Attachment 1

Revised Emergency Plan Implementing Procedure

Procedure Usage Requirements		Sections
Reference Use	• Review and understand the procedure before performing any steps, including the prerequisite section. • Have a copy or applicable pages/sections open at the work site. • Use Placekeeping method according to SO123-XV-HU-3. • If any portion of the document is performed from memory, do so in the sequence specified. Perform each step as written, except when an approved process specifically allows deviation. • Refer to the procedure or instruction at least once to ensure completion of the task in accordance with the requirements. • Review the document at the completion of the task to verify that all appropriate steps are performed and documented.	ALL

Color Usage	Location
This Document Does Not Contain Relevant Color	N/A

LEVEL 1 – QA PROGRAM AFFECTING

50.59 DNA / 72.48 DNA / RX DNA / 50.54(q) APPLIES

Procedure Type	Procedure Owner
General	**Kelli Gallion**

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1.0 PURPOSE AND SCOPE

1.1 To determine a dose at the Exclusion Area Boundary in an accident situation at the San Onofre Nuclear Generating Station.

1.2 This procedure applies when a release is occurring or when an event has been declared in accordance with the SONGS Permanently Defueled Emergency Plan (PDEP).

2.0 RESPONSIBILITIES

2.1 The Emergency Director and/or Radiation Protection (RP) Coordinator and/or RP Technician are responsible for the actions described in this procedure.

3.0 DEFINITIONS/ACRONYMS

3.1 CW: Closed Window (Ion chamber reading)

3.2 EAB: Exclusion Area Boundary

3.3 EDE: Effective Dose Equivalent

3.4 ODCM: Offsite Dose Calculation Manual

3.5 PVS: Plant Vent Stack

3.6 SDE: Shallow Dose Equivalent (skin dose)

3.7 WRGM: Wide Range Gas Monitor

4.0 PRECAUTIONS AND LIMITATIONS

4.1 None

5.0 PREREQUISITES

5.1 **VERIFY** this document is current by using one of the methods described in SO123-XV-HU-3.

5.2 **VERIFY** Level of Use requirements on the first page of this procedure.

6.0 PROCEDURE

NOTES

1. SDS ODCM/REMP Specialist or designee may be contacted for support with dose assessment. Obtaining this assistance must not delay event declaration.

2. EP(123) DA, Dose Assessment Calculation, electronic form may be found on the Aconex system or on the Portal under Org Units > Nuclear > PDEP Emergency Notification. This electronic form may be used instead of a hardcopy to perform calculations indicated in this procedure.

6.1 Meteorology

6.1.1 **OBTAIN** wind speed and delta Temperature from Control Room Instrumentation (e.g., Met Tower, Plant Computer System), or National Weather Service. **USE** 10 meter, 15 minute average for wind speed from primary tower (preferred) or from backup.

6.1.1.1 **RECORD** wind speed in EP(123) DA, *Dose Assessment Calculation*, Section 3.

6.1.1.2 **RECORD** delta Temperature to determine EAB Xμ/Q in EP(123) DA, Section 4.

NOTE

Actual survey results should be considered more accurate than a projection based on radiation monitors.

6.2 Noble Gas Source Term Estimate Using Radiation Monitor Data

6.2.1 IF a Fuel Handling Accident, THEN **USE** PVS Wide Range Gas Monitors (WRGM) for source term calculation.

6.2.2 IF release is unmonitored, THEN **GO TO** Section 6.5.

6.2.3 IF affected radiation monitors are NOT available for source term calculations, THEN **PERFORM** dose assessment based on sample analysis (Section 6.3) or field readings (Section 6.5).

NOTE

For WRGMs, the µCi/sec value on "Eff" channel is preferred when calculating a source term.

6.2.4 WHEN using Control Room instrumentation WRGM Effluent channel, THEN **PRESS** "Eff" button.

6.2.4.1 **RECORD** activity readings in EP(123) DA, Section 1.

6.2.4.2 **CALCULATE** and **RECORD** total noble gas source term in EP(123) DA, Section 1.

NOTES

1. Uneven mixing can occur in the common exhaust plenum. The results using the following step may underestimate total release source term. Survey results should be used to validate calculation results.
2. Unit 2 and Unit 3 PVSs have a common header, therefore the total release source term can be determined using the sum of monitors 2(3)RE-7865.

6.2.4.3 IF using monitors 2(3)RE-7865 and one of them is NOT available, THEN **DOUBLE** the value of the working radiation monitor activity AND ANNOTATE which radiation monitor was NOT available in EP(123) DA, Section 1.

6.2.5 **IMPLEMENT** Section 6.4 to perform steps needed to calculate dose.

NOTES

1. Only use Section 6.3 if affected radiation monitors are NOT available.
2. Actual survey results should be considered more accurate than a projection based on sample analysis.

6.3 Noble Gas Source Term Estimate Using Sample Analysis Results

6.3.1 **RECORD** the following data in EP(123) DA, Section 2:

- Noble Gas activity concentration (µCi/cc) from gamma spectrum results of PVS sample
- Total release flow rate (sum of both PVS, ft^3/min) from Control Room instrumentation

6.3.1.1 IF total flow rate is NOT available, THEN **USE** default PVS flow rate of 164,000 ft^3/min.

6.3.2 **CALCULATE** and **RECORD** the Noble Gas Source Term in EP(123) DA, Section 2.

6.3.3 IMPLEMENT Section 6.4 to perform steps needed to calculate dose.

6.4 Calculating Gaseous Projected Dose from Radiation Monitor Readings or Sample Analysis

6.4.1 **DETERMINE** Estimate of Release Duration and **RECORD** in EP(123) DA, Section 5. IF unknown, THEN assume 2 hours.

6.4.2 **CALCULATE** Wind Speed Factor in EP(123) DA and **RECORD** in Sections 3 and 5.

6.4.3 **DETERMINE** Stability Class and EAB Xµ/Q from Section 4 in EP(123) DA and **RECORD** Xµ/Q in Section 5.

6.4.3.1 IF delta Temperature is NOT available, THEN use Stability Class D to determine EAB Xµ/Q.

6.4.4 **CALCULATE** and **RECORD** SDE and EDE in EP(123) DA, Section 5.

6.4.5 **GO TO** Section 6.8

6.5 Gaseous Dose Assessment from Field Team Measurements

NOTE

This method assumes field data are taken in centerline of the plume and at the EAB. Off-axis data will underestimate source term. Data taken at locations NOT exactly on the EAB can result in significant errors in calculated source term because concentration decreases exponentially with distance between release point and sample point.

6.5.1 Effective Dose Equivalent (EDE) at EAB

6.5.1.1 **OBTAIN** a Closed Window (CW) reading in mR/hr at waist level, centerline of the plume at the EAB.

6.5.1.2 IF CW reading > 10 mrem/hr, THEN **IMMEDIATELY NOTIFY** the Shift Manager/Emergency Director of the EAL threshold for PD-AA1.4

6.5.1.3 **RECORD** CW reading in EP(123) DA, Section 6.

6.5.1.4 **DETERMINE** Estimate of Release Duration and **RECORD** in EP(123) DA, Section 6. IF unknown, THEN assume 2 hours.

6.5.1.5 **CALCULATE** and **RECORD** EDE in EP(123) DA, Section 6.

6.5.2 **GO TO** Section 6.8.

6.6 Liquid Dose Assessment General Parameters

6.6.1 **DETERMINE** and **RECORD** the following data in EP(123) DA, Section 7:

- Dilution flow rate (e.g., saltwater dilution pump flow) from Control Room instrumentation or estimate.
- Release flow rate from Control Room instrumentation or estimate.

6.6.2 **CALCULATE** and **RECORD** the total flow rate in EP(123) DA, Section 7.

6.6.3 **CALCULATE** and **RECORD** the ratio of total flow rate to release flow rate in EP(123) DA, Sections 7 and 8.

6.6.4 **DETERMINE** and **RECORD** the nuclides decay corrected activity from the liquid sample gamma spectrum results in EP(123) DA, Sections 7 and 8.

6.6.5 **CALCULATE** and **RECORD** the gamma concentration sum in EP(123) DA, Sections 7 and 8 (three places).

6.6.6 **DETERMINE** and **RECORD** the tritium (H-3) decay corrected activity in EP(123) DA, Section 8.

NOTE

Liquid ODCM MAX is determined by:

$$ODCM\ MAX = \frac{(D + R)\ x\ C\gamma}{R\ x\ \sum(C/MPC)}$$

6.7 Liquid ODCM Max and Times ODCM Limit Calculation

6.7.1 **CALCULATE** and **RECORD** the ratios of decay corrected activity to Maximum Permissible Concentration in EP(123) DA, Section 8.

6.7.2 **CALCULATE** and **RECORD** the sum of the ratios of decay corrected activity to Maximum Permissible Concentration in EP(123) DA, Section 8 (two places).

6.7.3 **CALCULATE** and **RECORD** the ODCM Max in EP(123) DA, Section 8.

6.7.4 **CALCULATE** and **RECORD** the Times ODCM Limit in EP(123) DA, Section 8.

6.8 Verification and Reporting of Dose Assessment

6.8.1 IF another qualified individual is available and time permits,
THEN have them independently perform dose assessment calculations.

6.8.2 **IMMEDIATELY REPORT** dose projections to Shift Manager/Emergency Director and/or RP Coordinator.

6.8.2.1 IF the gaseous TEDE at the EAB is > 10 mrem, THEN **IMMEDIATELY NOTIFY** the Shift Manager/Emergency Director that the EAL threshold for PD-AA1.2 has been met.

6.8.2.2 IF the liquid ODCM times is > 2 and ≤ 175, THEN **IMMEDIATELY NOTIFY** the Shift Manager/Emergency Director that the EAL threshold for PD-AU1.2 has been met.

6.8.2.3 IF the liquid ODCM times is > 175, THEN **IMMEDIATELY NOTIFY** the Shift Manager/Emergency Director that the EAL threshold for PD-AA1.3 has been met.

7.0 RETENTION OF RECORDS

7.1 **PROVIDE** all paperwork generated in response to the emergency even (e.g., logs, procedures, attachments, completed forms, and checklists) to the Emergency Preparedness Manager.

7.2 Emergency Response Records shall be maintained in EP files for a period of six years.

8.0 REFERENCES / COMMITMENTS

8.1 Implementing Reference

8.1.1 Procedures

8.1.1.1 SO123-XV-HU-3, Written Instruction Use and Adherence

8.2 Developmental References

8.2.1 Commitments

8.2.1.1 SONGS Permanently Defueled Emergency Plan, Volume 1

8.2.1.2 SONGS Permanently Defueled Emergency Plan, Volume 2, EAL Technical Bases Manual

8.2.1.3 SO23-ODCM, Units 1, 2, and 3 Offsite Dose Calculation Manual - ODCM

8.2.2 Corrective Actions to Prevent Recurrence (CAPR)

8.2.2.1 None

8.2.3 Procedures

8.2.3.1 SO123-VIII-ERO-2, Shift Manager / Emergency Director Checklist

8.2.3.2 SO123-VIII-ERO-5, Radiation Protection Coordinator Checklist

8.2.4 Other

8.2.4.1 EP(123) DA, Dose Assessment Calculation

Summary of Changes | **Attachment 1**

Activity tracking 10 CFR 50.54(q): 0617-56790

Author: Lucia Sischo

Reason	Description of Change	Reviewer(s)	Step, Section, Attachment or Page
0617-56790	Add step calculate and record total noble gas source term in EP(123) DA, section 1.	Owner EP (50.54) NOD RP SDS	Page 5
	Add section for liquid dose assessment, stating to contact Effluent Specialist or designee for support, and provide instructions to perform basic liquid dose assessment, including EP(123) DA completion.		Pages 6 and 7
	Include NOTES to identify responsibility or location of EP(123) DA.		Page 4
	Identify source term type.		Pages 4, 6, and 7
	Identify actions regarding source term type.		Page 8
Betterment	Update Section 3.0 for Acronyms.	Owner	Page 3

Reviewer Title	Reviewer Name:
Owner	Sischo
Emergency Planning [50.54(q) Qualified]	Sheek
RP	Sewell
NOD (Nuclear Oversight Division)	Churchill
SDS	McCann Heredia
Approvers:	
NOD Final Approval or designee	Gray
CFDM / Designee:	Gallion

Attachment 2

Report and Analysis Summary

San Onofre Nuclear Generating Station
Report and Analysis Summary
10 CFR 50.54(q)(5)

Document Number: SO123-VIII-ERO-6, Revision 2
Title: Dose Assessments
SONGS Action Request: 0617-56790

Change Description	**Analysis Summary**
The 10CFR50.54(q) evaluation for SO123-VIII-ERO-6 Revision 2 was performed under AR 0617-56790 assignment 3. This revision: • Adds instructions to perform liquid dose assessment using sample analysis results. • Adds a note to provide guidance for obtaining additional dose assessment support from a subject matter expert, with the clarification that this assistance must not delay event declaration. • Adds instructions for prompt report of EAL thresholds for liquid releases • Adds instructions to calculate and record total noble gas source term, which is performed in accordance with form EP(123) DA but inadvertently omitted from the procedure step. • Adds a note to provide the location of the electronic dose assessment worksheet, a tool used to facilitate dose assessment calculations. • Adds the words "noble gas" or "gaseous" to differentiate between the existing gaseous calculations and the liquid calculations being introduced • Incorporates editorial changes.	After incorporation of the changes in SO123-VIII-ERO-6 Revision 2, the Permanently Defueled Emergency Plan continues to maintain station specific dose assessment procedures to calculate accumulated or projected dose. Radiological information remains available to the Command Center staff to conduct assessment and initiate emergency measures when required. The changes do not conflict with the Permanently Defueled Emergency Plan content or the exemptions granted. The changes do not alter the licensing basis with regards to meeting the regulatory requirements. The Permanently Defueled Emergency Plan continues to meet the regulatory requirements of 10CFR50.47(b) and 10CFR50 Appendix E, Section IV, as exempted. The changes do not modify the licensing basis with regards to a reduction in effectiveness. The capability and timeliness to use methods, systems, and equipment for assessment of radioactive releases is maintained. The capability and timeliness to perform the associated elements are also maintained. The changes can be implemented without prior NRC approval.
PREPARED BY: Lucia Sischo DATE: 3-28-2018	REVIEWED BY: Kevin Sheek DATE: 3-28-2018