated in a timely manner and that the system is adequate to handle anticipated traffic during site emergency conditions.

7. Demonstrate that emergency monitoring teams and damage control teams, if needed, can be assembled and dispatched from the Personnel Control Center in a timely manner and can adequately perform assigned functions at their appointed destinations. Demonstrate also that the teams are adequately briefed of applicable plant conditions and protective clothing, dosimetry and respiratory protection requirements prior to being dispatched from the Personnel Control Center.

8. Demonstrate that plant operations and support personnel respond to the emergency situation utilizing emergency procedures to mitigate the consequences of the incident.

9. Demonstrate the capability of emergency personnel to follow and use emergency procedures, checklists, and data sheets.

10. Demonstrate the use of status boards to keep response personnel informed of the status of the event and to provide a basis for data transmission to the response centers.

Attachment B

CONDUCT OF THE EXERCISE

FOSAVEX-85

CONDUCT OF THE EXERCISE

1. Activity released and doses received are designed to be significant enough to escalate the event to a General Emergency. The release is not intended to be realistic in terms of actual available inventory.

2. Actual meteorological conditions will be utilized.

   a. Field monitoring teams will be provided with pre-determined field measurement data (via prompter cards). The field monitoring teams will be dispatched to track the plume. In the event that the meteorological stability category would preclude a plume from being detected (from a radiological standpoint), the field monitoring teams will continue to use the pre-determined data to demonstrate plume tracking capability.

   b. Depending upon the meteorological conditions during the exercise, the Personnel Control Center may have to be relocated. If this becomes necessary, in the judgement of the Technical Support Center Director, the Personnel Control Center will be moved only once to the other onsite location, for purposes of demonstrating the capability.

3. An extra crew of shift operating personnel will be used as the operating crew for the exercise. The regularly scheduled operating crew will perform their normal functions for the plant conditions at the time.

4. There will be no effort made to involve personnel arriving for normal work schedule, should the exercise still be underway when the Graveyard Shift begins (2300 hours). These personnel will be processed routinely through the Search and Identification facility.

5. Certain operator actions may have to be pre-empted in order to prevent the premature termination of the exercise.

6. The Early Warning Alert (EWA) system will be activated during the drill.

7. Personnel involved in control rod drive refurbishment activities, other than those directly involved in the emergency organization, shall continue uninterrupted with their work. Accountability of these individuals will be established.

8. During the loss of outside electric power to be simulated during the exercise, equipment and systems that would be affected will not be used. With regard to computer systems, the IBM controllers will be out of service. The Data Acquisition System (Data Logger) will be assumed to still be available due to the modification currently being installed to provide noninterruptible power to the system.

Attachment C

NARRATIVE SUMMARY
AND
SEQUENCE OF EVENTS

FOSAVEX-85

NARRATIVE SUMMARY

With the reactor operating at a steady power rate of 65% on the evening of Tuesday, June 18, 1985, an earthquake is experienced. The Control Room operators are informed that the earthquake had a horizontal acceleration of 0.07g, corresponding to an ALERT classification.

Notifications are made, and personnel report to their emergency stations.

45 minutes after the earthquake, a strong tremor occurs, and certain plant equipment is damaged. Included are a condenser rupture and a collapse of three cells on the main cooling tower. Loop 2 feedwater is shutdown, and the Reactor scrams. Simultaneously with the aftershock, a loss of all outside electric power occurs. The emergency diesel generators pick up loads as programmed.

A pinhole leak begins forming in the reheat section of the steam generator.

One hour into the exercise, the turbine-driven boiler feedpumps experience high vibration and low flow and are tripped. Condensate is supplied to the Loop 1 EES section of the steam generator to supply core cooling capability. A and B circulators will be run on condensate.

One hour and fifteen minutes into the event the reheater leak increases in magnitude so that it is detectable.

While attempting to isolate the reheater, it is found that three valves have failed, and the release is exiting the building via an electromatic relief valve. As the release is nonisolable, a SITE AREA EMERGENCY is declared. Depressurization of the PCRV through the helium purification system is initiated.

As dose assessments are performed, it is concluded that a GENERAL EMERGENCY should be declared due to dose rates at the Exclusion Area Boundary.

Meanwhile, an Equipment Operator slips on spilled wet and oily resin. He suffers a compound fractured leg and is contaminated. The Medical Emergency Plan is put into effect.

Two hours into the event, outside power is returned.

Dose assessment calculations continue and dose rates decrease due to the PCRV being depressurized. Approximately four hours after the release became detectable, the PCRV is depressurized.

FOSAVEX-85

SEQUENCE OF EVENTS

00:00	Initial Conditions: Reactor steady at 65% power level. B Boiler Feed pump out on a clearance.
00:00	0.07g earthquake occurs. There are no onsite or offsite consequences. An ALERT level emergency is declared. Notifications are made, and personnel begin reporting to the emergency response centers. Operators begin walkdown of the plant in accordance with emergency procedures.
00:45	An aftershock occurs, and causes considerable onsite damage, including: 1) A condenser rupture. This causes a loss of vacuum and an automatic reactor scram. 2) Loss of outside power. Emergency Diesel Generators pick up loads as expected. 3) Feedwater Loop 2 shutdown.
01:15	Reheat monitors show an increase indicating a primary coolant leak through the Loop 1 reheater section of the steam generator. A SITE AREA EMERGENCY is declared due to the nonisolable leak.
01:30	Reactor Equipment Operator reports via the plant paging system that he has suffered a compound fracture of his leg and is contaminated. Weld County and St. Luke's Hospital are notified.
01:45 (approx)	Dose assessment is complete. Emergency classification is determined to remain at a SITE AREA EMERGENCY.
02:00	Outside power is restored.
02:15 (approx)	Dose assessment performed again. Emergency has now increased in magnitude to a GENERAL EMERGENCY.

TIME AFTER START OF DRILL	EVENT
02:45 (approx)	Dose assessment results still indicate a GENERAL EMERGENCY.
03:15	Dose assessment results show a decrease in the magnitude of the emergency. A SITE AREA EMERGENCY is declared.
05:30	After depressurization is complete; release is terminated; de-escalation of the classification of the event from a SITE AREA EMERGENCY to NONE occurs.
NOTE:	After 03:00, other events may occur onsite to drill the operating shift. These are not intended to affect the emergency classification, or require offsite response, except for communications response.

TIME	LEAK THROUGH VALVE, CC/SEC	CIRCULATING ACTIVITY, CI	CI/SEC, NG	CI/SEC, I	R/HR WB	R/HR THYROID	CLASS
1:00	4041.4	4.13E+03	2.53E-01	7.71E-04	5.59E-02	2.73E-01	Site Area Emergency
1:15	8815.6	3.84E+03	5.52E-01	1.68E-03	1.22E-01	5.95E-01	"
1:30	23040.5	3.54E+03	1.44E+00	4.40E-03	3.17E-01	1.55E+00	"
1:45	46415.2	3.22E+03	2.91E+00	6.85E-03	5.47E-01	3.13E+00	"
2:00	78436.8	2.86E+03	4.91E+00	1.50E-02	1.09E+00	5.29E+00	General Emergency
2:15	77080.8	2.45E+03	4.83E+00	1.47E-02	1.07E+00	5.23E+00	"
2:30	75420.1	2.11E+03	4.72E+00	1.44E-02	1.04E+00	5.07E+00	"
2:45	73430.5	1.82E+03	4.59E+00	1.40E-02	1.02E+00	4.95E+00	"
3:00	71082.4	1.57E+03	4.45E+00	1.35E-02	9.84E-01	4.80E+00	Site Area Emergency
3:15	68339.0	1.35E+03	4.28E+00	1.31E-02	9.46E-01	4.62E+00	"
3:30	65154.5	1.17E+03	4.08E+00	1.24E-02	9.02E-01	4.40E+00	"
3:45	61470.9	1.02E+03	3.85E+00	1.17E-02	8.51E-01	4.15E+00	"
4:00	57213.8	8.93E+02	3.58E+00	1.09E-02	7.92E-01	3.87E+00	"
4:15	52283.5	7.84E+02	3.27E+00	1.00E-02	7.24E-01	3.54E+00	"
4:30	46541.0	6.92E+02	2.91E+00	8.90E-03	6.44E-01	3.15E+00	"
4:45	39775.9	6.15E+02	2.49E+00	7.61E-03	5.51E-01	2.69E+00	"
5:00	31627.0	5.50E+02	1.98E+00	6.05E-03	4.38E-01	2.14E+00	"
5:15	21281.2	4.96E+02	1.33E+00	4.08E-03	2.95E-01	1.44E+00	"
5:30	1781.0	4.52E+02	1.12E-01	3.41E-04	2.47E-02	1.21E-01	"

NOTES: RIS-9301 indicates 6.1×10^{9} cpm throughout exercise.
Plateout inventory = 400 curies I-131 Equivalent.
For the above calculations $^{X}/_{q} = 2.947 \times 10^{-4}$ sec/m^3
(Class = E, Windspeed = 3 mph).
The above dose rates are at the Exclusion Area Boundary.

ATTACHMENT D

OBSERVER/PROMPTER PACKAGES

Control Room Package

A. Initial conditions summarized on the attached Shift turnover sheets.

In general:

1) Reactor steady at 65% power.

2) Steady state control systems in remote auto

3) 1 B Boiler Feed Pump is out on a clearance

4) Auxiliary Boiler is in service according to Technical Specification requirements

SHIFT SUPERVISORS SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1	Shift Supervisors Narrative Log	[ ]
1.2	Night Order Book	[ ]
1.3	Primary Coolant Moisture Data	[ ]
1.4	RWP's Outstanding	[ ]
1.5	Health Physics Status Report	[ ]
1.6	Water Chemistry Status Report	[ ]
1.7	Consumables Inventory Report	[ ]
1.8	Reportable Events	[ ]
1.9	A.N.I. Reports	[ ]
1.10	Snubber Impairment Log	[ ]

2.0 PLANT STATUS LOG

Date 6/18/85 Time 1500 Operator I. Operate Sr.

Reactor Power 65 % Electric Load 220 MW

PCRV Pressure 635 psia Average Core Outlet 1380 °F

Total Helium Flow 68 % Circ. Inlet Temp. 640 °F

Main Steam 1000 °F Hot Reheat Steam 1000 °F

Primary Coolant Oxidants CO 0 ppm, CO_2 0 ppm, H_2O 0 ppm

increasing _____ decreasing _____ steady ✓

Analytical Moisture Monitors in Service

9305 (9306) (9307) None

Region Outlet Temperature Alarms on Data Logger

(None) _____ _____ _____ _____ _____ _____ _____ _____
(Circle "None" or list region and status, e.g. 24/300)

System 46 Pumps (A) B (C) D

System 47 Pumps (A) B

Waste Releases In Progress

R/A Liquid YES (NO) #_____

R/A Gas YES (NO) #_____

Reactor Sump > 10 gpm YES (NO)

Comments: None

_____

_____

_____

He Purification Trains

In Service		Standby		Regeneration			
(A)	B	A	(B)	Regen Dryer	A LTA Dryer	B LTA Dryer	(None)

H_2 Getters

In Service		Standby		Activating		None
A	(B)	(A)	B	A	B	

Fire Water Booster Pump In Service A B (None)

BUBW In Service (YES) NO

Brg. Water Make-up From (EFW) P-2105 P-2108 Gravity Other___

P-2105/Gravity Feed From Deaerator CST OM

Turbine Water Removal Pump In Service (A) B

Pelton Water Return To (Deaerator) Condenser Cond. Pump Suction

Buffer He Make-up From (Purified Helium) Bottle Farm

RMS Position Fuel Load Off (Run)

ISS Position Start Up Low Power (Power)

Plant Control Systems for > 30% (Auto) Manual N/A

	A	B	C	D
Circulator Speed	5800	5800	5800	5800
Motive Power	(S) FW C	(S) FW C	(S) FW C	(S) FW C

Comments: None

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

LOOP 1 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

LOOP 2 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

Comments: None

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

Condensate Pumps	A B (C) (D)
Condensate Polishers	A (B) (C)
L.P. Heaters	(#1) (#2) (#3)
L.P. Heater Shell Flooded	#2 YES (NO) #3 YES (NO)
Deaerator In Service	(YES) NO
Deaerator Steam Source	150 psi CRht (Extra) N.A.
Boiler Feedpumps In Service	(A) (B) (C) None
H.P. Heaters In Service	(#5) (#6) None
Pre-Boiler Recirc. In Service	YES (NO)
Circulating Water Pumps In Service	(A) (B) (C) (D)
Hot Reheat Bypasses Open	#1 #2 #3 #4 #5 #6 (None)
HS-3220 Position	(#1) #2 #3 #4 #5
Drainage Flowpath	Normal / Direct to Condenser / Decay Heat Exchanger (N/A)
Decay Heat Exchanger Supplied From	BPFT Loop 1 Rht Loop 2 Rht (N/A)
Station Housepower	RAT (UAT)
Emergency Diesel Generators	(A B C D STBY) (A B A/M IND./PAR.)
ACM D-G	YES NO (STBY)
Main Bus Links In Place	(YES) NO
Station Batteries On Overcharge	A B C (None)

Comments: (1) B boiler feed pump out for maint.

FORM (B) 372 - 22 - 3643

Service Water Pumps A (B) (C)

Service Water Tower Fans A (H) L R) B (H L R) None

Instrument Air Compressors (A) B (C)

Main Tower Fans A B C D E F G H I J None

H/L/R H H H H H H H H H H

P.P.S. Moisture Monitors Tripped

1118 1117 1116 1119 1115 1120 1121 1122 (None)

Penetration Interspace Pressure > PCRV (YES) NO DEPRESS

Circulating Water MU Pumps (A) B C

River Makeup Pumps

St. Vrain: A B (None)

Platte River: (A) B None

230 KV Status (Circle any breaker open or out of service)

5309 5307 5301 5317 5319

5310 5306

5311 5305 5300 5313 5315

Start-Up Book completed to Step _____ (N/A)
(during start-up or power changes)

Comments

None

3.0 PERSONNEL STATUS

	OFF-GOING	ON-COMING
3.1 Shift Supervisor (SRO)	G.G. Shifter	
Reactor Operator (SRO)	NA	NA
E. Reactor Operator (RO)	I. Operate Sr.	
W. Reactor Operator (RO)	R. License	
Reactor Equipment Operator (F.B.)	G. Dark	
Turbine Equipment Operator (F.B.L.)	L. Backup	
I. Auxiliary Tender (F.B.)	O. Demin	
O. Auxiliary Tender (F.B.)	F. Wheels	
*Health Physics Technician (F.B.)	L.F. Rems	
*Lead Security Officer (F.B.)	C. Eastwood	

*Names will be added after they report for duty.

3.2 Remarks

None.

4.0 SPECIAL INTEREST ITEMS

4.1 LCO's in grace period or violation

None

4.2 Non-routine testing in progress

None

4.3 Surveillance required to be performed prior to 2400 hours today.

None

4.4 Emergency maintenance work in progress.

None

4.5 Housekeeping problems.

None.

4.6 Safety and/or accidents reported during shift.

None.

4.7 Operating instructions listed in order of decreasing priorities.

Continue operating @ 65% power until "B" Boiler Feed Pump is returned to service.

4.8 Check and if any operator will exceed AC 7.1.1 guidelines, notify the Superintendent of Operations or his designee and get permission to exceed.

None

G. G. Shifter
Off-Going Shift Supervisor

Oncoming Shift Supervisor

5.0 POST SHIFT TURNOVER REVIEW

(Items to be reviewed after coming on shift.)

5.1	Operator Logs	
5.2	LCO Compliance Log	
5.3	Plant Trouble Reports	
5.4	Clearance Log	
5.5	O.D.R. Log	
5.6	TCR Log	
5.7	Start-up Book	

6.0 Conduct a shift briefing of proposed operation. Update individual operating instructions if necessary.

7.0 OPERATOR SHIFT TURNOVER CHECKLISTS REVIEWED

7.1	Reactor Operator (SRO)	[ ]
7.2	E. Reactor Operator	[ ]
7.3	W. Reactor Operator	[ ]
7.4	Reactor Equipment Operator	[ ]
7.5	Turbine Equipment Operator	[ ]
7.6	I. Auxiliary Tender	[ ]
7.7	O. Auxiliary Tender	[ ]

_____
OnComing Shift Supervisor

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

EAST REACTOR OPERATORS SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1	Reactor Operators Narrative Log	[ ]
1.2	Primary Coolant Moisture Data	[ ]
1.3	Water Chemistry Status Report	[ ]
1.4	P.P.S. Logs, Status	[ ]
1.5	Surveillance Test Status	[ ]
1.6	LCO Compliance Log Status	[ ]

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

2.0 PLANT STATUS LOG

Date 6/18/85 Time 1500 Operator I. Operate Sr.

Reactor Power 65 % Electric Load 220 MW

PCRV Pressure 635 psia Average Core Outlet 1380 °F

Total Helium Flow 68 % Circ. Inlet Temp. 640 °F

Main Steam 1000 °F Hot Reheat Steam 1000 °F

Primary Coolant Oxidants CO 0 ppm, CO_2 0 ppm, H_2O 0 ppm

increasing _____ decreasing _____ steady ✓

Analytical Moisture Monitors in Service

9305 (9306) (9307) None

Region Outlet Temperature Alarms on Data Logger

(None) _____ _____ _____ _____ _____ _____ _____ _____
(Circle "None" or list region and status, e.g. 24/300)

System 46 Pumps (A) B (C) D

System 47 Pumps (A) B

Waste Releases In Progress

R/A Liquid YES (NO) #_____

R/A Gas YES (NO) #_____

Reactor Sump > 10 gpm YES (NO)

Comments: None.

_____

_____

_____

He Purification Trains

In Service		Standby		Regeneration			
(A)	B	A	(B)	Regen Dryer	A LTA Dryer	B LTA Dryer	(None)

H_2 Getters

In Service		Standby		Activating		None
A	(B)	(A)	B	A	B	

Fire Water Booster Pump In Service A B (None)

BUBW In Service (YES) NO

Brg. Water Make-up From (EFW) P-2105 P-2108 Gravity Other___

P-2105/Gravity Feed From Deaerator CST OM

Turbine Water Removal Pump In Service (A) B

Pelton Water Return To (Deaerator) Condenser Cond. Pump Suction

Buffer He Make-up From (Purified Helium) Bottle Farm

RMS Position Fuel Load Off (Run)

ISS Position Start Up Low Power (Power)

Plant Control Systems for > 30% (Auto) Manual N/A

	A	B	C	D
Circulator Speed	5800	5800	5800	5800
Motive Power	(S) FW C	(S) FW C	(S) FW C	(S) FW C

Comments: None

LOOP 1 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

LOOP 2 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

Comments: None

Condensate Pumps A B (C) (D)

Condensate Polishers A (B) (C)

L.P. Heaters (#1) (#2) (#3)

L.P. Heater Shell Flooded #2 YES (NO) #3 YES (NO)

Deaerator In Service (YES) NO

Deaerator Steam Source 150 psi CRht (Extra) N.A.

Boiler Feedpumps In Service (A) (B) (C) None

H.P. Heaters In Service (#5) (#6) None

Pre-Boiler Recirc. In Service YES (NO)

Circulating Water Pumps In Service (A) (B) (C) (D)

Hot Reheat Bypasses Open #1 #2 #3 #4 #5 #6 (None)

HS-3220 Position (#1) #2 #3 #4 #5

Drainage Flowpath Normal Direct to Condenser Decay Heat Exchanger (N/A)

Decay Heat Exchanger Supplied From BPFT Loop 1 Rht Loop 2 Rht (N/A)

Station Housepower RAT (UAT)

Emergency Diesel (A B C D STBY)

Generators (A B) (A/M) (IND./PAR.)

ACM D-G YES NO (STBY)

Main Bus Links In Place (YES) NO

Station Batteries On Overcharge A B C (None)

Comments: (1) B boiler feed pump out for maint.

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FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

Service Water Pumps A (B) (C)

Service Water Tower Fans A (H) L R) B (H L R) None

Instrument Air Compressors (A) B (C)

Main Tower Fans A B C D E F G H I J None

H/L/R H H H H H H H H H H

P.P.S. Moisture Monitors Tripped

1118 1117 1116 1119 1115 1120 1121 1122 (None)

Penetration Interspace Pressure > PCRV (YES) NO DEPRESS

Circulating Water MU Pumps (A) B C

River Makeup Pumps

St. Vrain: A B (None)

Platte River: (A) B None

230 KV Status (Circle any breaker open or out of service)

5309 5307 5301 5317 5319

5310 5306

5311 5305 5300 5313 5315

Start-Up Book completed to Step _____ (N/A)
(during start-up or power changes)

Comments

None

3.0 PERSONNEL STATUS

	OFF-GOING	ON-COMING
3.1 Shift Supervisor (SRO)	G. G. Shifter	
Reactor Operator (SRO)	NA	NA
E. Reactor Operator (RO)	I. Operate Sr.	
W. Reactor Operator (RO)	R. License	
Reactor Equipment Operator (F.B.)	G. Dark	
Turbine Equipment Operator (F.B.L.)	L. Backup	
I. Auxiliary Tender (F.B.)	D. Demin	
O. Auxiliary Tender (F.B.)	F. Wheels	
*Health Physics Technician (F.B.)	L. F. Rems	
*Lead Security Officer (F.B.)	C. Eastwood	

*Names will be added after they report for duty.

3.2 Remarks

None.

4.0 SPECIAL INTEREST ITEMS

4.1 LCO's in grace period or violation

None

4.2 Non-routine testing in progress

None

4.3 Surveillance required to be performed prior to 2400 hours today.

None

4.4 Emergency maintenance work in progress.

None.

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

4.5 Operating instructions listed in order of decreasing priorities.

Continue operating @ 65% power until "B" Boiler Feed Pump is returned to service.

4.6 Indicate the status of any inoperable radiation monitors on I-14. This should include spare monitors being used to insure operability of normal monitors.

NA

I Operate St.
Off-Going Reactor Operator

On-Coming Reactor Operator

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

5.0 Items to be reviewed after coming on shift.

5.1	Reactor Operator Logs (All R.O. Logs and Data Sheets)	[ ]
5.2	LCO Compliance Log	[ ]
5.3	Plant Trouble Reports	[ ]
5.4	Clearance Log	[ ]
5.5	O.D.R. Log	[ ]
5.6	TCR Log	[ ]
5.7	Start-up Book	[ ]

_____
On-Duty Reactor Operator

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

WEST REACTOR OPERATORS SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1	Reactor Operators Narrative Log	[ ]
1.2	Primary Coolant Moisture Data	[ ]
1.3	Water Chemistry Status Report	[ ]
1.4	P.P.S. Logs, Status	[ ]
1.5	Surveillance Test Status	[ ]
1.6	LCO Compliance Log Status	[ ]

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

2.0 PLANT STATUS LOG

Date 6/18/85 Time 1500 Operator I. Operate Sr.

Reactor Power 65 % Electric Load 220 MW

PCRV Pressure 635 psia Average Core Outlet 1380 °F

Total Helium Flow 68 % Circ. Inlet Temp. 640 °F

Main Steam 1000 °F Hot Reheat Steam 1000 °F

Primary Coolant Oxidants CO 0 ppm, CO_2 0 ppm, H_2O 0 ppm

increasing _____ decreasing _____ steady ✓

Analytical Moisture Monitors in Service

9305 (9306) (9307) None

Region Outlet Temperature Alarms on Data Logger

(None) _____ _____ _____ _____ _____ _____ _____ _____
(Circle "None" or list region and status, e.g. 24/300)

System 46 Pumps (A) B (C) D

System 47 Pumps (A) B

Waste Releases In Progress

R/A Liquid YES (NO) #_____

R/A Gas YES (NO) #_____

Reactor Sump > 10 gpm YES (NO)

Comments: None

_____

_____

_____

He Purification Trains

In Service		Standby		Regeneration		
(A)	B	A	(B)	Regen Dryer	A LTA Dryer	B LTA Dryer (None)

H_2 Getters

In Service		Standby		Activating		None
A	(B)	(A)	B	A	B	

Fire Water Booster Pump In Service A B (None)

BUBW In Service (YES) NO

Brg. Water Make-up From (EFW) P-2105 P-2108 Gravity Other___

P-2105/Gravity Feed From Deaerator CST OM

Turbine Water Removal Pump In Service (A) B

Pelton Water Return To (Deaerator) Condenser Cond. Pump Suction

Buffer He Make-up From (Purified Helium) Bottle Farm

RMS Position Fuel Load Off (Run)

ISS Position Start Up Low Power (Power)

Plant Control Systems for > 30% (Auto) Manual N/A

	A	B	C	D
Circulator Speed	5800	5800	5800	5800
Motive Power	(S) FW C	(S) FW C	(S) FW C	(S) FW C

Comments: None

LOOP 1 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

LOOP 2 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

Comments: none

Condensate Pumps	A B (C) (D)
Condensate Polishers	A (B) (C)
L.P. Heaters	(#1) (#2) (#3)
L.P. Heater Shell Flooded	#2 YES (NO) #3 YES (NO)
Deaerator In Service	(YES) NO
Deaerator Steam Source	150 psi CRht (Extra) N.A.
Boiler Feedpumps In Service	(A) (B) (C) None
H.P. Heaters In Service	(#5) (#6) None
Pre-Boiler Recirc. In Service	YES (NO)
Circulating Water Pumps In Service	(A) (B) (C) (D)
Hot Reheat Bypasses Open	#1 #2 #3 #4 #5 #6 (None)
HS-3220 Position	(#1) #2 #3 #4 #5
Drainage Flowpath	Normal / Direct to Condenser / Decay Heat Exchanger (N/A)
Decay Heat Exchanger Supplied From	BPFT Loop 1 Rht Loop 2 Rht (N/A)
Station Housepower	RAT (UAT)
Emergency Diesel	(A B C D STBY)
Generators	(A B) (A/M) (IND./PAR.)
ACM D-G	YES NO (STBY)
Main Bus Links In Place	(YES) NO
Station Batteries On Overcharge	A B C (None)

Comments: (1) B boiler feed pump out for maint.

Service Water Pumps A (B) (C)

Service Water Tower Fans A (H L R) B (H L R) None

Instrument Air Compressors (A) B (C)

Main Tower Fans A B C D E F G H I J None

H/L/R H H H H H H H H H H

P.P.S. Moisture Monitors Tripped

1118 1117 1116 1119 1115 1120 1121 1122 (None)

Penetration Interspace Pressure > PCRV (YES) NO DEPRESS

Circulating Water MU Pumps (A) B C

River Makeup Pumps

St. Vrain			Platte River		
A	B	(None)	(A)	B	None

230 KV Status (Circle any breaker open or out of service)

5309	5307	5301	5317	5319
5310	5306			
5311	5305	5300	5313	5315

Start-Up Book completed to Step _____ (N/A)
(during start-up or power changes)

Comments

None

3.0 PERSONNEL STATUS

	OFF-GOING	ON-COMING
3.1 Shift Supervisor (SRO)	G. G. Shifter	
Reactor Operator (SRO)	NA	NA
E. Reactor Operator (RO)	I. Operate Sr.	
W. Reactor Operator (RO)	R. License	
Reactor Equipment Operator (F.B.)	G. Dark	
Turbine Equipment Operator (F.B.L.)	L. Backup	
I. Auxiliary Tender (F.B.)	O. Demin	
O. Auxiliary Tender (F.B.)	F. Wheels	
*Health Physics Technician (F.B.)	L. F. Rems	
*Lead Security Officer (F.B.)	C. Eastwood	

*Names will be added after they report for duty.

3.2 Remarks

None

4.0 SPECIAL INTEREST ITEMS

4.1 LCO's in grace period or violation

None

4.2 Non-routine testing in progress

None

4.3 Surveillance required to be performed prior to 2400 hours today.

None,

4.4 Emergency maintenance work in progress.

None,

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PUBLIC SERVICE COMPANY OF COLORADO

4.5 Operating instructions listed in order of decreasing priorities.

Continue operating @ 65% power until "B" Boiler Feed Pump is returned to service.

4.6 Indicate the status of any inoperable radiation monitors on I-14. This should include spare monitors being used to insure operability of normal monitors.

NA

R. License
Off-Going Reactor Operator

On-Coming Reactor Operator

5.0 POST SHIFT TURNOVER CHECKLIST

(Items to be reviewed after coming on shift.)

5.1	Reactor Operator Logs (All R.O. Logs and Data Sheets)	☐
5.2	LCO Compliance Log	☐
5.3	Plant Trouble Reports	☐
5.4	Clearance Log	☐
5.5	O.D.R. Log	☐
5.6	TCR Log	☐
5.7	Start-up Book	☐

_____
On-Duty Reactor Operator

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

REACTOR EQUIPMENT OPERATORS SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1 Reactor Equipment Operator Narrative Log |_|

1.2 Reactor Equipment Operator Log #1 |_|

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

2.0 REACTOR EQUIPMENT OPERATOR PLANT STATUS LOG

Date 6/18/85 Time 1500 Operator G. Darke

Reactor Power 65 % Electric Load 220 MW

PCRV Pressure 635 psia Average Core Outlet 1380 °F

Main Steam Temp. 1000 °F Hot Reheat Steam Temp. 1000 °F

Primary Coolant Oxidants CO 0 ppm, CO_2 0 ppm, H_2O 0 ppm

increasing _____ decreasing _____ steady ✓

Analytical Moisture Monitors in Service

ME9305 ____ ME9306 ✓ ME9307 ✓

He Purification Train

In Service		Standby		Regen	Regeneration		None
(A)	B	A	(B)	Dryer	A LTA Dryer	B LTA Dryer	

H_2 Getters

In Service		Standby		Activating	
A	(B)	(A)	B	A	B

He Circulator Status

	A	B	C	D
Circulator Speed	5600	5800	5800	5600
Power Source	(S) FW C	(S) FW C	(S) FW C	(S) FW C

BUBW Header In Service (YES) NO

Brg. Water Make-up From (EFW) P-2105 P-2108 Gravity

P-2105/Gravity Feed From Deaerator CST

Pelton Water Return To (Deaerator) Condenser Cond. Pump Suction

Buffer He Make-up From (Purified Helium) Bottle Farm

Comments: None

FORM (B) 372 - 22 - 3643

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

LOOP 1 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 21K #/hr

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

LOOP 2 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond.

Reheat Attemperators In Service (YES) NO Flow 21K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

Moisture Monitor Dewars Normal (A) (B) (C) (D) OOS

Rad Waste Release in Progress

R/A Liquid YES #_____ (NO)
R/A Gas YES #_____ (NO)

Comments: none

FORM (B) 372 - 22 - 3643

Liquid Waste System Status

Tank in Service	(A)	B	
Tank Recircling	A	B	Monitor (N/A)
Demin In-Service	A	(B)	N/A
Status of Off-Line PIG	(CLEAN)	DIRTY	MAINT.

Gaseous Waste System Status

Tank In-Service	A	(B)	
Tank Off-Line	FULL	(EMPTY)	BEING SAMPLED
Compressor In Service	(A)	B	BOTH

Surveillances

SR-OP-29W Plant Recorder	YES	NO	(N/A)

Comments

None

3.0 PERSONNEL STATUS - (Non-Applicable)

4.0 SPECIAL INTEREST ITEMS

4.1 RSD panel status (explain reason for any alarms that are up).

NA

4.2 Non-routine testing in progress (effecting E.O.'s area of responsibility).

None

4.3 Equipment Operator surveillance tests in progress at shift change.

None

4.4 Emergency maintenance work in progress.

None

4.5 Special operating instructions from the Shift Supervisor (or Reactor Operator).

none

4.6 All Station logs, tests, and data sheets are properly signed and dated. ☑

G. Dark
Off-Going Equipment Operator

Oncoming Equipment Operator

5.0 POST SHIFT TURNOVER REVIEW

(Items to be reviewed after coming on shift.)

5.1	Reactor Equipment Operator Log #2	☐
5.2	Purification train regeneration log (if applicable) N/A ☐	☐
5.3	Turbine Equipment Operator narrative log	☐
5.4	Turbine Equipment Operator Log #1	☐
5.5	Turbine Equipment Operator Shift Turnover Checklist	☐
5.6	Plant Trouble Reports	☐
5.7	Clearance Log	☐
5.8	O.D.R. Log	☐
5.9	T.C.R. Log	☐

_____
On Duty Reactor Equipment Operator

TURBINE EQUIPMENT OPERATOR SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1 Turbine Equipment Operator Narrative Log [ ]

1.2 Turbine E.O. Log #1 [ ]

2.0 TURBINE EQUIPMENT OPERATOR STATUS LOG

Date 6/18/85 Time 1600 Operator L. Backup

Reactor Power 65 % Electric Load 220 MW

LOOP 1 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond.

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRHT Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

LOOP 2 EES In Service (YES) NO

EES Supplied From (FW) EFW EM Cond. N/A

Reheater In Service (YES) NO

Reheater Supplied From 150 psi Steam (CRht Steam) BPFT Steam EM Cond. N/A

Reheat Attemperators In Service (YES) NO Flow 27K #/hr.

Main Steam Bypass Open YES (NO)

Start-up Bypass Open YES (NO)

Hot Reheat Bypasses Open YES (NO)

Comments: None

Hot Reheat Attemperators lined up properly (YES) NO
(if NO, explain in comments)

HS 3220 Position (#1) #2 #3 #4 #5

Drainage Flowpath Normal Direct to Condenser Decay Heat Exchanger (NA)

Decay Heat Exchanger Supplied From BPFT Loop 1 RHT Loop 2 RHT (NA)

P-2105 supplied from (Deaerator) CST

Fire Water Booster In Service A B (N/A)

Pelton Water return to (Dearator) Condenser Cond Pump Suction

Deaerator drain open YES (NO) to COND. Misc. D.TK. Turns___

Circ. Water Pumps in service (A) (B) (C) (D)

Main Tower fans A B C D E F G H I J None

H/L/R H H H H H H H H H H

Condensate Pumps A B (C) (D)

S.J.A.E. in service NO #1 (PRI) (SEC) #2 PRI SEC

Hog Ejector in service YES (NO)

L. P. Heaters in service (YES) NO

L. P. Shells flooded YES (NO)

Deaerator in service (YES) NO

Dearator steam source 150 psi CRht (EXTRA) N/A

BFP's in service (A) B (C) None

Comments: (1) B feedpump cleared out for maintenance.

H. P. Heaters in service	(#5)	(#6)	None	
Pre-Boiler Recirc. in Service	YES	(NO)		
Emergency Firewater Booster in service	P-2109	P-2110	(N/A)	
Emergency Diesels in standby	(YES)	NO		
Main Bus Links in place	(YES)	NO		
Station Batteries on overcharge	A	B	C	(None)

Auxiliary Boiler Status

Inside	(IN SERVICE)	STANDBY	MAINT.
Outside	IN SERVICE	(STANDBY)	MAINT.

Waste Releases in progress

R/A Liquid	YES #_____	(NO)
R/A Gas	YES #_____	(NO)

Surveillances

SR-OP-29W Plant Recorders	YES	NO	(N/A)
SR-OP-21-W GE Turbine Generator	YES	NO	(N/A)

Comments

Auxiliary boiler must be kept in service while B Boiler Feed Pump is cleared out per LCO 432

3.0 PERSONNEL STATUS - (Non-Applicable)

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

4.0 SPECIAL INTEREST ITEMS

4.1 Non-routine testing (effecting E.O.'s area of responsibility) in progress.

None

4.2 E. O. surveillance tests in progress at shift change.

None

4.3 Emergency maintenance work in progress

None

4.4 Special operating instructions from the Shift Supervisor (or Reactor Operator).

None

4.5 All station logs and data sheets are properly signed and dated. IET

L. Backup
Off-Going Turbine Equip Operator

Oncoming Turbine Equip.Operator

5.0 POST SHIFT TURNOVER REVIEW

(Items to be reviewed after coming on shift.)

5.1	Reactor Equipment Operator narrative log	[ ]
5.2	Reactor Equipment Operator Shift Turnover Checklist	[ ]
5.3	Plant Trouble Reports	[ ]
5.4	Clearance Log	[ ]
5.5	O.D.R. Log	[ ]
5.6	TCR Log	[ ]

_____
On-Duty Turbine Equipment Operator

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

INSIDE TENDER SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1	Inside Tenders Narrative Log	[ ]
1.2	Inside Tender Log #1	[ ]
1.3	Daily Water Chemistry Status Report	[ ]

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

2.0 INSIDE TENDER PLANT STATUS LOG

Date 6/18/85 Time 1500 Operator D. Domin

Reactor Power 65 % Electric Load 220 MW

He Circulators in service (A) (B) (C) (D)

Motive Power (S) FW C (S) FW C (S) FW C (S) FW C

Condenser in service (YES) NO

Ultra-Filtration Unit in Service YES (NO)

Deaerator In Service (YES) NO

Pre-Boiler Recirc. in Service YES (NO)

LOOP 1 EES In Service (YES) NO

EES Supplied by (FW) EFW EM Cond.

Chemical Injection Points Rel. eff.

LOOP 2 EES In Service (YES) NO

EES Supplied by (FW) EFW EM Cond.

Chemical Injection Points Rel. eff.

R. O. Unit in service (YES) NO

Building Heating in Service YES (NO) _____ Heat XCHGR

Makeup Train discharge to (CONDENSER) CST

Aux Boiler in service (INSIDE) OUTSIDE NONE

Comments: none

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

Waste Releases in Progress

R/A Gas YES (NO)

Ammonia, Hydrazine, Sulphite Mixing Tank Levels > 30% (YES) NO

Ammonia Pumps (AUTO) MAN OFF

Hydrazine Pumps (AUTO) MAN OFF

Sulphite Pumps (AUTO) MAN OFF

P-3308 IN SERVICE (OUT OF SERVICE) AUTO MANUAL

PCV 33148 In Service YES (NO)

Inst. Air Compressors In Service (A) B (C)

Service Water Booster Pump In Service (A) B (C) (D) E

Service Water Return Pumps In Service (A) (B) C

Misc Drain Tank Drain Path (COND) CST

Service Air Source SAC (CP's)

Suveillances

SR-OP-29W Plant Recorder YES NO (N/A)

Comments: None

3.0 PERSONNEL STATUS - (Non-Applicable)

4.0 SPECIAL INTEREST ITEMS

4.1 Non-routine testing (effecting the Auxiliary Tenders area of responsibility) in progress.

none

4.2 A.T. surveillance tests in progress at shift change.

none

4.3 Emergency maintenance work in progress.

none

Public Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

4.4 Special Operating instructions from the Shift Supervisor (or Reactor Operator)

none

4.5 All station logs and data sheets are properly signed and dated.

IET

O. Domin
Off-Going Inside Aux Tender

On-Coming Inside Aux Tender

5.0 POST SHIFT TURNOVER CHECKLIST

(Items to be reviewed after coming on shift.)

5.1	Water Tender log	[ ]
5.2	Outside Tender narrative log	[ ]
5.3	Outside Tender Shift Turnover Checklist	[ ]
5.4	Plant Trouble Reports	[ ]
5.5	Clearance Log	[ ]
5.6	O.D.R. Log	[ ]
5.7	TCR Log	[ ]
5.8	Inventory report (previous shift)	[ ]

On-Duty Auxiliary Tender

OUTSIDE TENDER SHIFT TURNOVER CHECKLIST

On-Coming Shift 1600 (ON) to 2400 (OFF)

Date 6/18/85

1.0 NARRATIVE LOG AND DATA SHEET REVIEW

1.1	Outside Tenders Narrative Log	[ ]
1.2	Outside Tenders Log #1	[ ]
1.3	Daily Water Chemistry Status Report	[ ]

2.0 OUTSIDE TENDER PLANT STATUS REPORT

Date 6/18/85 Time 1500 Operator F. Wheeler

Reactor Power 65 % Electric Load 220 MW

Main Tower Fans A B C D E F G H I J None

H/L/R H H H H H H H H H H

Service Water Tower Fans A (H) L R) B (H) L R)

He Circulator N_2 Pres. Sys. in Service YES (NO)

Emergency Cavity Pressurization in Service YES (NO)

Waste Release in Progress

R/A Liquid YES (NO)

Turbine Building Sump Blowdown to (GOOSE QUILL) SLOUGH

Main Tower Blowdown to (GOOSE QUILL) SLOUGH

Main Tower Blowdown HOT 0 COLD 1500 RAW 0

Shallow Well Status

Supplying Plant (#3) #4 #9 (#10) #11 #12

Irrigation #3 (#4) (#9) #10 #11 #12

Comments: None

River Pump Status

Supplying Storage Ponds SV "A" SV"B" (PR"A") PR"B" None
Supplying Others (specify) none

River Screen Wash Status PR in service

Waste Evaporation Ponds in Service NW NE (South)

LN_2 Dewars, DRAW FROM (NORTH) SOUTH
RECIRC TO (NORTH) SOUTH
VENT (NORTH) SOUTH

Surveillances

SR 5.2.24.a-D Circ Water Makeup System Pond Inc.: YES NO (N/A)

SR-OP-29W Plant Recorder YES NO (N/A)

Comments: none

3.0 PERSONNEL STATUS - (Non-Applicable)

4.0 SPECIAL INTEREST ITEMS

4.1 Non-Routine Testing, surveillance tests, and maintenance work (effecting Auxiliary Tenders area of Responsibility) in progress.

none

4.2 Condition of Main and Service Water Cooling Towers. (Normal, or list condition, e.g. icing up, etc.)

Both, normal

4.3 Road conditions or hazards encountered during rounds (this should include vehicle problems).

good

4.4 Special operating instructions from the Shift Supervisor (or Reactor Operator).

none,

4.5 All station logs and data sheets are properly signed and dated. IA

F. Wheels
Off-Going Outside Tender

On-Coming Outside Tender

5.0 POST SHIFT TURNOVER CHECKLIST

(Items to be reviewed after coming on shift.)

5.1	Inside Tender narrative log	[ ]
5.2	Inside Tender Shift Turnover checklist	[ ]
5.3	Plant Trouble Reports	[ ]
5.4	Clearance Log	[ ]
5.5	O.D.R. Log	[ ]
5.6	TCR Log	[ ]
5.7	Inventory Report (previous shift)	[ ]

On-Duty Outside Auxiliary Tender

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
00:00	Event:	Earthquake
		Control Room indications:
	SS ERO WRO	Tremor is felt
	ERO	I-06E, 5-5 (seismic instrumentation) alarm
	ERO	Alarms on I-06G indicate trip of cooling water tower fans: 1-4 (A fan), 2-4 (B-fan), 3-5 (H-fan), 4-5 (I-fan), 5-5 (J-fan), 1-7 (Tower fan trip). Green and white lights on control board indicate A, B, H, I, and J fans have tripped.
	SS	Magnitude assigned by Results Department to be 0.07g ground acceleration
	I-14	RIS-9301 indicates 6.1 X 10^9 cmp for duration of drill.
	Prompter	Anticipated actions:
		1) Immediate actions per EP K-1
		2) Dispatch outside auxiliary tender to inspect and restart tower fans
		3) Shift Supervisor declares Alert and begins making notifications per RERP CR
		4) Follow up actions per EP K-1
		5) Shift Supervisor begins orderly plant shutdown

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
00:45	Event:	Strong Earthquake Aftershock
	SS, ERO, WRO	Tremor is felt
	ERO	The condenser north wall ruptures where the reheat bypass lines go into the condenser
		a) I-06C 2-3 (Condenser low vacuum)
		b) I-06C 1-3 (Condenser emergency vacuum)
		c) I-06D 3-3 (Low vacuum trip) 1-1 (stop valves closed)
		d) I-06C 5-6 (Hot reheat bypass valve vacuum trip) (Both electromatics open)
		e) Local indication - Turbine-driven Boiler Feed Pump (TDBFP) turbine hoods begin overheating
		I-06 E 3-6 (4 KV bus undervoltage) 3-7 (480 V bus undervoltage) All outside line breakers have green and white trip indications. Normal plant lighting goes out. Innumerous alarms associated with Turbine trip and loss of outside electric power.

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
	ERO	I-05D 2-2 (Helium circulator 1C loss of bearing water) 5-2 (Helium circulator 1C trip first)
		I-05D 2-4 (Helium circulator 1D loss of bearing water)
		I-05D 5-1 (Helium circulator 1C loop shutdown trip)
		I-05D 5-3 (Helium circulator 1D loop shutdown trip)
		I-05D 5-6 (Loop 2 shutdown first)
		Loop 2 helium circulator auxiliaries isolate normally
		Loop 2 secondary coolant isolates normally
		I-06G 1-4, 2-4, 3-4, 4-4, 5-4, 1-5, 2-5, 3-5, 4-5, 5-5, 1-7 (main tower fans tripped), 2-7, 3-7 (service water tower fans tripped)
		Both diesel/generator sets start and load normally
	WRO	I-03A 5-1, 5-2, 5-3 single channel scram, I-03B 4-1, 5-1, 6-1 two Loop trouble. Reactor scram (low vacuum), if not already scrammed.
	OAT	Outside auxiliary tender finds north 3 cells on main cooling tower partially collapsed.
	Prompter	Anticipated actions:
		Immediate actions per Emergency Procedures (EPs) F-2, F-3, B, and C
		Follow-up reports to NRC and State by Technical Support Center or Shift Supervisor
		Follow-up actions per EPs F-2, F-3, B and C

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
		Restart follow-up actions of EP K-1
		Dispatch outside auxiliary tender to restart Service Water Fans and check Main Cooling Tower.
01:00	Event:	TDBFPs high vibration
	ERO	I-06A 4-3 (turbine)
		I-06A 5-1 and 5-4 (low Boiler Feed Pump flow)
		PI-3104 and PI-3106 I-06 indicating falling pressure
		FR-2205 and FR-2206 I-05 indicating falling flow
	Prompter	Anticipated actions:
		Trip both TDBFPs
		Put condensate on Loop I EES section of steam generator
01:15	Event:	Primary coolant leak through Loop I reheater (nonisolable leak through electromatic)
	WRO	I-05B 1-4 (Loop 1 hot reheat pipe activity high)
		I-03A 4-7 (Loop 1 reheat activity high)
		I-05A 2-5 (Loop I reheat header activity high)
	Prompter	Anticipated actions:
		Advise Technical Support Center of condition, and ask them to initiate dose assessment
		Place A and B circulators on condensate water turbine drives

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
	ERO	As attempt is made to isolate Loop 1 reheater
		a) HV-2253 broken operator
		b) V-52110 stem broken
		c) PCV-5221-1 failed open
	ERO	Initate actions per EP H-3
01:30	REO	You have a compound fracture of left leg - you slipped on spilled wet and oily resin at level 3 Health Physics storage area). Page the Control Room and inform them of your condition and location.
	Prompter	Page by Reactor side Equipment Operator
	Prompter	Anticipated actions:
		CR should get page from Reactor side Equipment Operator
		Initiate FSV Medical Emergency Plan
		Ask Technical Support Center to arrange for a replacement Equipment Operator
02:00	Event:	Outside power becomes available
	WRO	Phone message from Lookout Center Dispatcher (Pawnee line charged to FSV switchyard)

CONTROL ROOM INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
	Prompter	Anticipated actions:
		Power up the 4160 V busses and non-essential 480 V busses
		Begin picking up non-essential loads as required.
		Charging the essential 480 V busses from a single outside power line to be at the Shift Supervisors discretion.

TECHNICAL SUPPORT CENTER INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
01:15	Radiochemistry Person, Technical Support Person	Plateout Activity = 4.0×10^2 Ci equivalent I^{131} for duration of drill
SEE BELOW	Radiochemistry Person, Technical Support Person	Circulating activity = SEE BELOW
01:15		3.84E+03 Ci equivalent I^{131}
01:30		3.54E+03 Ci equivalent I^{131}
01:45		3.22E+03 Ci equivalent I^{131}
02:00		2.86E+03 Ci equivalent I^{131}
02:15		2.45E+03 Ci equivalent I^{131}
02:30		2.11E+03 Ci equivalent I^{131}
02:45		1.82E+03 Ci equivalent I^{131}
03:00		1.57E+03 Ci equivalent I^{131}
03:15		1.35E+03 Ci equivalent I^{131}
03:30		1.17E+03 Ci equivalent I^{131}
03:45		1.02E+03 Ci equivalent I^{131}
04:00		8.93E+02 Ci equivalent I^{131}
04:15		7.84E+02 Ci equivalent I^{131}
04:30		6.92E+02 Ci equivalent I^{131}
04:45		6.15E+02 Ci equivalent I^{131}
05:00		5.50E+02 Ci equivalent I^{131}
05:15		4.96E+02 Ci equivalent I^{131}

TECHNICAL SUPPORT CENTER INPUT AND PROMPTER CARDS

TIME	RECIPIENT	DESCRIPTION
05:30		4.52E+02 Ci equivalent I^{131}

Graphs of Core Pressure and Temperatures will be provided to the Technical Support Center personnel during the exercise.