#### Date Entered: Dec 06, 2000

то:	USNRC/WASHING	GTON	
	JMCKNIGHT	Copy Number:	145
•			
			3ER: 170796
			*****

### PROCEDURE NUMBER: EI-7.2

TITLE: EMERGENCY POST ACCIDENT ANALYSIS

TRANSMITTAL: LISTED BELOW ARE NEW/REVISED PROCEDURES WHICH MUST BE IMMEDIATELY INSERTED INTO OR DISCARDED FROM YOUR PROCEDURE MANUAL.

-----

Action Required	
REMOVE AND DESTROY	EI-7.2, R/8, ENTIRE PROCEDURE
REPLACE WITH	EI-7.2, R/8, ENTIRE PROCEDURE
	EDITORIAL

# SIGN, DATE, AND RETURN THE ACKNOWLEDGEMENT FORM WITHIN 10 DAYS TO THE PALISADES PLANT DOCUMENT CONTROL.

SIGNATURE OR INITIALS

<u>DATE</u>

A045

Procedure No EI-7.2 Revision 8 Issued Date 12/6/00

### PALISADES NUCLEAR PLANT EMERGENCY IMPLEMENTING PROCEDURE

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

Michael Sullini 1 12/6/00 Procedure Sponsor Date

TAChartrand	/ 8/5/96	
Technical Reviewer	Date	

JPKryska	/ 9/20/96
User Reviewer	Date

-

\_\_\_\_

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### Table of Contents

1.0	PERSONNEL RESPONSIBILITY					
2.0	PURPOSE			. 1		
3.0	INITIAL CONDITIONS AND/OR REQUIREMENTS			. 1		
4.0	REFEREN	REFERENCES				
	4.1 4.2	SOURCE I	DOCUMENTS			. 1 . 2
5.0	PREREQU	UISITES				. 2
	5.1 5.2	DOSIMET	RY REQUIREMENTS			2
6.0	PRECAUTIONS AND LIMITATIONS					
7.0	PROCED	ROCEDURE		4		
	7.1	PRE-ANAI	YSIS INSTRUMENT PREPARATI	ON		4
		7.1.1 7.1.2 7.1.3	Boron: Chloride Ion Chromatogra Gas Chromatograph (Backup for Chromatograph) Gamma Spec System	ph In-line Gas	 	4 5 5
	7.2	SAMPLE I	PREPARATION	•••••		5
		7.2.1 7.2.2 7.2.3	Diluted PCS Gas Sample for Radi Diluted PCS Gas Sample for H <sub>2</sub> A In-line Gas Chromatograph) Undiluted PCS Liquid Sample for	ioactivity Analysis (Ba Chloride, a	 <u>ackup f</u> 	5 <u>or</u> 6
		7.2.4 7.2.5	Boron Diluted PCS Liquid Sample for Ra Containment Air Sample for Radi	adioactivity ioactivity	· · · · · ·	6 6 6

Proc No El-7.2 Revision 8 Page ii

## TITLE: EMERGENCY POST ACCIDENT ANALYSIS

Table of Contents			
8.0	<u>CALCULATIONS</u>		
	8.1IN-LINE GAS CHROMATOGRAPH ANALYSIS78.2BACKUP GAS CHROMATOGRAPH ANALYSIS7		
9.0	ATTACHMENTS AND RECORDS89.1ATTACHMENTS89.2RECORDS8		
C   10.0	SPECIAL REVIEWS		
ATTAC	HMENTS		

Attachment 1, "Post Accident Analytical Data Sheet"

Proc No El-7.2 Revision 8 Page 1 of 8

0

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

#### USER ALERT REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

#### 1.0 **PERSONNEL RESPONSIBILITY**

The OSC Chemistry Supervisor shall implement this procedure.

### 2.0 **<u>PURPOSE</u>**

To describe the sequential method of analyzing the Primary Coolant System samples obtained from the post accident sample panel during a post accident condition.

#### 3.0 INITIAL CONDITIONS AND/OR REQUIREMENTS

This procedure shall be implemented per Emergency Implementing Procedures EI-7.1, "Post Accident Sampling - PCS Liquid/Gas and Containment Air."

#### 4.0 **REFERENCES**

#### 4.1 SOURCE DOCUMENTS

- 4.1.1 NUREG 0737
- 4.1.2 NUREG 0654
- 4.1.3 Technical Specifications Chapter 5, Section 5.5.3, "Post Accident Sampling Program"

Proc No El-7.2 Revision 8 Page 2 of 8

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### 4.2 **REFERENCE DOCUMENTS**

- 4.2.1 Emergency Implementing Procedure EI-7.1, "Post Accident Sampling - PCS Liquid/Gas and Containment Air"
- 4.2.2 Emergency Implementing Procedure EI-7.3, "Hydrogen Analysis of Post Accident Samples"
- 4.2.3 Emergency Implementing Procedure EI-7.4, "Post Accident Gas and Liquid Activity Analysis"
- 4.2.4 Emergency Implementing Procedure EI-7.5, "Boron; Chloride Ion Chromatography Method Post Accident"
- 4.2.5 Emergency Implementing Procedure EI-1, "Emergency Classification and Actions"
- 4.2.6 Emergency Implementing Procedure EI-7.0, "Emergency Post Accident Sampling Decision Process"
- 4.2.7 Palisades Administrative Procedure 10.46, "Plant Records"

#### 5.0 **PREREQUISITES**

#### 5.1 DOSIMETRY REQUIREMENTS

- 5.1.1 As dictated by OSC Health Physics Supervisor.
- 5.1.2 Individuals handling samples shall wear ring TLDs on one finger to each hand.

#### 5.2 ANTI-C CLOTHING REQUIREMENTS

Minimum clothing shall be determined by the OSC Health Physics Supervisor.

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### 6.0 **PRECAUTIONS AND LIMITATIONS**

- 6.1 After a reactor accident, very high radiation dose rate and high levels of airborne radioactivity may be present in unexpected locations. Take precautions to keep internal and external exposure to a minimum. These may include, but are not limited to the following precautions:
  - a. Air sampling shall be performed to determine the iodine concentration in the sampling and analysis areas.
  - b. Since the radiological conditions in the sampling area are uncertain, radiological surveillance shall be required.
  - c. At least one calibrated high-range dose rate instrument should be available at all times.
  - d. The instruments used for survey purposes should be ion chamber or gm type instruments. If an instrument with a sealed chamber is not available, bag the instrument to preclude internal contamination with radioactive gases.
  - e. Handling of samples should be minimized. When samples must be handled, a Beta radiation dose rate deduction of 90% can be assumed for heavy rubber gloves. Dose to the extremities shall be limited to 40,000 mrem Shallow Dose Equivalent, (SDE).
  - f. When not being handled, samples shall be stored in a shielded or remote location. All open samples shall be handled in vent hoods.
  - g. Airborne conditions in the Auxiliary Building could require the use of pressure demand type supplied air respirators or Self Contained Breathing Apparatus (SCBA) by all personnel involved.

Proc No El-7.2 Revision 8 Page 4 of 8

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

- 6.2 Assume that all reactor coolant samples are extremely radioactive until determined otherwise by survey. Handle all liquids collected during post-accident sampling, including dilutions, with extreme care to prevent unnecessary personnel exposure.
  - a. Shielding shall be used in the hot laboratory hood. Ensure shield is in the hood. This shield will normally be located in the hot laboratory hood.
  - Personnel should keep their occupational radiation exposure (wholebody and extremity) as low as reasonably achievable (ALARA) by practical use of shielding, by maintaining a distance from the sources of radiation, and by proceeding to a low background radiation area during wait time periods.
  - c. Remote handing tools may be used in support of ALARA.
  - d. Check dosimeters periodically to determine approximate exposure.
- 6.3 There is a three hour time limit on sampling and analysis from the time the sample is requested.

### 7.0 **PROCEDURE**

#### USER ALERT REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

### 7.1 **PRE-ANALYSIS INSTRUMENT PREPARATION**

### 7.1.1 Boron: Chloride Ion Chromatograph

Ensure Ion Chromatograph is calibrated and an acceptable functional check is run prior to analyzing a PASM sample for Boron and Chloride per Emergency Implementing Procedure EI-7.5, "Boron; Chloride Ion Chromatography Method Post Accident."

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### 7.1.2 Gas Chromatograph (Backup for In-line Gas Chromatograph)

- a. Ensure carrier gas flow has been established and instrument settings are proper.
- b. Standardize as per Emergency Implementing Procedure EI-7.3, "Hydrogen Analysis of Post Accident Samples."
- c. Perform functional check as per Emergency Implementing Procedure EI-7.3, "Hydrogen Analysis of Post Accident Samples."

#### 7.1.3 Gamma Spec System

- a. Conduct a 500 second background analysis to ensure no interference with changing background radiation levels as per Emergency Implementing Procedure EI-7.4, "Post Accident Gas and Liquid Activity Analysis."
- b. Verify that a daily source check count has been performed to show that the equipment is performing at the calibrated efficiencies/Kev for the Gamma Spec System to be used for PASM analysis.

#### 7.2 **SAMPLE PREPARATION**

#### 7.2.1 Diluted PCS Gas Sample for Radioactivity

- a. Prepare and Analyze PCS gas sample per Emergency Implementing Procedure EI-7.4, "Post Accident Gas and Liquid Activity Analysis."
- b. Attach gamma spectral analysis printout to data sheet, Attachment 1, "Post Accident Analysis Data Sheet."

Proc No El-7.2 Revision 8 Page 6 of 8

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

# 7.2.2 Diluted PCS Gas Sample for H<sub>2</sub> Analysis (Backup for In-line Gas Chromatograph)

- a. No preparation of the  $H_2$  gas sample is necessary. Sample will be analyzed directly as it is delivered to the lab after being counted for activity.
- b. Analyze as per Emergency Implementing Procedure EI-7.3, "Hydrogen Analysis of Post Accident Samples."
- c. Syringe should be purged in lab hood.
- d. Remove septum from vial and allow to vent in hood.

### 7.2.3 Undiluted PCS Liquid Sample for Chloride, and Boron

Boron, Chloride analysis will be performed using Emergency Implementing Procedure EI-7.5, "Boron; Chloride Ion Chromatography Method Post Accident."

### 7.2.4 Diluted PCS Liquid Sample for Radioactivity

- a. Prepare and analyze diluted PCS liquid sample per Emergency Implementing Procedure EI-7.4, "Post Accident Gas and Liquid Activity Analysis."
- b. Attach gamma spectral analysis printout to data sheet, Attachment 1, "Post Accident Analysis Data Sheet."

### 7.2.5 Containment Air Sample for Radioactivity

- a. Prepare and analyze containment air sample per Emergency Implementing Procedure EI-7.4, "Post Accident Gas and Liquid Activity Analysis."
- b. Attach gamma spectral analysis printout to datasheet Attachment 1, "Post Accident Analysis Data Sheet."

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### 8.0 CALCULATIONS

- 8.1 IN-LINE GAS CHROMATOGRAPH ANALYSIS
- 8.1.1 Hydrogen peak height obtained from Emergency Implementing Procedure EI-7.1, "Post Accident Sampling - PCS Liquid/Gas and Containment Air."

Peak	Heiaht
i Quit	inorgine

8.1.2 Determine corrected peak height using the following calculation:

Corrected Peak Height = <u>Peak Height x Attenuation</u> 10

Corrected Peak Height

8.1.3 Determine cc/kg for  $H_2$  using calibration curve. Calibration curves are specific for attenuation values.

\_\_\_\_\_H₂ cc/kg

8.1.4 Record  $H_2$  cc/kg on Attachment 1.

### 8.2 BACKUP GAS CHROMATOGRAPH ANALYSIS

8.2.1 Hydrogen % for diluted PCS gas sample obtained from Emergency Implementing Procedure EI-7.3, "Hydrogen Analysis of Post Accident Samples."

\_\_\_\_\_ % H<sub>2</sub>

#### 8.2.2 Determine ppm $H_2$ using the following calculation:

 $H_2 \% x 10,000 \text{ ppm}/\% = \text{ppm } H_2$  ppm  $H_2$ 

8.2.3 Determine  $cc/kg H_2$  using the following calculation:

ppm H<sub>2</sub> x 9.338 cc/kg/ppm = H<sub>2</sub> cc/kg  $H_2$  cc/kg

8.2.4 Record  $H_2$  cc/kg on Attachment 1.

Proc No El-7.2 Revision 8 Page 8 of 8

### TITLE: EMERGENCY POST ACCIDENT ANALYSIS

### 9.0 ATTACHMENTS AND RECORDS

### 9.1 ATTACHMENTS

9.1.1 Attachment 1, "Post Accident Analytical Data Sheet"

### 9.2 **RECORDS**

0

Records generated by this procedure shall be filed in accordance with Palisades Administrative Procedure 10.46, "Plant Records."

### 10.0 SPECIAL REVIEWS

None

Proc No EI-7.2 Attachment 1 **Revision 8** Page 1 of 1

### POST ACCIDENT ANALYTICAL DATA SHEET

### PCS OFF GAS ANALYSIS (diluted sample)

- 1. Sample Date/Time \_\_\_\_\_/ (from El-7.1)
- 2. Hydrogen Concentration cc/kg 3. Attach gamma spectral analysis print out to data sheet.

# PCS LIQUID ANALYSIS (undiluted sample)

#### Sample Date/Time \_\_\_\_\_/ (from El-7.1) 1. 2. Chloride Concentration (See El-7.5, "Boron; Chloride ppm Ion Chromatography Method Post Accident") 3. Boron Concentration (See El-7.5, "Boron; Chloride Ion ppm Chromatography Method Post Accident") 4. Dissolved Oxygen Concentration (From EI-7.1) ppm Recommended

5. pH (From EI-7.1) Recommended

### PCS LIQUID ANALYSIS (diluted sample)

- Sample Date/Time \_\_\_\_\_/ (from EI-7.1) 1.
- 2. Attach gamma spectral analysis print out to data sheet.

### **CONTAINMENT AIR ANALYSIS**

- Sample Date/Time \_\_\_\_ / (from El-7.1) 1.
- 2. Attach gamma spectral analysis print out to data sheet.

### ALL ANALYTICAL RESULTS COMPLETED

\_\_\_\_\_/ Date

Time