

50-285

VOLUME III

OMAHA PUBLIC POWER DISTRICT - FORT CALHOUN STATIONEMERGENCY PLAN IMPLEMENTING PROCEDURESTABLE OF CONTENTS

1. OPERATION SUPPORT CENTER

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-OSC-1	Emergency Classification	R3 7-12-83	7-12-83
EPIP-OSC-2	Emergency Plan Activation	R6 3-31-83	3-31-83
EPIP-OSC-3	Notification of Unusual Event Actions	R1 4-23-82	4-23-82
EPIP-OSC-4	Alert Event Actions	R1 4-23-82	4-23-82
EPIP-OSC-5	Site Area Emergency Actions	R1 1-14-82	1-14-82
EPIP-OSC-6	General Emergency Actions	R1 1-14-82	1-14-82
EPIP-OSC-7	Personnel Rescue	R1 8-24-82	8-24-82
EPIP-OSC-8	Medical Assistance	R1 11-10-82	11-10-82
EPIP-OSC-9	Emergency Repairs, Corrective Actions and Damage Control	R0 4-23-82	4-23-82
EPIP-OSC-10	Initial Assessment of Plant Parameters and Effluent Monitors to Determine Source Term	R1 8-26-82	8-26-82
EPIP-OSC-11	Initial Dose Assessment Based on Plant Instrumentation	R1 8-31-82	8-31-82
EPIP-OSC-12	Accidental Actuation of Early Warning Siren System	R0 11-04-82	
EPIP-OSC-14	Emergency Duty Officer (EDO) Actions	R1 5-5-83	5-5-83

TABLE OF CONTENTS
(Continued)

2. EMERGENCY OPERATION FACILITY

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-EOF-1	Activation of Emergency Operation Facility	R1 1-31-83	1-31-83
EPIP-EOF-2	Emergency Operation Facility Communication	R2 5-13-83	5-13-83
EPIP-EOF-3	Emergency Instruments and Equipment	R2 3-02-82	3-02-82
EPIP-EOF-4	Measurement of Airborne Radioactivity (Incorporated into EPIP-EOF-6)	R3 8-18-82	8-18-82
EPIP-EOF-5	Onsite Dose Assessment (Incorporated into EPIP-EOF-6)	R3 8-18-82	8-18-82
EPIP-EOF-6	Onsite/OffSite Dose Assessment	R3 8-18-82	8-18-82
EPIP-EOF-7	Protective Action Guidelines	R1 4-23-82	4-23-82
EPIP-EOF-8	Environmental Monitoring	R1 5-13-82	5-13-82
EPIP-EOF-9	Personnel Accountability	R3 5-11-83	5-11-83
EPIP-EOF-10	Personnel Decontamination	R2 11-01-82	11-01-82
EPIP-EOF-11	Dosimetry and Records	R1 9-14-82	9-14-82
EPIP-EOF-12	Site Security	R1 1-06-83	1-06-83
EPIP-EOF-13	Shift Supervisor/EDO to EDO Transition	R1 2-01-83	2-01-83
EPIP-EOF-14	EDO to Recovery Manager Transition	R1 11-10-82	11-10-82
EPIP-EOF-15	Determination of Contamination Release Through Plant Stack	R1 11-10-82	11-10-82

VOLUME III

TABLE OF CONTENTS
(Continued)

2. EMERGENCY OPERATION FACILITY (Continued)

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-EOF-16	Continuing Dose Assessments Based On Plant Instrumentation	R0 4-23-82	4-23-82
EPIP-EOF-17	Initiation of Public Warning	R1 6-23-83	6-23-83
EPIP-EOF-18	Offsite Radiological Surveys	R3 6-07-83	6-07-83

VOLUME III
TABLE OF CONTENTS
(Continued)

3. TECHNICAL SUPPORT CENTER

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-TSC-1	Activation of Technical Support Center	R3 2-15-83	2-15-83
EPIP-TSC-2	Technical Support Center Communication	R2 5-13-83	9-22-82
EPIP-TSC-3	Plant and Reactor Operation Support - Alert Classification	R1 11-04-82	11-04-82
EPIP-TSC-4	Plant and Reactor Operation Support - Site Area Emergency Classification	R2 11-09-82	11-09-82
EPIP-TSC-5	Plant and Reactor Operation Support - General Emergency Classification	R1 11-04-82	11-04-82
EPIP-TSC-6	Plant Engineering and Repair	R1 11-10-82	11-10-82

VOLUME III
TABLE OF CONTENTS
(Continued)

4. REENTRY AND RECOVERY ORGANIZATION

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-RR-1	Activation of Recovery Organization	R3 1-31-83	1-31-83
EPIP-RR-2	Reentry and Recovery Communication (DELETED)	R0 2-20-81	1-27-83
EPIP-RR-3	Reentry to Evacuated Area	R1 1-06-83	1-06-83
EPIP-RR-4	Reentry and Recovery OnSite NRC Coordination	R1 1-31-83	1-31-83
EPIP-RR-5	Technical Specification Modifications	R0 2-20-81	12-14-82
EPIP-RR-6	Population Exposure Projection	R3 9-07-82	9-07-82
EPIP-RR-7	Recovery Decontamination	R0 2-20-81	12-14-82
EPIP-RR-8	Waste Management	R1 1-06-83	1-06-83
EPIP-RR-9	Reentry and Recovery Equipment Procurement	R1 1-06-83	1-06-83
EPIP-RR-10	Recovery Organization's Recovery Manager	R2 2-01-83	2-01-83
EPIP-RR-11	Recovery Organization's Technical Support Manager	R1 2-01-83	2-01-83
EPIP-RR-12	Recovery Organization's Licensing Administrator	R1 2-01-83	2-01-83
EPIP-RR-13	Recovery Organization's Core Physics Coordinator	R1 2-01-83	2-01-83
EPIP-RR-14	Recovery Organization's Systems Analysis/Procedure Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-15	Recovery Organization's Shift Support Coordinator	R1 2-01-83	2-01-83

VOLUME III
TABLE OF CONTENTS
(Continued)

4. REENTRY AND RECOVERY ORGANIZATION (Continued)

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-RR-16	Recovery Organization's Instrument and Control Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-17	Recovery Organization's Security and Technical Support Administrative Supervisor	R2 2-01-83	2-01-83
EPIP-RR-18	Recovery Organization's Plant Operations Manager	R1 2-01-83	2-01-83
EPIP-RR-19	Recovery Organization's Shift Operations Supervisor	R2 5-11-83	5-11-83
EPIP-RR-20	Recovery Organization's Instrument and Control Supervisor	R1 2-01-83	2-01-83
EPIP-RR-21	Recovery Organization's Maintenance/Quality Control Supervisor	R1 2-01-83	2-01-83
EPIP-RR-22	Recovery Organization's Health Physics/Chemistry Supervisor	R1 2-01-83	2-01-83
EPIP-RR-23	Recovery Organization's Procedure/Training Supervisor	R1 2-01-83	2-01-83
EPIP-RR-24	Recovery Organization's Emergency Coordinator	R1 2-01-83	2-01-83
EPIP-RR-25	Recovery Organization's Dose Assessment Coordinator	R1 2-01-83	2-01-83
EPIP-RR-26	Recovery Organization's Environmental Survey and Analysis Coordinator	R1 2-01-83	2-01-83
EPIP-RR-27	Recovery Organization's Radiochemical Analysis Coordinator	R1 2-01-83	2-01-83

VOLUME III
TABLE OF CONTENTS
(Continued)

4. REENTRY AND RECOVERY ORGANIZATION (Continued)

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-RR-28	Recovery Organization's Dosimetry Coordinator	R1 2-01-83	2-01-83
EPIP-RR-29	Recovery Organization's Administrative Logistics Manager	R1 2-01-83	2-01-83
EPIP-RR-30	Recovery Organization's Administrative Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-31	Recovery Organization's Finance Coordinator	R1 2-01-83	2-01-83
EPIP-RR-32	Recovery Organization's Accommodations Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-33	Recovery Organization's Commissary Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-34	Recovery Organization's Communications Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-35	Recovery Organization's Human Resources Coordinator	R1 2-01-83	2-01-83
EPIP-RR/6	Recovery Organization's Material Management Coordinator	R1 2-01-83	2-01-83
EPIP-RR-37	Recovery Organization's Transportation Coordinator	R1 2-01-83	2-01-83
EPIP-RR-38	Recovery Organization's Accounting Coordinator	R1 2-01-83	2-01-83
EPIP-RR-39	Recovery Organization's Media Release Center Director	R1 2-01-83	2-01-83
EPIP-RR-40	Recovery Organization's EOF Information Specialist	R1 2-01-83	2-01-83
EPIP-RR-41	Recovery Organization's EOF Technical Liaison	R1 2-01-83	2-01-83

VOLUME III
TABLE OF CONTENTS
(Continued)

4. REENTRY AND RECOVERY ORGANIZATION (Continued)

<u>Procedure No.</u>	<u>Title</u>	04	<u>Revision No./Date</u>	<u>List Review Date</u>
EPIP-RR-42	Recovery Organization's EOF Information Specialist		R1 2-01-83	2-01-83
EPIP-RR-43	Recovery Organization's EOF Technical Liaison		R1 2-01-83	2-01-83
EPIP-RR-44	Recovery Organization's Public Information and Rumor Control Supervisor		R1 2-01-83	2-01-83
EPIP-RR-45	Recovery Organization's Clerical Supervisor		R1 2-01-83	2-01-83
EPIP-RR-46	Recovery Organization's Internal Services Coordinator		R1 2-01-83	2-01-83
EPIP-RR-47	Recovery Organization's Design and Construction Manager		R1 2-01-83	2-01-83
EPIP-RR-48	Recovery Organization's Utility Engineering Director		R1 2-01-83	2-01-83
EPIP-RR-49	Recovery Organization's Architect Engineering Director		R1 2-01-83	2-01-83
EPIP-RR-50	Recovery Organization's Director of Nuclear Steam Supply System		R1 2-01-83	2-01-83
EPIP-RR-51	Recovery Organization's Director of Construction		R1 2-01-83	2-01-83
EPIP-RR-52	Recovery Organization's Construction Quality Assurance Director		R1 2-01-83	2-01-83
EPIP-RR-53	Recovery Organization's Manager of Waste Management		R1 2-01-83	2-01-83

VOLUME III
TABLE OF CONTENTS
(Continued)

4. REENTRY AND RECOVERY ORGANIZATION (Continued)

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-RR-54	Recovery Organization's Radwaste/Technical Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-55	Recovery Organization's Scheduling/Planning Manager	R1 2-01-83	2-01-83
EPIP-RR-56	Recovery Organization's Advisory Support Coordinator	R1 2-01-83	2-01-83
EPIP-RR-57	Recovery Organization's Nuclear Fuel Supplier Representative	R1 2-01-83	2-01-83
EPIP-RR-58	Recovery Organization's Architect Engineering Representative (Gibbs and Hill)	R1 2-01-83	2-01-83
EPIP-RR-59	Recovery Organization's Architect Engineering Representative	R1 2-01-83	2-01-83
EPIP-RR-60	Recovery Organization's Radiological Assessment Representative	R1 2-01-83	2-01-83
EPIP-RR-61	Recovery Organization's Site Representative	R1 2-01-83	2-01-83
EPIP-RR-62	Recovery Organization's NRC and FEMA Representative	R1 2-01-83	2-01-83

VOLUME III

TABLE OF CONTENTS
(Continued)

5. PUBLIC INFORMATION

<u>Procedure No.</u>	<u>Title</u>	<u>Revision No./Date</u>	<u>Last Review Date</u>
EPIP-PI-1	PUBLIC INFORMATION (Crisis Communication Plan)	R2 9-14-82	9-14-82

Fort Calhoun Station Unit No. 1
Emergency Plan Implementing Procedure
EPIP-OSC-1
Operations Support Center

EMERGENCY CLASSIFICATION

I. PURPOSE

To provide descriptions and examples initiating conditions of the four Emergency Classifications: 1) Notification of Unusual Event; 2) Alert; 3) Site Area Emergency; and 4) General Emergency.

II. PREREQUISITES

1. Occurrence of an incident disrupting normal operation of the plant.

III. PRECAUTIONS

1. Monitor conditions carefully and act conservatively to minimize the impact on the surrounding environment, health and safety of the public as well as plant equipment and personnel.

IV. PROCEDURE

1. Upon recognition of an abnormal plant or site condition the observer shall notify the Shift Supervisor of the situation.
2. The Shift Supervisor shall (using EPIP-OSC-14 as a guide):
 - a) Evaluate the condition and determine the applicable emergency classification per Figure OSC-1.1, Emergency Action Level (EAL) Criteria.
 - b. Declare the applicable EAL and activate the Radiological Emergency Response Plan (RERP) per EPIP-OSC-2.
 - c. Upon activating the RERP refer to the appropriate Emergency Plan Implementing Procedure (EPIP) for immediate and follow-up actions based upon the following:
 - 1) Notification of Unusual Event Actions, EPIP-OSC-3
 - 2) Alert Actions, EPIP-OSC-4
 - 3) Site Area Emergency Actions, EPIP-OSC-5
 - 4) General Emergency Actions, EPIP-OSC-6

JUL 12 1983

IV. PROCEDURE (Continued)

- 5) Initial assessment of plant parameters and effluent monitors to determine source term, EPIP-OSC-10.
- 6) Initial dose assessment based on plant instrumentation, EPIP-OSC-11.
- d. Monitor response activities and plant conditions and adjust the Emergency Action Level as necessary.

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JUL 12 1983

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

EMERGENCY CLASSIFICATION

<u>KEY PARAMETER</u>	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
1. Fuel Damage (EP-23)	a. Fuel damage indication; i.e., high coolant activity requiring plant shutdown. b. Abnormal coolant temp. and/or pressure or abnormal fuel temp. outside of Tech. Spec. limits.	a. Severe loss of fuel cladding; i.e., coolant activity of 300 uCi/cc equivalent of I-131, but not an iodine spike. b. Reactor coolant pump locked rotor with indication of possible fuel failure.	Degraded core with possible loss of coolable geometry.	Loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier.
2. Primary Coolant System (EP-5/-5A, EP-28)	a. Exceeding Tech Spec. primary or primary-to-secondary system leak rate (Tech. Spec. 2.1.4(1), (2), and (3)). b. Failure of a RCS safety or relief valve to close.	Reactor coolant leak rate greater than 40 gpm.	Known loss of coolant accident (LOCA) greater than charging pumps capacity.	a. Small and large LOCA with failure of ECCS to perform leading to severe core degradation or melt. b. Small LOCA and initially successful ECCS. Subsequent failure of containment heat removal systems over several hours.
3. Secondary Coolant System (EP-6, EP-29, EP-30/-30A)	a. Uncontrolled rapid secondary depressurization. b. Failure of a steam generator safety or relief valve to close.	a. Rapid failure of one steam generator tube with loss of offsite power. b. Rapid failure of more than 10 steam generator tubes	a. Rapid failure of of several steam generator tubes and indication of fuel damage. b. Main steam line break with greater	-----

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

EMERGENCY CLASSIFICATION

<u>KEY PARAMETER</u>	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
		c. Main steam line break with greater than 10 gpm primary-to-secondary leak rate OR main steam isolation valve malfunction.	than 40 gpm primary-to-secondary leak and indication of fuel damage.	
4. Limiting Conditions for Operations (EP-1, EP-25, EP-32).	Loss of containment integrity requiring shutdown by Tech. Spec. 2.6(1)a.	Loss of any function needed for cold shutdown.	Loss of any function needed for hot shutdown.	-----
5. Engineered-Safeguards	a. Loss of ESF requiring shutdown by Tech. Spec. 2.3, 2.4, and 2.7. b. ECCS actuation involving a valid initiation signal.	a. Failure of the RPS to initiate and complete a scram which brings the reactor subcritical. b. Evacuation of control room anticipated OR required with control of shutdown systems established from local stations.	a. Transient requiring operation of shutdown cooling system with failure to trip without any immediate evidence of core damage. b. Evacuation of control room and control of shutdown systems not established from local stations in 15 minutes.	Transient requiring operation of shutdown cooling system with failure to trip which results in core damage or additional failure of core cooling and makeup systems.

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

EMERGENCY CLASSIFICATION

<u>KEY PARAMETER</u>	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
6. Station Power EP-3, EP-18, EP-19, P-33)	Loss of all offsite power or loss of onsite AC power capability.	a. Loss of offsite power and loss of onsite AC power for less than 15 minutes. b. Loss of all onsite DC power for less than 15 minutes.	a. Loss of off-site power and loss of onsite AC power for more than 15 minutes. b. Loss of all vital onsite DC power for more than 15 minutes.	Failure of offsite and onsite power with total loss of auxiliary feedwater makeup capability for several hours.
7. Annunciators (EP-18, EP-19)	Indications or alarms on process or effluent parameters, not functional in control room to an extent requiring plant shutdown or other significant loss of assessment or communication capability (not including loss of plant computer or meteorological instrumentation).	Loss of all annunciators.	All annunciators lost for more than 15 minutes and plant not in cold shutdown or transient initiated while all alarms lost.	-----
8. Feedwater System (EP-7)	-----	-----	-----	Transient initiated by loss of feedwater and condensate systems followed by failure of auxiliary feedwater system for extended period.

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

EMERGENCY CLASSIFICATION

<u>KEY PARAMETER</u>	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
9. Fire (EP-10)	Fire within the plant lasting more than 10 minutes after firefighting efforts have begun.	Fire lasting more than 10 minutes potentially affecting safety system's performance.	Fire defeating redundant safety trains or functions.	-----
10. Fuel Handling Accident (EP-14)	-----	Accident with release of radioactivity to containment or spent fuel pool area.	Major damage to spent fuel in containment or spent fuel pool area.	-----
11. Radiological Effluents (EP-11, EP-23)	<p>a. Gaseous Effluent instantaneous release limits of 13,600 uCi/sec for Noble Gases and 4.55 uCi/Sec for Iodines. Perform release rate calculations on attached Form FC-220 if high alarm is received on RM-062 or RM-057 and RM-060.</p> <p>b. High alarm(s) received for liquid effluent radiation monitor(s) per</p>	<p>a. Gaseous effluent instantaneous release limits of 136,000 uCi/sec for Noble Gases and 45.5 uCi/Sec for Iodines. Perform release rate calculations on attached Form FC-220 for RM-062 or RM-057 and RM-060.</p> <p>b. Appropriate value for applicable radiation monitor per Table OSC-1.1.</p> <p>c. Sustained high radia-</p>	<p>a. Gaseous effluent monitors detect levels corresponding to greater than 50 mrem/hr W.B. for 1/2 hour or 250 mrem/hr to the thyroid at the site boundary. Perform release rate calculations on attached Form FC-220 for RM-062 or RM-057 and RM-060 and compare results in</p>	<p>a. Gaseous effluent monitors detect levels corresponding to 1.0 rem/hr W.B. OR 5 rem/hr thyroid at the site boundary. Perform release rate calculations on attached Form FC-220 for RM-062 or RM-057 and RM-060 and compare the results in Table OSC-1.2 to the above limits.</p> <p>b. The above dose rates are projected based on area radiation</p>

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

EMERGENCY CLASSIFICATION

<u>KEY PARAMETER</u>	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
	Table OSC-1.1	tion levels or high airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of a factor of 1000 in background radiation readings of Area Radiation Monitors.	Table OSC-1.2 to the above limits. b. The above dose rates are projected based on area radiation monitor and/or other plant parameters or are measured at the exclusion area boundary (Refer to EPIP-OSC-10 and OSC-11 for containment area monitor calculations). c. RM-056A and/or RM-056B readings are equal to or greater than one(s) in Table OSC-1.1.	monitor and/or other plant parameters (Refer to EPIP-OSC-10 and OSC-11 for containment area monitor calculations). c. RM-056A and/or RM-056B readings are equal to or greater than one(s) in Table OSC-1.1.
12. Security Threat (physical Security Plan)	In plant Security alert	Ongoing security threat involving physical attack on the facility.	Security threat involving imminent loss of physical control of the plant.	Security threat resulting in loss of physical control of the facility.

FIGURE OSC-1.1
EMERGENCY ACTION LEVEL CRITERIA

<u>KEY PARAMETER</u>	<u>EMERGENCY CLASSIFICATION</u>			
	<u>NOTIFICATION OF UNUSUAL EVENT</u>	<u>ALERT</u>	<u>SITE AREA EMERGENCY</u>	<u>GENERAL EMERGENCY</u>
13. Natural Phenomena (EP-27)	Phenomenon beyond usual levels when plant in operation	Severe phenomenon when plant in operation	Severe phenomenon when plant not in cold shutdown	
	a. Earthquake (detected on station seismic instrumentation)	a. Earthquake.	a. Earthquake with core or safety system damage probable	-----
	b. 50 year flood or low water requiring shutdown.	b. Flood or low water	b. Flood or low water	
	c. Tornado crosses site boundary.	c. Tornado striking.	c. Sustained winds in excess of design levels.	
14. Other Hazards	a. Aircraft crash onsite.	a. Aircraft Crash on facility.	a. Aircraft crash affecting vital structure by fire or impact.	-----
	b. Train derailment onsite	b. Known explosion damage to facility affecting plant operation.	b. Severe damage to safe shutdown equipment from missile or explosion.	
	c. Near or onsite explosion.	c. Entry into plant environs of toxic or flammable gases causing potential habitability problems.	c. Entry of toxic flammable gases into vital areas essential for safe shutdown where evacuation of the area constitutes a safety problem.	
	d. Near or onsite toxic or flammable gas release.	d. Turbine failure causing casing penetration.		
		e. Missile impact affecting plant operation.		

Table OSC-1.1
Liquid Process Radiation Monitors Used for Accident Classification
(Values Stated Above Normal Bkg)

<u>Radiation Monitor No.</u>	<u>Description</u>	<u>Notification of Unusual Event</u>	<u>Alert</u>	<u>Site Area Emergency</u>	<u>General Emergency</u>
		<u>CPM</u>	<u>CPM</u>	<u>CPM</u>	<u>CPM</u>
RM-054A	S/G Blowdown	High Alarm(*)	1.0E+04	**	**
RM-054B	S/G Blowdown	High Alarm(*)	1.0E+04	**	**
RM-055	Overboard Disch. Hdr.	Automatic shutoff prevents radiological release			
RM-055A	Overboard Disch. Hdr.	Automatic shut off prevents radiological release			
RM-C56A	Raw Water Header	High Alarm(*)	7.0E+03	7.0E+04	7.0E+05
RM-056B	Raw Water Header	High Alarm(*)	7.0E+04	7.0E+05	>1.0E+06

(**) RM-054A and RM-054B effluent will automatically terminate prior to Site Area and General Emergency readings.

(*) High Alarm setpoint is established in the most recent revision of the Technical Data Book.

NOTES:

- (1) Unusual Event is based on high alarm setpoint readings given in Technical Data Book, current revision.
- (2) Alert condition is based on a dose rate of 1 mr, if continued over 2 hours, at the site boundary or approximate midpoint between unusual event and site emergency
- (3) Site Emergency is based on dose rate of:
 - (a) 50 millirem/hr for ~ hr to whole body at the site boundary, or
 - (b) 250 millirem/hr for ~ hr to thyroid at the site boundary.
- (4) General Emergency is based on dose rate of:
 - (a) 1 Rem/hr to whole body at the site boundary, or
 - (b) 5 Rem/hr to thyroid at the site boundary.

TABLE OSC-1.2
WHOLE BODY AND THYROID DOSE RATES
 FOR
SITE AREA EMERGENCY OR GENERAL EMERGENCY

Whole Body Dose:
 (RM-062 or RM-057)

$$\frac{\text{_____}}{Q} \times \frac{\text{_____}}{X/Q} \quad \times 7.25E+05$$

(From FC-220) (From plant computer)

$$= \text{_____ mrem/hr}$$

Thyroid Dose:
 (RM-060)

$$\frac{\text{_____}}{Q} \times \frac{\text{_____}}{X/Q} \quad \times 1.55E+09$$

(From FC-220) (From plant computer)

$$= \text{_____ mrem/hr}$$

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JUL 1 2 1983

Fort Calhoun Station Unit No. 1

FC-220

1 of 4

Meteorological Data and Release Rates Calculation Sheet

Time _____ Date _____, 19____ Monitor _____

METEOROLOGICAL DATA (From Control Room)

1. Wind direction at 10 meters is _____° at _____ hours.

2. Temperature Difference (ΔT) is _____°C at _____ hours.

STABILITY CLASS (from WT and table below) _____

3. Wind speed at 10 meters is _____ mph at _____ hours.
(present)4. Wind speed at 10 meters is _____ mph at _____ hours.
(previous hour)AVERAGE WIND SPEED (\bar{u}) = _____ mph $\times 0.447$ = _____ meters/second

5. Stack flow rate = _____ cfm.

6. Condenser off gas flow rate = _____ cfm RM-057 ONLY7. X/Q (at site boundary) = _____ sec/m³STABILITY CLASSES

$>T(^{\circ}\text{C})$	Class
<-1.9	A
-1.9 to -1.7	B
-1.7 to -1.5	C
-1.5 to -0.5	D
-0.5 to 1.5	E
0.5 to 4.0	F
>4.0	G

(1) Monitors sensitivity factors are per Revision 25, dated January 7, 1982 of the Technical Data Book. Use the revised data, if available.

ISSUED
JUL 12 1983

PROCESS MONITOR DATA (From Control Room)

1. RM-052 reads _____ cpm at _____ hours
 RM-052 background _____ cpm at _____ hours
 RM-052 net cpm is _____ ncpm.

$$Q = \frac{\text{Stack Flow Rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{\left[\frac{2.4E+06 \text{ cpm}}{(1) \text{ } \mu\text{Ci/cc}} \right]} \right] \times 4.72E-04$$

$$\text{RELEASE RATE (Q)} = \text{_____ Ci/sec}$$

2. RM-062 reads _____ cpm at _____ hours
 RM-062 background _____ cpm at _____ hours
 RM-062 net cpm is _____ ncpm.

$$Q = \frac{\text{Stack Flow Rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{\left[\frac{1.45E+07 \text{ cpm}}{(1) \text{ } \mu\text{Ci/cc}} \right]} \right] \times 4.72E-04$$

$$\text{RELEASE RATE (Q)} = \text{_____ Ci/sec}$$

3. RM-060 reads _____ cpm at _____ hours.
 RM-060 background _____ cpm at _____ hours.
 RM-060 net cpm is _____ ncpm.

RM-060 sample volume:

$$\begin{aligned} \text{Sample Volume (cc)} &= [\text{RM-060 flow rate (cfm)}] \times [\text{Time cartridge in service (min)}] \times [(28,317 \text{ (cc/ft}^3))] \\ &= \text{_____ cc} \end{aligned}$$

* The average flow rate for RM-060 is approximately 2.3 cfm.

$$Q = \frac{\text{Stack Flow Rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{\left[\frac{2.26E+03 \text{ cpm} \times \text{cc}}{(1) \text{ } \mu\text{Ci (Sample Vol.)}} \right]} \right] \times 4.72E-04$$

$$\text{RELEASE RATE (Q)} = \text{_____ Ci/sec}$$

(1) Monitors sensitivity factors are per Revision 25, dated January 7, 1982 of the Technical Data Book. Use the revised data, if available.

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JUL 12 1983

R3 7-12-83

3. Continued

NOTE: If the specific activity for iodine-131 has been determined from the sample cartridge using isotopic gamma spectroscopy, the release rate from the plant may be calculated using the following equation:

$$Q = \frac{\text{Stack Flow Rate}}{\text{I-131 Spec. Activity}} \text{ cfm} \times \frac{\mu\text{Ci/cc} \times 4.72\text{E-04}}{\text{I-131 Spec. Activity}}$$

$$\text{RELEASE RATE (Q)} = \text{_____ Ci/sec}$$

4. RM-061 reads _____ cpm at _____ hours.

RM-061 background _____ cpm at _____ hours.

RM-061 net cpm is _____ ncpm.

RM-061 Sample volume

$$\begin{aligned} \text{Sample Volume (cc)} &= [\text{RM-061 flow rate (cfm)*}] \times [(\text{Sample collection time (min)**}) \times [28,317 (\text{cc/ft}^3)]] \\ &= \text{_____ cc} \end{aligned}$$

* The average flow rate for RM-061 is approximately 7 cfm.

$$Q = \frac{\text{Stack Flow Rate}}{\text{I-131 Spec. Activity}} \text{ cfm} \times \left[\frac{4.56\text{E+05 cpm} \times \frac{\text{ncpm}}{\text{cc}}}{(1) \mu\text{Ci (Sample Vol.)}} \right] \times 4.72\text{E-04}$$

$$\text{RELEASE RATE (Q)} = \text{_____ Ci/sec}$$

**The normal sample collection time used for RM-061 is 60 minutes.

(1) Monitors sensitivity factors are per Revision 25, dated January 7, 1982 of the Technical Data Book. Use the revised data, if available.

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JUL 12 1983

5. RM-057 reads _____ cpm at _____ hours.

RM-057 background _____ cpm at _____ hours.

RM-057 net cpm is _____ ncpm

$$Q = \frac{\text{condenser off gas flow rate}}{\text{cfm}} \times \left[\frac{\text{ncpm}}{4.0E+07 \frac{\text{cpm}}{(1) \mu\text{Ci/cc}}} \right] \times 4.72 E-04$$

RELEASE RATE (Q) = _____ Ci/sec.

- (1) Monitors sensitivity factors are per Revision 25, dated January 7, 1982 of the Technical Data Book. Use the revised data, if available.

JUL 12 1983

Omaha Public Power District
1623 Harney Omaha, Nebraska 68102
402/536-4000

August 11, 1983
LIC-83-192

Mr. J. T. Collins, Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Reference: Docket No. 50-285

Dear Mr. Collins:

Pursuant to 10 CFR 50, Appendix E, Section V, five (5) copies of changes to the Fort Calhoun Station Emergency Plan Implementing Procedures are being provided to the Commission. Three (3) copies (for control copy numbers 154, 155, and 156) are provided for your office. Two (2) copies (for control copy numbers 165 and 166) have been provided to the Document Control Desk in Washington, D.C. A transmittal sheet is provided for each copy to confirm receipt of the serialized document. It is requested that these sheets be completed and returned within five (5) days of receipt.

Sincerely,

A L Jankowski for

W. C. Jones
Division Manager
Production Operations

WCJ:jmm

Enclosures

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

Mr. L. A. Yandell, Senior Resident
Inspector

X005
1/2

OMAHA PUBLIC POWER DISTRICT
CONFIRMATION OF TRANSMITTAL
EMERGENCY PLAN IMPLEMENTING PROCEDURES
(EPIP)

50-285

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EPIP-OSC-1	1-1 thru 1-14 (R2 3-21-83)	EPIP-OSC-1	1-1 thru 1-14 (R3 7-12-83)



Manager - Radiological Health
& Emergency Planning

I hereby acknowledge receipt of the above copy or numbered pages. The additional or revised pages have been included in my assigned copy of the EPIP and/or superseded pages have been removed as required.

Signed _____ Date _____

(Please sign and return this form within 5 days to the Administrative Services Department, Attention: Jane Morfeld, Omaha Public Power District, 1623 Harney Street, Omaha, Nebraska 68102.)

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