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

NRC

TITLE: STEAM LEAK OR INADVERTENT LIFTING OF STEAM RELIEF VALVE

RESPONSIBLE FOR	M E Johnston			
AUTHORIZED BY				
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STEAM LEAK OR INADVERTENT LIFTING OF STEAM RELIEF VALVE
SYMPTOM-ACTION MATRIX

ACTIONS	SYMPTOMS			
	1.1 Unexpected Less Than Normal Steam Pressure In Any Steam Header	1.2 Unusual Noise Or Visual Observation	1.3 Both "Steam Leak Detection System" Alarms 1-05B, 2-6 AND 1-05C, 2-6	1.4 "Steam Leak Detection System" High Temperature Alarm
OPERATOR ACTION 2.1 Dispatch an operator to investigate source and location of the leak.	XX	XX		XX
2.2 Isolate the leak, including loop isolation if necessary.	XX XX	XX XX		XX XX
2.3 IF leak is not isolatable AND constitutes a hazard, THEN shutdown the affected system.	XX	XX		XX
2.4 Verify reactor scrammed on Two Loop Trouble, ensure appropriate immediate actions of AOP-EP B.			XX	
2.5 Verify both secondary cooling loops shutdown and isolated.			XX	
2.6 Ensure main turbine tripped and appropriate immediate actions of AOP-EP F-1.			XX	

NOTE: THIS EMERGENCY PROCEDURE DEALS WITH LEAKS LARGE ENOUGH TO RAISE PRESSURE AND/OR TEMPERATURE INSIDE A BUILDING OR OBSTRUCT VISIBILITY AROUND EQUIPMENT OR PASSAGE WAYS.

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OPERATOR ACTION 2.7 Verify leak isolated. If not, shut off "B" BFP.			XX	
2.8 Follow-up action will vary with magnitude and location of leak. The Shift Supervisor will decide the follow-up actions.	XX	XX	XX	XX
2.9 Proceed to Emergency Operating Procedures for recovery from IOFC.			XX XX	
2.10 Insert reserve shutdown material in all 37 Regions within one (1) hour after reactor building temperature is confirmed to be 150 degrees F or higher.				XX
2.11 Notify The Technical Advisor as soon as possible upon actuation of the SLRDIS system.			XX	

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	1.1 Unexpected Less Than Normal Steam Pressure In Any Steam Header	1.2 Unusual Noise Or Visual Observation	1.3 Both "Steam Leak Detection System" Alarms I-05B, 2-6 AND I-05C, 2-6	1.4 "Steam Leak Detection System" High Temperature Alarm
OPERATOR ACTION 2.12 If active core cooling cannot be established within 1 1/2 Hours, proceed to AOP-EP G.			XX XX	

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INTRODUCTION

This emergency procedure deals with leaks which are large enough to raise the temperature of either building up to and including actuation of the Steam Line Rupture Detection/Isolation System (SLRDIS). Emergency Procedure B-1 provides instructions for main steam pressure low (<1500 psig), reheat pressure low (<35 psig), and reactor building temperature high (>175°F) all of which could be due to a steam leak. This emergency procedure provides immediate and follow-up actions for a SLRDIS trip and directs to Safe Shutdown Cooling Procedures for recovery, if unsuccessful then to EP-G, Loss Of Forced Cooling.

DISCUSSION OF SYMPTOMS

1.1 Unexpected, Less Than Normal Steam Pressure In Any Steam Header.

Lower than normal steam pressure could indicate a sizeable leak somewhere.

1.2 Unusual Noise Or Visual Observation.

Continued unusual noise could be a steam leak or a steam leak could be observed during regular rounds.

1.3 Both "Steam Leak Detection System" Alarms, I-05C, 2-6 AND I-05C, 2-6.

Each of the SLRDIS panels (I-93543 and I-93544) monitors temperature and the rate of temperature rise in the turbine building and the reactor building. Temperature trips are initiated at a fixed setpoint prior to the analyzed value of 180°F. Rate of rise trips are initated prior to the analyzed value of 55°F per minute. If BOTH panels have at least two of the four fixed temperature channels OR two of the four rate of rise channels tripped, the reactor will scram on two loop trouble, all four helium circulators trip (steam and water), both secondary coolant loops isolate, the main turbine trips immediately, and forty-four valves shut to isolate the leak.

1.4 "Steam Leak Detection System" High Temperature Alarm.

Setpoint of 135°F would indicate area of actual high temperature.

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DISCUSSION OF OPERATOR ACTION

2.1 Dispatch an operator to investigate source and location of the leak.

An investigation is required to locate the source of the leak for eventual corrective action.

2.2 Isolate leak including loop isolation if necessary.

A steam leak of the size covered by this procedure would create a hazard in addition to representing a sizeable loss of secondary coolant.

2.3 IF leak is not isolatable AND constitutes a hazard, THEN shut down the affected system.

Repair is necessary for a sizable leak.

2.4 Verify reactor scrammed on Two Loop Trouble, ensure appropriate immediate actions of AOP-EP B.

Actuation of both SLRDIS panels scrams the reactor on two-loop trouble due to both loops being shutdown.

2.5 Verify both secondary cooling loops shutdown and isolated.

Actuation of both SLRDIS panels isolates both secondary cooling loops to help isolate rupture. Verify with qualified instruments; SI-2109, SI-2110, SI-2115, SI-2116, FR-2205, and FR-2206.

2.6 Ensure main turbine tripped and appropriate immediate actions of AOP-EP F-1.

Actuation of both SLRDIS panels isolates all steam to the main turbine causing immediate turbine trip through Four Circulator Trip Circuitry.

2.7 Verify leak isolated. If not, shut off "B" BFP.

If the actuation of the SLRDIS system does not isolate the leak, the most likely source capable of actuating the system is "B" Boiler Feed Pump. Qualified isolation is by closing HV-3109 and HV-31119.

2.8 Followup action will vary with magnitude and location of leak. The Shift Supervisor will decide the followup action.

Each leak will need to be acted on as conditions dictate.

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2.9 Proceed to Emergency Operating Procedures for recovery from IOFC.

The Emergency Operating Procedures (EOP) will identify the steps needed to restore forced cooling within 90 minutes.

2.10 Insert Reserve Shutdown material in all 37 regions within one (1) hour after reactor building temperature is confirmed to be 150 degrees F or higher.

Insertion of reserve shutdown material is necessary due to the CRD In-Limit lights, analog and digital indications not being environmentally qualified. The one hour time is based on Interim Technical Specification LCO 3.1.4 Action B.

This requirement is to be deleted if the CRD indications are qualified in the future.

2.11 Notify the Technical Advisor as soon as possible upon actuation of the SLRDIS system.

Because an LOFC has taken place, and a high energy line break existed, the Technical Advisor shall be contacted to ensure his availability if needed for core heat calculations.

2.12 If active core cooling cannot be established within 1 1/2 hours, proceed to AOP-EP G.

The tables of EP G determine how long is allowed for re-establishing core cooling following the LOFC. If these times are exceeded (1 ½ hours, worst case), the operators must follow the Loss of Core Cooling Emergency Procedure.

NRC1

EMERGENCY OPERATING PROCEDURES

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
EOP-UG	Emergency Operating Procedures User's Guide	1	06-29-89
EOP-CSFM	Critical Safety Function Monitoring Procedure	3	08-09-89
EOP-1	Restoration of Reactivity Critical Safety Function	3	04-19-90
EOP-2	Restoration of Secondary Coolant Critical Safety Function	3	08-09-89
EOP-3	Restoration of Primary Coolant Critical Safety Function	3	08-09-89
EOP-4	Restoration of PCRV Integrity Critical Safety Function	3	08-09-89
EOP-5	Restoration of Radioactive Release Critical Safety Function	3	08-09-89
EOP-6	Restoration of Essential Electric Power	3	08-09-89