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TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VA

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

Action Required	Section or Description
REMOVE AND DESTROY	EI-6.2, R/4, ENTIRE PROCEDURE
REPLACE WITH	EI-6.2, R/4, ENTIRE PROCEDURE
	EDITORIAL AND APPLICABILITY
	WORD 2000 CONVERSION

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

SIGNATURE OR INITIALS _____ DATE _____

A045

Procedure No EI-6.2
Revision 4
Issued Date 6/25/02

PALISADES NUCLEAR PLANT
EMERGENCY IMPLEMENTING PROCEDURE

TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VALVES

J L Fontaine / 3/18/02

Procedure Sponsor Date

/

Technical Reviewer Date

/

User Reviewer Date

TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VALVES

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ATTACHMENTS

Attachment 1, "Steam Dump Release Rate Work Sheet"
Attachment 2, "Steam Line Monitor Conversion Factor"

TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VALVES

USER ALERT
INFORMATION USE PROCEDURE

The activities covered by this procedure may be performed from memory.

1.0 PERSONNEL RESPONSIBILITY

The Health Physics Support Group Leader shall implement this procedure. In the absence of a Health Physics Support Group Leader, the Site Emergency Director (SED) or the EOF Director shall delegate this responsibility.

2.0 PURPOSE

This procedure provides a manual calculation of a release rate for radioactive effluents from the atmospheric dump valves. This data is used as input for offsite dose calculations.

This procedure provides a manual backup to the steam dump release rate calculations performed in the Automated Dose Assessment Program, "Offsite."

3.0 REFERENCES

3.1 SOURCE DOCUMENTS

3.1.1 NUREG 0654, Section I, "Accident Assessment"

3.1.2 Dose Assessment Basis Document DABD-04, "Palisades - Steam Dump Release Rate Calculations"

3.2 REFERENCE DOCUMENTS

3.2.1 Emergency Implementing Procedure EI-6.0, "Offsite Dose Calculation and Recommendations for Protective Actions"

3.2.2 Health Physics Procedure HP 6.29, "Atmospheric Dump Valve, Steam Generator Code Safeties and Turbine Driven Auxiliary Feed Pump Release Calculations"

3.2.3 Palisades Administrative Procedure 10.46, "Plant Records"

3.2.4 Palisades Administrative Procedure 10.41, "Procedure Initiation and Revision" 1e

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4.0 INITIAL CONDITIONS AND/OR REQUIREMENTS

a. This procedure shall be implemented as required per Emergency Implementing Procedure EI-6.0, "Offsite Dose Calculation and Recommendations for Protective Actions."

b. Data and results from this procedure should be recorded on Attachment 1, "Steam Dump Release Rate Work Sheet."

c. This procedure presupposes that a steam dump has occurred or is occurring.

d. For initial dose estimation, use release rate estimated in Section 5.0. As data becomes available and time permits, the release rate may be confirmed using Section 6.0.

5.0 RELEASE RATE ESTIMATION

USER ALERT
INFORMATION USE PROCEDURE

The activities covered by this procedure may be performed from memory.

5.1 Use the work sheet (Attachment 1) to perform all calculations. This work sheet steps you through all the required calculations.

5.2 Record the time since reactor shutdown in the space provided on the work sheet. The time since reactor shutdown is used to obtain the monitor conversion factor "C" from Attachment 2 of this procedure. This conversion factor converts the steam line monitor reading in CPM to Ci/sec.

5.3 If the steam generator dump valve(s) is/are open, the release rate out each dump is calculated by multiplying the monitor reading in CPM by the conversion constant "C" and the fraction that the dump valve is open.

TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VALVES

NOTE: The status of each dump valve can be obtained from page 331 on the Plant Process Computer (PPC). A solid green valve symbol means the valve is closed. A red hollow symbol means the dump valve may be partially open or fully open. If the valve is only partially open, both the green light and red light on the front Control Room panel will be off. If the valve is fully open, the red light on the front Control Room panel will be on.

5.4 The fraction that the dump valve is open equals zero for a fully closed valve or one for a fully open valve. If the valve is partially open, then the fraction open must be estimated by either doing a system water mass balance to determine the mass of water lost over a given time period or a volume flow calculation to determine the flow through the dump valve.

NOTE: The following "FRACTION" calculations are performed independently for each steam line.

5.4.1 Mass Balance Calculation

a. To calculate the fraction that the dump valve is open, divide the actual total mass of water (lbs) lost over the given time period by the total mass that would be lost for a fully open valve and the number of dump valves open.

$$\text{FRACTION} = \frac{\text{Actual Mass Lost}}{(\text{Full Open Mass Lost}) \times (\text{\# of Valves Open})}$$

The following equation gives the saturated steam mass flow rate (lb/sec) through a fully open dump valve as a function of steam pressure (psia).

Full Open Mass Lost = (0.2977 x PRESSURE) - 2.6983

Where:

Full Open Mass Lost - Equals the saturated steam mass flow rate (lb/sec).

PRESSURE - Saturated steam pressure (psia).

5.4.2 Volume Flow

a. To calculate the fraction that the valve is open, divide the calculated actual flow rate by the fully open flow rate and by the number of dump valves open.

$$\text{FRACTION} = \frac{\text{Actual Flow Rate}}{(134\ ft^3/sec) \times (\#\ \text{of Valves Open})}$$

The volume flow rate through a fully open dump valve is a constant value equal to 3.8E+06 cc/sec or 134 ft^3/sec. This value is independent of steam temperature and pressure.

5.5 Enter the "FRACTION" calculated on the Steam Dump Release Work Sheet as follows:

a. If one Steam Dump Valve is (partially) open per steam line, then enter the "FRACTION" calculated for that Steam Dump Valve only. Enter zero for the other Steam Dump Valve.

b. If both Steam Dump Valves are (partially) open per steam line, then enter the "FRACTION" calculated for both Steam Dump Valves.

6.0 CONFIRMATION OF RELEASE RATE ESTIMATE

6.1 Complete Health Physics Procedure HP 6.29, "Atmospheric Dump Valve, Steam Generator Code Safeties and Turbine Driven Auxiliary Feed Pump Release Calculations" (only as time permits and data becomes available).

7.0 ATTACHMENTS AND RECORDS

7.1 ATTACHMENTS

7.1.1 Attachment 1, "Steam Dump Release Rate Work Sheet"

7.1.2 Attachment 2, "Steam Line Monitor Conversion Factor"

7.2 RECORDS

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

TITLE: RELEASE RATE DETERMINATION FROM STEAM LINE MONITORS RIA-2323 AND RIA-2324 FOR STEAM RELEASES THROUGH ATMOSPHERIC DUMP VALVES

8.0 SPECIAL REVIEWS

The scope of this procedure does not include activities that require a 50.59 review per Palisades Administrative Procedure 10.41, "Procedure Initiation and Revision." Therefore, changes to this procedure do not require a 50.59 review.

The scope of this procedure includes activities that require a PRC review per Palisades Administrative Procedure 10.41, "Procedure Initiation and Revision." Therefore, changes to this procedure require a PRC review.

e

DATE: _____
TIME: _____

STEAM DUMP RELEASE RATE WORK SHEET

TIME SINCE
REACTOR SHUTDOWN
_____ HOURS

STEAM GENERATOR "A" DUMPS OPEN

YES

NO

NOBLE GAS RELEASE RATE CALC STEAM LINE "A"

NGA1 = _____ x _____ x _____ = _____
RIA2324 FRACT0781 C

NGA2 = _____ x _____ x _____ = _____
RIA2324 FRACT0782 C

NGA = NGA1 + NGA2 = _____

PARAMETER	DESCRIPTION	SOURCE
RIA2324	Monitor Reading cpm	PPC 352
FRACT0781	0=Closed 1=100% Open*	PPC 331
FRACT0782	0=Closed 1=100% Open*	PPC 331
C	Convert CPM to Ci/sec	Att 2
NGA1,A2	Ci/sec per Valve	
NGA	Ci/sec Total line A	

STEAM GENERATOR "B" DUMPS OPEN

YES

NO

NOBLE GAS RELEASE RATE CALC STEAM LINE "B"

NGB1 = _____ x _____ x _____ = _____
RIA2323 FRACT0779 C

NGB2 = _____ x _____ x _____ = _____
RIA2323 FRACT0780 C

NGB = NGB1 + NGB2 = _____

PARAMETER	DESCRIPTION	SOURCE
RIA2323	Monitor Reading cpm	PPC 352
FRACT0779	0=Closed 1=100% Open*	PPC 331
FRACT0780	0=Closed 1=100% Open*	PPC 331
C	Convert CPM to Ci/sec	Att 2
NGB1,B2	Ci/sec per Valve	
NGB	Ci/sec Total line B	

TOTAL NOBLE GAS & IODINE RELEASE

NG = NGA + NGB = _____
I^2 = NG x 1.0E-03 = _____

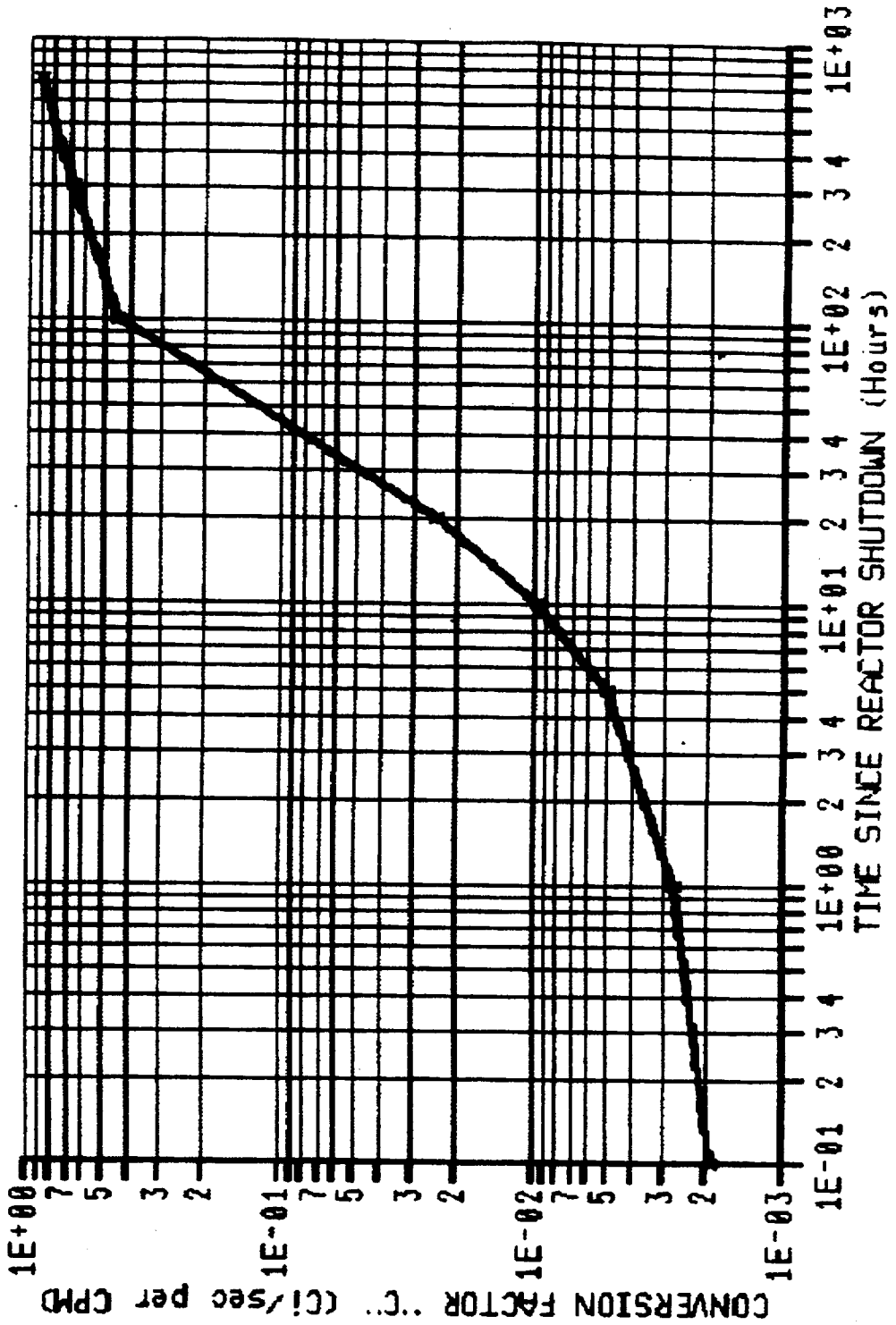
NG - TOTAL NOBLE GAS RELEASE RATE OUT ALL DUMP VALVES (Ci/sec)**

I^2 - TOTAL I-131 RELEASE RATE OUT ALL DUMP VALVES (Ci/sec)

* If actual flow is known, FRACT = Actual Flow ft^3 sec / 134
Where 134 equals full flow through valve in ft^3 sec

** If turbine bypass valve is open, the stack monitor may detect additional noble gas release from the condenser air ejector.

Completed By: _____

Reviewed By: _____

STEAM LINE MONITOR CONVERSION FACTOR