Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37384-2000

January 9, 2001

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - EMERGENCY PLAN IMPLEMENTING PROCEDURE (EPIP) REVISIONS

In accordance with the requirements of 10 CFR 50, Appendix E, Section V, the enclosure provides the following EPIP:

EPIP	Revision	Title
EPIP-13	0	Dose Assessment
EPIP-14	16	Radiological Control Response

If you have any questions concerning this matter, please telephone me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,

Pedro Salas
Licensing and Industry Affairs Manager

Enclosure
cc: See page 2

A045

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TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-13

DOSE ASSESSMENT

Revision 0

QUALITY RELATED

PREPARED/PROOFREAD BY: W. P. Brooks

RESPONSIBLE ORGANIZATION: Emergency Preparedness

APPROVED BY: J. Randy Ford

EFFECTIVE DATE: 12/19/2000

Level Of Use: Reference

REVISION DESCRIPTION: Initial Release. This EPIP was developed from the dose assessment sections of EPIP-14 Rev 14 for ease of use. The EPIP is intended to be a stand alone document no longer relying on 0-TI-CEM-030-030.0 for dose assessment during emergencies. This change is to be made concurrent with EPIP-14 and 0-TI-CEM-030-030.0.

TABLE OF CONTENTS

1.0 PURPOSE

This procedure describes the initial dose assessment methodology to be used in the event of a radiological emergency until Central Emergency Control Center (CECC) dose assessment staff starts performing this function. Additionally, the procedure provides Chemistry a manual method to determine the site noble gas release rate for determination of emergency classification in accordance with EPIP-1. The procedure can be performed in any mode and is a best estimate of the release rates for comparison with the limits contained in the Emergency Plan Implementing Procedures (EPIPs).

This instruction must be used in conjunction with the Integrated Computer System (ICS) dose assessment if a release is occurring through the main steam safety valves or atmospheric relief valves (PORVs) of the main steam system. The ICS code RAD025 does not include this release path.

2.0 REFERENCES

2.1 INTERFACE DOCUMENTS

A. EPIP-14, "Radiological Control Response"
B. CECC-EPIP-9, "Emergency Environmental Radiological Monitoring Procedures"
C. 0-TI-CEM-030-030.0, "Manual Calculation of Plant Gas, Iodine, and Particulate Release Rates for Offsite Dose Calculation Manual (ODCM) Compliance"
D. TI-18, "Radiation Monitors"
E. EPIP-1, "Emergency Plan Classification Matrix"

3.0 INSTRUCTIONS

3.1 Chemistry Response

The designated Chemistry personnel are responsible for managing the activities of the Chemistry Lab.

A. Upon request of the Shift Manager (SM) or Site Emergency Director (SED), Chemistry personnel shall determine the plant total gas release rate (source term) using Appendix D.

B. Upon request of the SM or SED, Chemistry personnel shall determine the doses associated with the plant total gas release rate calculated in section A above.

C. In the event of an CECC activation, any source term assessments and associated dose assessments should be reported to the CECC dose assessment staff when the CECC is staffed and further dose assessments using this procedure should cease.

3.2 Requests for Dose Assessments

The performance of these assessments may be initiated by request of the SM if (1) ICS point "RAD 025" is not available or (2) the "dose assessment" feature on ICS is not functional or (3) if a release is occurring through the main steam safeties or atmospheric relief valves (PORVs) or (4) at the discretion of the SM.

3.3 Dose Assessment Process

NOTE: Emergency Classification may be required based on this data. If data cannot be independently QV&V, then immediately carry to the Main Control Room.

3.3.1 If ICS is available and not excluded by Section 3.3.2, then conduct a dose assessment using Appendix A.

3.3.2 If ICS is unavailable or this is a Special Case - Steam Generator Release Through Safeties or PORVs, then conduct the dose assessment using Appendix B with support from Appendices C and D as appropriate.

4.0 RECORDS

4.1 QA Records

None

4.2 Non-QA Records

The materials generated in support key actions during an actual emergency are considered Lifetime retention Non-QA records. Materials shall be forwarded to the EP Manager who shall submit any records deemed necessary to demonstrate performance for lifetime storage.

The materials generated in support key actions during drills and exercises are considered Non-QA records. These records shall be forwarded to the EP Manager who shall retain records deemed necessary to demonstrate six-year plan performance for six years and shall retain records from other required drills for two years.

4.3 Training Records

Materials generated as part of training need not be retained.

Appendix A
Page 1 of 1
ICS Dose Assessment

A. Key Information

A1	Release Point(s) - Shield Bldg, AB, SB, TB, or Condenser	(circle all that apply)
A2	Expected Duration - If unknown or unsure, use 4 hours	_____ hours
A3	Mix Multiplier (Type I=Gap Release or Type II= Fuel Overtemp/Melt) Type II is used if Core Cooling RED Path (ICS Screen CTREE) **Mix Multiplier is 1.0 for Type I or 3.2 for Type II**	Mix Multiplier _____

B. ICS "One Button" Dose Assessment (May ONLY be used if no SG release)

B1	Go to ICS Screen Group Display Menu (GROUP DISP MENU) then select DOSE ASSESSMENT. Press CALCULATE button. Enter the information from that screen in the first blank of each line below. Site Boundary TEDE Hourly Dose _____ * _____ * _____ = 2.00 Mile TEDE Hourly Dose _____ * _____ * _____ = 5.00 Mile TEDE Hourly Dose _____ * _____ * _____ = TEDE Hrs (A2) Multiplier (A3)	**TEDE Dose** Site Boundary _____Rem 2.00 Mi _____ Rem 5.00 Mi _____ Rem

C. Thyroid Committed Dose Equivalent (CDE) calculation

C1	**Calculate Iodine CDE Doses.** Obtain TEDE Dose from Block B1 and calculate as given below. Site Boundary TEDE Dose_____ * 10 Rem thyroid CDE per Rem TEDE = 2.00 Mile TEDE Dose _____ * 10 Rem thyroid CDE per Rem TEDE = Rem 5.00 Mile TEDE Dose _____ * 10 Rem thyroid CDE per Rem TEDE = Rem Rem (B1)	**Thyroid CDE Dose** Site Boundary _____Rem 2.00 Mi _____ 5.00 Mi _____

Performed By: _____ _____
Initials Date / Time

NOTE: Emergency Classification may be required based on this data. If necessary, hand carry to the Main Control Room.

Report Release Rates and Dose Values obtained in Blocks B1 and C1 to SM and/or SED

Reported By: _____ _____
Initials Date / Time

Appendix B
Page 1 of 2
Manual Dose Assessment

A. Key Information

A1	Release Point(s) - Shield Bldg, AB, SB, TB, Condenser, or SG/PORV/Safety	(circle all that apply)
A2	Expected Duration - If unknown or unsure, use 4 hours	_____ hours
A3	Mix Multiplier (Type I=Gap Release or Type II= Fuel Overtemp/Melt) Type II is used if Core Cooling RED Path (ICS Screen CTREE) **Mix Multiplier is 1.0 for Type I or 3.2 for Type II**	Mix Multiplier _____

B. Dose Assessment

B1	**Determine Plant Total Gaseous Rad Release Rate in uCi/sec.** Use Appendix D.	_____ uCi/sec
B2	**Determine 46 meter 15 min avg windspeed in mph by using the preferred list below.** (See page 2 of 2 of this Appendix for instructions) (1) ICS Screen METDATA then press DOSE CALC MET DATA button, **OR** (2) TSC Met Data (convert using mph =m/s *2.2), **OR** (3) National Weather Service (423) 586-8400, **OR** (4) Default - use 2.2 mph (1.0 m/s)	_____ mph
B3	**Determine 46-10 meter Stability Class (A-F) by using the preferred list below.** (See page 2 of 2 of this Appendix for instructions) (1) ICS Screen METDATA then press DOSE CALC MET DATA button, **OR** (2) ICS Screen MTDATA6 to get delta-T and use Appendix B Table 1, **OR** (3) ICS Screen METDATA to get temperatures and use Appendix B Table 1, **OR** (4) Default - Use Stability Class E	Stability Class _____
B4	**Calculate TEDE Doses.** (See page 2 of 2 of this Appendix for instructions) Obtain TEDE Factor (R/hr per uCi/s) from Appendix C and calculate... Site Boundary TEDE Factor _____ * _____ * _____ * _____ = 2.00-4.99 mi TEDE Factor _____ * _____ * _____ * _____ = 5.00-10.0 mi TEDE Factor _____ * _____ * _____ * _____ = R/hr per uCi/s (Appendix C) Hrs (A2) Factor (A3) uCi/s (B1)	**TEDE Dose** Site Boundary _____ Rem 2.00 Mi _____ Rem 5.00 Mi _____ Rem

C. Thyroid Committed Dose Equivalent (CDE) calculation

C1	**Calculate Iodine CDE Doses.** (See page 2 of 2 of this Appendix for instructions) Obtain TEDE Dose from Block B4 and calculate as given below. Site Boundary TEDE Dose_____ * 10 Rem thyroid CDE per Rem TEDE = 2.00-4.99 mi TEDE Dose _____ * 10 Rem thyroid CDE per Rem TEDE = 5.00-10.0 mi TEDE Dose _____ * 10 Rem thyroid CDE per Rem TEDE = Rem (B4)	**Thyroid CDE Dose** Site Boundary_____ Rem 2.00Mi _____ Rem 5.00 Mi _____ Rem

Performed By: _____ _____
Initials Date / Time

NOTE: Emergency Classification may be required based on this data. If necessary, hand carry to the Main Control Room.

Report Release Rate (B1) and Dose Values obtained in Blocks B4 and C1 to SM and/or SED,

Reported By: _____ _____
Initials Date / Time

Appendix B
Page 2 of 2
Manual Dose Assessment

Expanded instructions for performing calculations.

B2. Option 1: On the affected Unit ICS Main Menu click on "SECONDARY MIMICS" button. On the Secondary Mimics page click on "MET DATA" button. From the "MET-TOWER LINK" page or the "DOSE CALC MET DATA" page record the 46 Meter Ave. Wind Speed (15 Min) in mph,
Option 2: From the TSC Data System obtain the latest weather data printout (see TSC Users Manual). Remember you must multiply 15 min average wind speed in m/s by 2.2 to obtain mph.
Option 3: Call the **National Weather Service** in Morristown, Tn. for wind speed in mph.
Option 4: If no other data is available, use a default value of 2.2 mi/hr (1.0 m/s).

B3. Option 1: On the affected Unit ICS Main Menu click on "SECONDARY MIMICS" button. On the Secondary Mimics page click on "MET DATA" button. From the "MET-TOWER LINK" page click the "DOSE CALC MET DATA" and record the 46-10 Meter Stability Class PID 0Y2319A (A-F).
Option 2: From the "MET-TOWER LINK" page click on the "STABILITY DELTA-T's" button note the [VERTICAL AIR TEMP DELTA-T 46-10 METERS (INSTANTANEOUS)] and refer to Table 1 below.
Option 3: From the "MET-TOWER LINK" page obtain the [10 METER AIR TEMP] value and the [46 METER AIR TEMP] value and refer to Table 1 below.
Option 4: If no other data is available, use a default value of Stability Class E.

Table 1
Stability Class by 46-10 m
Delta-T

Delta-T °F ≤ minus 1.3 °F	A
Delta-T °F > minus 1.3 ≤ minus 1.2 °F	B
Delta-T °F > minus 1.2 ≤ minus 1.0 °F	C
Delta-T °F > minus 1.0 ≤ minus 0.4 °F	D
Delta-T °F > minus 0.4 ≤ 0.9 °F	E
Delta-T °F > 0.9 ≤ 2.6 °F	F
Delta-T °F > 2.6 °F	G

If using raw temperatures, 15 min. AVG if available other Instantaneous:
Temp at 46 meters = _____ F
Temp at 10 meters = _____ F
Delta-T (46m -10m) ___ - ___ = _____ F
Stability Class from Table 1 = _____

B4. From Appendix C, find the appropriate stability class. Then, find the desired distance range in miles on the vertical scale and the wind speed on the horizontal scale. Record the corresponding TEDE FACTOR the appropriate section B4 blank. For wind speeds that fall between the values in the table, default to the lower wind speed. This is the more conservative value.

C1. To obtain Thyroid CDE, multiply the TEDE Dose by 10.

APPENDIX C
Page 1 of 1

TEDE FACTOR (Rem/hr per μCi/s)

Stability Class A — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	5.1E-10	2.5E-10	2.0E-10	1.5E-10	1.0E-10	9.1E-11	8.1E-11	7.1E-11	6.1E-11	5.1E-11
2.00-4.99	1.7E-10	8.7E-11	7.0E-11	5.2E-11	3.5E-11	3.1E-11	2.8E-11	2.4E-11	2.1E-11	1.7E-11
5.0-10.0	6.3E-11	3.4E-11	2.8E-11	2.2E-11	1.6E-11	1.4E-11	1.3E-11	1.1E-11	9.5E-12	7.9E-12

Stability Class B — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	2.3E-09	1.2E-09	9.4E-10	7.1E-10	4.7E-10	4.3E-10	3.8E-10	3.3E-10	2.8E-10	2.3E-10
2.00-4.99	2.3E-10	1.2E-10	9.2E-11	6.8E-11	4.5E-11	4.1E-11	3.6E-11	3.2E-11	2.7E-11	2.3E-11
5.0-10.0	8.2E-11	4.6E-11	3.7E-11	2.9E-11	2.1E-11	1.9E-11	1.7E-11	1.5E-11	1.2E-11	1.0E-11

Stability Class C — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	6.8E-09	3.5E-09	2.8E-09	2.1E-09	1.4E-09	1.2E-09	1.1E-09	9.6E-10	8.2E-10	6.8E-10
2.00-4.99	9.3E-10	4.5E-10	3.7E-10	2.8E-10	1.9E-10	1.7E-10	1.5E-10	1.3E-10	1.1E-10	9.3E-11
5.0-10.0	1.6E-10	9.1E-11	7.5E-11	5.8E-11	4.2E-11	3.7E-11	3.3E-11	2.9E-11	2.5E-11	2.1E-11

Stability Class D — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	2.0E-08	1.0E-08	8.0E-09	6.0E-09	4.1E-09	3.6E-09	3.2E-09	2.8E-09	2.4E-09	2.0E-09
2.00-4.99	3.3E-09	1.7E-09	1.4E-09	1.0E-09	6.8E-10	6.2E-10	5.5E-10	4.8E-10	4.1E-10	3.5E-10
5.0-10.0	6.9E-10	3.9E-10	3.2E-10	2.5E-10	1.8E-10	1.6E-10	1.4E-10	1.2E-10	1.0E-10	8.7E-11

Stability Class E — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	3.5E-08	1.7E-08	1.4E-08	1.0E-08	7.0E-09	6.3E-09	5.6E-09	4.9E-09	4.2E-09	3.5E-09
2.00-4.99	6.6E-09	3.3E-09	2.7E-09	2.0E-09	1.3E-09	1.2E-09	1.1E-09	9.3E-10	7.9E-10	6.6E-10
5.0-10.0	1.5E-09	8.2E-10	6.7E-10	5.3E-10	3.8E-10	3.4E-10	3.1E-10	2.7E-10	2.3E-10	1.9E-10

Stability Class F — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	6.6E-08	3.3E-08	2.7E-08	2.0E-08	1.3E-08	1.2E-08	1.1E-08	9.3E-09	8.0E-09	6.6E-09
2.00-4.99	1.5E-08	7.6E-09	6.1E-09	4.6E-09	3.1E-09	2.8E-09	2.5E-09	2.2E-09	1.8E-09	1.5E-09
5.0-10.0	3.8E-09	2.1E-09	1.7E-09	1.3E-09	9.6E-10	8.6E-10	7.7E-10	6.7E-10	5.7E-10	4.7E-10

Stability Class G — Wind Speed (mi/h)

miles	2.2 mi/h	4.5 mi/h	6.7 mi/h	8.9 mi/h	11.2 mi/h	13.4 mi/h	15.7 mi/h	17.9 mi/h	20.1 mi/h	22.4 mi/h
0.62-1.99	1.5E-07	7.2E-08	5.7E-08	4.3E-08	2.8E-08	2.5E-08	2.3E-08	2.0E-08	1.7E-08	1.4E-08
2.00-4.99	3.7E-08	1.6E-08	1.3E-08	9.5E-09	6.3E-09	5.6E-09	5.0E-09	4.4E-09	3.8E-09	3.2E-09
5.0-10.0	9.4E-09	5.0E-09	4.1E-09	3.2E-09	2.3E-09	2.0E-09	1.8E-09	1.5E-09	1.3E-09	1.1E-09

APPENDIX D
Plant Total Gaseous Rad Release Rate
Page 1 of 3

***ICS* if RAD025 functional...**

Monitored Release Rate from ICS "SHOW RAD025" command	=_____ uCi/s
Steam Generator Release Rate Adjustment (page 2 of this appendix)	=_____ uCi/s
Total Release = summation of the above values	=_____ uCi/s
Performed By: _____ _____ Initials Date / Time	

Otherwise: Calculate the release rate as shown below

Unit 1 Shield Bldg	1-RE-90-400 **OR** 1R9102A (μCi/sec)		=_____ uCi/s
Unit 2 Shield Bldg	2-RE-90-400 **OR** 2R9102A (μCi/sec)		=_____ uCi/s
Aux. Bldg._____ 0-RM-90-101B **OR** 0R0020A (cpm)	x	_____ 0-FE-30-174 **OR** 0F2704A (cfm)	x 8.7E-6 =_____ uCi/s unit conversions
Service Bldg._____ 0-RM-90-132B **OR** 0R0011A (cpm)	x	_____ 0-FE-90-132 **OR** 0F2702A (cfm)	x 8.7E-6 =_____ uCi/s unit conversions
U1 Condenser_____ 1-RM-90-255 or 256 **OR** 1R9022A **OR** 1R9023A (mR/h)	x	_____ 1-FT-2-256 **OR** 1F2700A (cfm)	x 26.55 =_____ uCi/s unit conversions
U2 Condenser_____ 2-RM-90-255 or 256 **OR** 2R9022A **OR** 2R9023A (mR/h)	x	_____ 2-FT-2-256 **OR** 2F2700A (cfm)	x 26.55 =_____ uCi/s unit conversions
Steam Generator Release Rate (if necessary - use page 2 of this appendix)			=_____ uCi/s
Total Release = Summation of releases through rad monitors above			=_____ uCi/s
Performed By: _____ _____ Initials Date / Time			

APPENDIX D
Calculation of Plant Total Gaseous Rad Release Rate
Page 2 of 3

Adjustment of Plant Total Gaseous Rad Release Rate for Steam Generator Releases
This calculates the release from a Steam Generator (SG) with release to environs.

Steam Lines Flowrates (lbm/hr) are considered zero below unless the SM/US has confirmed both:
(1) a tube leak/rupture exists on the specified loop and
(2) a release is potentially on-going through the main steam safety valves or PORV's on the specified loop.

INCLUDE DATA for SGs that meet both 1 and 2 above; Otherwise N/A.

UNIT 1:

SG#1, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(1-RM-90-421) **OR** 1R9027A (1-FE-1-3) **OR** 1F0405A **OR** 1F0406A unit conversions

SG#2, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(1-RM-90-422) **OR** 1R9028A (1-FE-1-10) **OR** 1F0425A **OR** 1F0426A unit conversions

SG#3, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(1-RM-90-423) **OR** 1R9029A (1-FE-1-21) **OR** 1F0445A **OR** 1F0446A unit conversions

SG#4, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(1-RM-90-423) **OR** 1R9030A (1-FE-1-28) **OR** 1F0465A **OR** 1F0466A unit conversions

UNIT 2:

SG#1, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(1-RM-90-421) **OR** 2R9027A (2-FE-1-3) **OR** 2F0405A **OR** 2F0406A unit conversions

SG#2, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(2-RM-90-422) **OR** 2R9028A (2-FE-1-10) **OR** 2F0425A **OR** 2F0426A unit conversions

SG#3, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(2-RM-90-423) **OR** 2R9029A (2-FE-1-21) **OR** 2F0445A **OR** 2F0446A unit conversions

SG#4, _____(μCi/cc) x _____ MLB/HR x 10^6 x 4.24 =_____ uCi/s
(2-RM-90-423) **OR** 2R9030A (2-FE-1-28) **OR** 2F0465A **OR** 2F0466A unit conversions

Additional Releases from Steam Generators (sum above releases) =_____ uCi/s

Unit conversions based on 3600 s/hr, 28317 cc/ft3, 0.53916 ft3/lbm for steam at 524F.

Performed By: _____ _____
Initials Date / Time

APPENDIX D
Calculation of Plant Total Gaseous Rad Release Rate
Page 3 of 3

BASIS

Unit conversion factor 26.55 is based on radiation monitor efficiency of 0.05625 uCi/cc per mR/h (from energy calculation SQNAPS3-100) and 472 cc/sec per cfm (see REP basis 7.1 SAE)

Units conversions factor of 8.7E-6 = 5.42E+7 CPM per uCi/cc (from table below) * 28317 cc/ft3 * 0.016 min/sec

Nuclide	GAP Release Mix NUREG 1465	Conversion uCi/cc to CPM	CPM
KR-85	1.1E-03	6.26E+07	6.82E+04
KR-85M	4.6E-02	6.90E+07	3.16E+06
KR-87	9.2E-02	7.00E+07	6.42E+06
KR-88	1.3E-01	7.00E+07	9.23E+06
XE-131M	1.9E-03	3.40E+07	6.43E+04
XE-133	3.3E-01	2.27E+07	7.41E+06
XE-133M	1.1E-02	5.10E+07	5.84E+05
XE-135	6.3E-02	7.00E+07	4.41E+06
XE-138	3.3E-01	7.00E+07	2.29E+07
Totals	**1.0E+00**	*from TI-18*	**5.42E+07**

(based on NUREG 1465 Gap Release Mix and TI -18 factors)

SOURCE NOTES

REQUIREMENTS STATEMENT	SOURCE DOCUMENT	IMPLEMENTING STATEMENT
NP Radiological Emergency Plan (NP-REP)		
Appendix A - C.1	99-002929-000	Manual calculation for Thyroid CDE to match ICS.
Appendix B - C.1	99-002929-000	Manual calculation for Thyroid CDE to match ICS.

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-14

RADIOLOGICAL CONTROL RESPONSE

Revision 16

QUALITY RELATED

PREPARED/PROOFREAD BY: W. P. Brooks

RESPONSIBLE ORGANIZATION: Emergency Preparedness

APPROVED BY: J. Randy Ford

EFFECTIVE DATE: 12/19/2000

Level Of Use: Reference

REVISION DESCRIPTION: Intent Change Removed Dose Assessment from EPIP-14 to new EPIP-13. Updated KI issuance to allow tablet by tablet issuance versus 10 day course. Deleted specific KI information sheet due to change of vendor and FDA information sheet is now part of packaging. Added record retention information. Required manual Radiation Monitor data collection only if ICS is non-functional. Clarified that spraying water is treated same by RADCON as standing water from a personnel protection standpoint. Modified directions associated with assembly siren to be consistent with EPIP-7. Revisions are not shown due to extent of the changes.

TABLE OF CONTENTS

1.0 PURPOSE

To describe the actions and responsibilities of Sequoyah's Radiological Control (RADCON) and Chemistry Sections in the event of a radiological emergency.

2.0 REFERENCES

A. EPIP-7, "Activation and Operation of the Operations Support Center (OSC)"
B. EPIP-8, "Personnel Accountability and Evacuation"
C. EPIP-13, "Initial Dose Assessment"
D. CECC-EPIP-9, "Emergency Environmental Radiological Monitoring Procedures"
E. RCI-20, "Radioiodine Monitoring During Accident Conditions"

2.1 Developmental Documents

A. EPIP-6, "Activation and Operation of the Technical Support Center "
B. EPIP-10, "Medical Emergency Response"

3.0 INSTRUCTIONS

3.1 Initiation of an Alert or Higher Declaration

Upon initiation of an Alert, Site Area Emergency, or General Emergency, the RADCON and Chemistry Sections shall assemble a specific number of personnel as described below.

A. **RADCON**: During normal and off-shifts a Radiological Emergency Plan (REP) activation will be announced over the public address system or the emergency sirens may be activated and the Emergency Paging System (EPS) will be activated. The RADCON Lab will be contacted by the Shift Manager or designee. RADCON Shift Supervisor (RCSS) will determine the number of ANSI qualified RADCON personnel currently onsite. He shall ensure that at least a total of eight (8) (not counting him/herself) are available onsite within approximately 30 minutes and a total of least fourteen (14) (counting him/herself if qualified) are available onsite within one hour [six (6) additional ANSI qualified RADCON personnel within 30 minutes]. Call ins shall be in accordance with Appendix E ensuring that Fitness For Duty questions are asked and response documented. Additional RADCON support personnel may need to be called in using Appendix D.

B. **CHEMISTRY**: The Chemistry Lab will be contacted by the Shift Manager or designee. Chemistry Shift Supervisor (CSS) will determine the number of chemistry technicians currently (counting the CSS if qualified) onsite and shall ensure that at least a total of two (2) chemistry technicians are available onsite within approximately 30 minutes and at least a total of three (3) are available onsite within one hour if the Dose Assessment function has not been assumed by other staff. Additional (above the minimum required staffing) Chemistry support personnel may need to be called in, use Appendix D to document.

3.1 Initiation of an Alert (Continued)

C. Chemistry Shift Supervisor (CSS) shall perform Dose Assessment in accordance with EPIP-13, "Initial Dose Assessment" when notified by the Shift Manager or Site Emergency Director.

D. When the OSC is staffed by the OSC RADCON Supervisor (OSC RCS), the RCSS shall assemble two survey teams and dispatch them to the OSC for briefings and dressout.

E. The TSC and OSC are activated during Alert, Site Area Emergency, or General Emergency or as deemed necessary by the SED.

F. All response teams, except as listed in EPIP-7, will be dispatched from the OSC and should have a RADCON representative as a member. If the Fire Brigade, Medical Emergency Response Team or Damage Control Team is already responding they are not required to return to the OSC to be dispatched, but shall be tracked, briefed, and de-briefed by the OSC in accordance with EPIP-7, Section 3.2.5. RADCON survey teams may be dispatched from the lab but shall be tracked by the OSC.

G. Response teams will be debriefed by the OSC after completing their team assignment.

3.2 TSC RADCON Manager (RCM) Responsibilities

The responsibilities and duties of the TSC RADCON representative are detailed in EPIP-6. A summary of the details associated with these responsibilities are provided below.

A. The primary responsibilities of the TSC RCM are to direct onsite radiological surveillance activities, assess inplant and onsite radiological conditions and to make this information available to the Site Emergency Director (SED), the Central Emergency Control Center (CECC) and other TSC personnel as necessary, to support and coordinate protective actions.

B. To facilitate the evaluation of in-plant radiological conditions and to establish trends. Appendix A lists the radiation monitors [i.e., Area Radiation Monitors (ARMs) and Continuous Air Monitors (CAMs)] that may be used.

C. The TSC RCM, together with other TSC personnel, evaluates plant conditions to anticipate future developments and formulates corrective action plans to address actual or postulated conditions. The TSC RCM renders recommendations and advises the SED on radiological issues.

D. The TSC RCM communicates with the CECC RADCON Manager, providing pertinent in-plant radiological data so that appropriate offsite protective actions can be implemented in a timely manner.

E. The TSC RCM maintains communications with the OSC RADCON Supervisor (RCS), constantly evaluating inplant radiological conditions, recommending and identifying the need for radiological surveys.

3.2 TSC RADCON Manager (RCM) Responsibilities (Continued)

F. When directed by the Site Emergency Director, establishes a contamination checkpoint for personnel and vehicles leaving the site.

G. Determines when to issue and to whom to issue Potassium Iodide in accordance with section 3.7.

3.3 Activation of the Operations Support Center

3.3.1 OSC RADCON Supervisor (RCS)

The OSC RADCON Supervisor is a trained and qualified individual designated by the RADCON Manager. The approved alternates are listed in the Call List.

The responsibilities and duties of the OSC RADCON Supervisor are detailed in EPIP-7. A summary of the details associated with these responsibilities are provided below:

A. The primary responsibilities of the OSC RADCON Supervisor are to ensure that, when required, a RADCON tech accompanies each team; detailed radiological briefings are provided to OSC team members; and the OSC Manager, and OSC Staff are knowledgeable of in-plant radiological conditions. He also serves as the interface between the TSC and the RADCON Lab.

B. Maintains awareness of in-plant radiological conditions and related parameters and reports those conditions to the TSC RCM.

C. Communicates directly with the TSC to coordinate inplant response activities. Assists in the development of briefing notes, and radiological condition updates.

D. In conjunction with the TSC, identifies the need, location, and extent of radiological surveillance activities required to assess or mitigate the consequences of the accident.

E. All teams are dispatched from the OSC except as described in section 3.1.F. The OSC RADCON Supervisor is responsible for ensuring that personnel making entries into the plant, including survey teams, are aware of any special precautions, plant conditions, or requirements and are assigned team tracking numbers.

F. Ensure that OSC Team members are instructed to note their Remaining Allowable Dose (RAD) upon exiting the RCA and to provide their current RAD to the Personnel Pool Manager when they return to the OSC. The Personnel Pool Manager will update their RAD in his log. Repetitive exposures of workers should be restricted by substituting other qualified personnel for team members, on reentry, to distribute exposures.

G. Report all survey results as soon as possible to the TSC so they can make recommendations to the proper agencies to initiate any required protective actions.

3.4 RADCON Lab Responsibilities

3.4.1 Designated RCSS

The designated RCSS is responsible for managing the activities of the RADCON lab.

A. In the event of an Alert, Site Area Emergency, or General Emergency the OSC may become the staging area for entries into affected plant areas.

B. A RADCON Representative should accompany all emergency response teams when initial entries are made into affected plant areas.

C. The RCSS is responsible for ensuring that adequate numbers of RADCON representatives are available, in accordance with paragraph 3.1.A, to support emergency activities and that two (2) survey teams are dressed out and ready for briefing.

D. The RCSS is responsible for preparing and designating an onsite RADCON environmental monitoring team. Team members will prepare and operate the monitoring van in accordance with CECC-EPIP-9. Record all survey results. If results indicate offsite contamination, the survey areas may need to be expanded. Obtain further instructions and perform required surveillance.

E. Until relieved by the OSC RADCON Supervisor, if directed by the TSC, SED, or deemed necessary by the RCSS based on plant conditions, the RCSS will dispatch survey teams to assembly areas, the OSC and TSC to evaluate radiological conditions, monitor radiation levels as conditions dictate and ensure updated habitability surveys are performed. These survey teams will monitor contamination levels as needed both on personnel and floor/equipment areas and implement corrective actions (e.g., decontamination or zoning) as necessary.

F. The RCSS will monitor the RADCON lab for habitability and will coordinate evacuation activities to the alternate RADCON lab location if warranted.

G. The RCSS will ensure all survey teams are tracked by the OSC.

H. The RCSS will ensure DAC-hour exposure when available and RAD calculations are completed and reported to the OSC RADCON Supervisor.

I. The RCSS will ensure respiratory protection is issued as needed.

J. Ensure that HIS-20 entries are properly made and that all dosimetery is properly issued, collected and identified for each worker. Make arrangements to have TLD badges read, as soon as possible.

3.5 Chemistry Response

3.5.1 Designated Chemistry Personnel

The designated Chemistry personnel are responsible for managing the activities of the Chem Lab.

A. Upon request of the Shift Manager (SM), Chemistry personnel shall determine the plant source term that shall be reported to the SM for classification purposes and protective action recommendations to the state.

B. The CSS is responsible for ensuring that adequate numbers of chemistry personnel are available in accordance with paragraph 3.1.B.

C. In the event of an Alert, Site Area Emergency, or a General Emergency, due to a radiological release, a plant total gas release rate (source term) may need to be determined in accordance with EPIP-13.

D. The source term shall be reported to the CECC dose assessment staff, when the CECC is manned, for input into a preliminary dose assessment.

E. Projected dose at the site boundary, 2 miles and 5 miles may be determined in accordance with EPIP-13.

3.6 General Response

3.6.1 All RADCON Personnel

All RADCON personnel should comply with the following:

A. The following precautions should be considered during emergency incidents.

Anticipated Conditions	Protective Considerations
Noble gas concentrations $> 1 \times 10^{-3}$ μCi/cc	Precaution: If fuel damage has occurred or is suspected, respirators should be worn due to potentially rapid changes in conditions (ensuring TEDE is ALARA).
Iodine concentrations > 10 DAC	SCBA
Particulate concentrations > 10 DAC	Particulate mask or SCBA (SCBA recommended if $\geq$ 50 DAC).
Standing water >1" or Spraying Water	Rain suits, rubber boots, Extremity dosimetry

3.6.1 All RADCON Personnel (Continued)

B. If it is necessary to evacuate the RADCON lab, then the personnel stationed in the lab will secure the equipment listed in EPIP-17, Appendix C. This equipment will be brought to the alternate lab by RADCON. This list is a minimum and if time permits and manpower allows, then efforts should be made to transport additional equipment and supplies to the alternate lab. The SED shall be informed when it becomes necessary to evacuate the 690' RADCON lab. If this situation develops, a RADCON Lab will be established adjacent to the TSC. This alternate lab should be set-up in the switchgear room, El 732' or other suitable area, as emergency conditions allow (the TSC RCM is responsible for making this determination). This lab will be equipped with necessary supplies and instrumentation needed to perform minimum radiological surveys and analysis required during an emergency.

C. If severe radiological conditions are suspected, the "Buddy System" shall be utilized.

D. If not already covered under a standing RWP and if time is available, an RWP should be issued to cover entry teams; if not, suitable protective measures should be taken in accordance with established procedures.

E. When accountability is initiated, if not previously accounted for, RADCON personnel shall secure work in a safe manner and proceed to the 690' RADCON Lab and/or other designated assembly areas and swipe into the accountability reader in accordance with EPIP-8. If previously accounted for, contact the RCSS or OSC RADCON Supervisor for directions.

F. RADCON representatives may be sent to the assembly areas to determine if any workers were in the affected plant areas at the time of the event. These people shall be separated from other plant workers and personnel contamination surveys should be initiated for all personnel.

G. If ICS is not functional, radiation monitor readings may be obtained from Control Room personnel or an individual may be sent to the Control Room to record the necessary values. Readings are obtained from panels 0-M-12 and 1/2-M-30 and recorded on Appendix A.

H. As radiation monitor readings are updated, the OSC RADCON Supervisor ensures labs will be contacted to ensure that their status boards are made current.

I. As reports become available regarding the details of the emergency, RADCON personnel shall prepare all necessary equipment needed during recovery and report to the OSC as needed to ready survey or damage control team(s) for entry into the affected area(s).

J. Upon notification from the OSC RADCON Supervisor, the survey team(s) may proceed to the specified area. It should be noted that depending on the type of accident, this initial survey may not be performed until hours or perhaps even days after the event. In this case, procedures may be developed describing the reentry steps to be followed. Other essential personnel may be required to assist in reentry activities.

3.7 Issuance of Potassium Iodide (KI)

A. Projected cumulative doses to the thyroid from inhalation of radioactive iodine can be estimated using Appendix C "Occupational Thyroid Dose from Inhalation of I-131."

B. If a person's projected cumulative dose to the thyroid from inhalation of radioactive iodine might exceed 10 rem, the exposed person should be started immediately on KI. Authorization to issue KI is the responsibility of the TSC RCM. He shall inform the SED prior to issuance.

C. The initial dose of KI should not be delayed and those who begin therapy should continue the KI unless their thyroid dose is determined not to have exceeded 10 rem. A copy of the Food and Drug Administration approved instructions shall accompany issue of KI Dosage schedules and other pertinent information are outlined on the package and should be followed closely.

D. Potassium iodide is stored in the OSC. KI has an approved shelf-life with the expiration date listed. To ensure that the KI supply is valid, these dates will be inspected and the KI replaced as necessary.

E. The issuing agent shall complete the Potassium Iodide Issue Report (Appendix B) for KI issued. A copy of this report will be routed to the TSC RCM in a timely manner.

3.8 Use of Silver Zeolite Cartridges

A. During accident conditions noble gas concentrations may be present in significant quantities both inplant and offsite. The collection of these noble gases on charcoal cartridges during iodine sampling will interfere with subsequent iodine analysis.

B. Silver zeolite cartridges are provided for use during periods of high noble gas concentrations. RCI-20 describes the utilization of and lists hazards associated with Silver Zeolite cartridge use.

3.9 Personnel Decontamination and Facilities

A. RADCON will use established procedures for personnel decontamination. Decontamination facilities are available for use by Sequoyah personnel.

B. Contaminated personnel are normally decontaminated at the 690' elevation decon facility. This facility is equipped with a wash sink, shower, and all necessary supplies. These supplies include various decontamination agents and soaps, towels, clean clothing, and other miscellaneous supplies.

C. EPIP-10 contains guidelines for RADCON assistance during a medical emergency or hospital treatment. Contaminated personnel requiring offsite medical attention are treated at the agreement hospital where the staff that has been trained in the handling and care of contaminated patients. Emergency Preparedness maintains a supply cabinet at the hospital's Emergency Room which contains posting materials and various other supplies.

4.0 RECORDS

4.1 QA Records

4.2 Non-QA Records

The Appendices A, B, or D generated in support of key actions during an actual emergency are considered Non-QA records. These records shall be forwarded to the EP Manager who shall submit any records deemed necessary to demonstrate performance for lifetime storage.

The Appendices A, B, or D generated in support of key actions during a drills and exercises are considered Non-QA records. These records shall be forwarded to the EP Manager who shall retain records deemed necessary to demonstrate six-year plan performance for six years and shall retain records from other required drills for two years.

4.3 Other Records

Materials generated as part of training need not be retained.

APPENDIX A
Page 1 of 1

DATE : _____

IN PLANT RADIATION MONITORS

Affected Unit _____

DESCRIPTION	IDENTIFIER	INITIAL READING TIME: _____	UPDATED READINGS TIME: _____	TIME: _____	
PANEL 0-M-12					
SPENT FUEL PIT AREA RADMON	1/2-RM-90-1				mR/hr
SFP AREA RADMON	0-RM-90-5				mR/hr
CCS HXS AREA RADMON	1/2-RM-90-6				mR/hr
HOT SAMPLE ROOM AREA RADMON	1/2-RM-90-7				mR/hr
AFW PUMPS AREA RADMON	1/2-RM-90-8				mR/hr
CNDS WASTE TKS AREA RADMON	0-RM-90-9				mR/hr
CCS BD AREA RADMON	1/2-RM-90-10				mR/hr
CNTMT SPRAY AND RHR PUMPS RADMON	0-RM-90-11				mR/hr
CNTMT UPPER COMPT RADMON-TOTAL GAS	1/2-RM-90-112B				CPM
CNTMT LOWER COMPT RADMON-TOTAL GAS	1/2-RM-90-106B				CPM
PANEL 1/2-M-30 SHIELD BLDG VENT MON RAD INDICATOR	1/2-RI-90-400 Low Range Mid Range High Range Effluent				µCi/cc µCi/cc µCi/cc µCi/sec
SAMPLE ROOM POST ACCIDENT AREA MONITOR	1/2-RM-90-280				mR/hr
RHR POST ACCIDENT AREA MONITOR -LO RNGE -HI RNGE -LO RNGE -HI RNGE	 1/2-RM-90-290 1/2-RM-90-291 1/2-RM-90-292 1/2-RM-90-293				 mR/hr mR/hr mR/hr mR/hr

Route to EP Manager

Data Taker Signature _____
Time _____
Date _____

APPENDIX B
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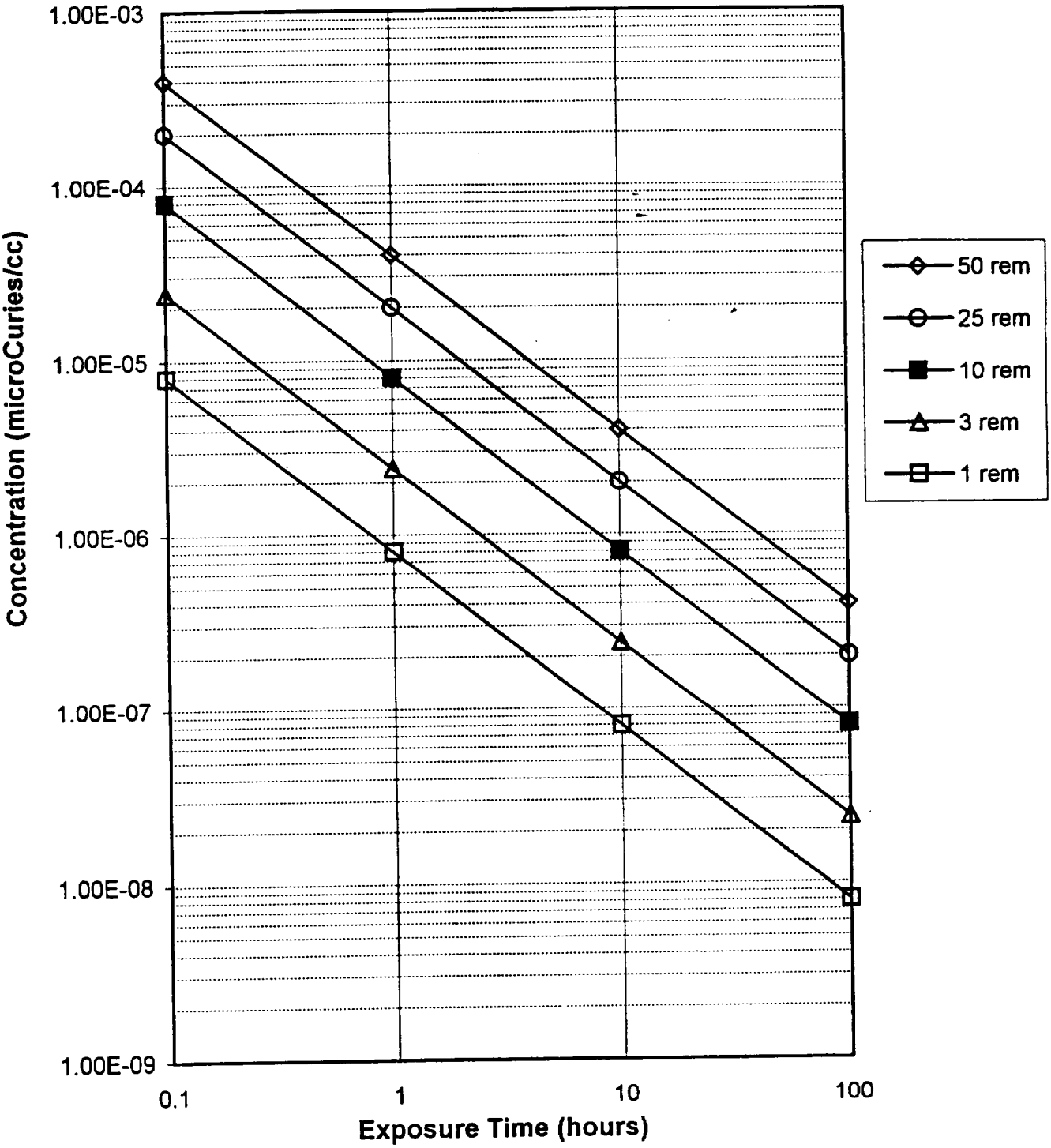
POTASSIUM IODIDE ISSUE REPORT

NAME	SS NUMBER	EXPOSURE PERIOD	TIME OF INITIAL KI DOSE	NUMBER OF DOSES ISSUED	INFORMATION INSTRUCTIONS ISSUED	ISSUED BY	DATE ISSUED

Route to Emergency Preparedness Manager

APPENDIX C
Page 1 of 1

Occupational Thyroid Dose from Inhalation of I-131



APPENDIX D
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FITNESS FOR DUTY
PROGRAM ADMINISTRATION
CALL-IN SHEET

Person Calling_____ Date_____

Give this message: "This is (caller's name) at Sequoyah Nuclear Plant. An emergency has been declared, or a REP drill is being conducted (as appropriate). Have you consumed any alcohol within the last five hours? Are you fit for duty? If you are fit for duty, please report to the RADCON Lab or Chemistry Lab *(as applicable)* and the duty Shift Supervisor immediately."

*SPP-1.2, "Fitness For Duty", Section 3.14, Call-in-for Unscheduled Work, 3.14.1.A.4, If the answer to the alcohol consumption question is "yes" and the employee is told to report to work then Nuclear Security on site should be notified and be requested to administer a saliva test or hand held breathalyzer to the employee. This must be administered as soon as the person arrives on site.

NAME	TIME CALLED	TIME NEEDED TO REPORT	ALCOHOL 5 HRS. PRIOR TO REPORT? (Y/N)*	FIT FOR DUTY (Y/N)	DUTY OFFICIAL COMMENTS

SOURCE NOTES

REQUIREMENTS STATEMENT	SOURCE DOCUMENT	IMPLEMENTING STATEMENT
NP Radiological Emergency Plan (NP-REP)		
Paragraph 3.1.A	SQ963213PER	Revise EPIP-14 to indicate fitness for duty questions are required for call-ins.