CATEGORY 1

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RECIP.NAME RECIPIENT AFFILIATION
Records Management Branch (Document Control Desk)

SUBJECT: Forwards revised EPIPs 0-EPIP-20201, "Maintaining Emergency Preparedness - Radiological Emergency Plan Training" & 0-EPIP-20126, "Off-Site Dose Calculations." With summary of changes.

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JUL 6 1999

L-99-147
10 CFR 50.54(q)
10 CFR 50 Appendix E

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

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Emergency Plan Implementing Procedure Revisions

The following Emergency Plan Implementing Procedures have been revised: 0-EPIP-20201, Maintaining Emergency Preparedness - Radiological Emergency Plan Training, and 0-EPIP-20126, Off-Site Dose Calculations.

Pursuant to the requirements of 10 CFR 50.54(q) and 10 CFR 50 Appendix E, one copy of each of the revised procedures is enclosed. A summary of changes to the procedures is attached. The implementation date for 0-EPIP-20201 was June 8, 1999. The implementation date for 0-EPIP-20126 was June 21, 1999. FPL has determined that the changes described do not result in a decrease in the effectiveness of the Emergency Plan.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

CLM

Attachment, enclosure

cc: Regional Administrator, Region II, USNRC (2 copies)
Senior Resident Inspector, USNRC, Turkey Point Plant (w/o enclosure)

SUMMMARY OF CHANGES

0-EPIP-20201:
Maintaining Emergency Preparedness - Radiological Emergency Plan Training.

- The title of the person responsible for ensuring Security Team personnel are trained was changed from Security Supervisor to Security Training Coordinator.
- Added clarification that Nuclear Division Duty Officer, Emergency Control Officer, Emergency Information Officer, and Governor's Advisor can receive training from either the Turkey Point or Port St. Lucie site.
- Clarified the SAMG 2-year training cycle.
- Added to the Emergency Plan Training Matrix, the requirement for plant operators to receive RCA Access and Respirator Training.
- Deleted from the Emergency Plan Training Matrix, the requirement for plant security officers to receive respirator training. The security officers provide no field response requiring the use of respiratory protection. The Emergency Plan does not require any use of security officers in handling field response. Security response is handled in accordance with Security Plans and procedures.
- Deleted Lessons 109 and 110 from the SAMG Initial Training Matrix, since they were drill outlines and not training modules.
- Corrected various typographical errors.

SUMMMARY OF CHANGES

0-EPIP-20126, Off-Site Dose Calculations.

- A note was added to the Definitions section discussing the use of 1700°F as an indicator of overheating/melting the core instead of the 700°F used as an indicator in other emergency procedures.
- Rewrote instructions on the "Off-Site Dose Calculations – Computer Method" to be more user friendly.
- Added guidance on estimating the noble gas concentration using the Iodine Release Rate Factor (IRRF) and Iodine concentration.
- Revised the Noble Gas and Iodine release rates for a steam generator tube rupture to provide consistency with analyses in the Updated Final Safety Analysis Report.
- Revised the IRRF for a steam generator tube rupture to provide consistency with analyses in the Updated Final Safety Analysis Report.
- Added a method for determining the percent of containment atmosphere mass lost, without requiring engineering support.
- Revised the primary to secondary flow rate, the default release rate, and the Iodine Partition Factor to provide consistency with analyses in the Updated Final Safety Analysis Report..

50-250 Superseded Per Rev's To 0-EPIP-20126 & 20201 PE 7/6/99
#9907140138

Florida Power & Light Company

Turkey Point Nuclear Plant

0-EPIP-20126

Title:

Off-site Dose Calculations

Safety Related Procedure	
Responsible Department:	Emergency Preparedness
Revision Approval Date:	5/2/98
Periodic Review Due:	5/1/03
Implementation Date:	6/1/98

RTS 97-1404P

★1:2/JR/ev

LIST OF EFFECTIVE PAGES

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1.0 PURPOSE

1.1 This procedure provides a method for estimating Emergency Off-site Doses to support Protective Action Recommendation (PAR) formulation.

1.2 This procedure provides a method for reporting Reportable Quantities (RQ) of radionuclides releases pursuant to 40 CFR 302 and 40 CFR 355.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Plant Procedures

1. 0-ADM-115, Notification of Plant Events
2. 0-EPIP-20101, Duties of Emergency Coordinator
3. 0-NCAP-104, Primary to Secondary Leak Detection

2.1.2 Regulatory Guides

1. 10 CFR 20, Appendix B
2. 40 CFR 302, Reportable Quantity Adjustment - Radionuclides
3. 40 CFR 355, Emergency Planning and Notification

2.1.3 Miscellaneous Documents (i.e., PC/Ms, Correspondence)

1. Turkey Point Plant Radiological Emergency Plan
2. Turkey Point Units 3 and 4 Off-site Dose Calculation Manual
   a. Section 2.0, Table 2.2-1
   b. Section 3.0, Tables 3.1-1, 3.2-1
3. Class A, Emergency Off-site Dose Calculation System User's Manual
4. EPA-520, Rev 6/79

2.1.3 (Cont'd)

5. NRC Response Technical Manual, RTM-91

6. JPE-PTPO-85-74, Containment Break Calculations

7. JPE-LR-87-033, Steam Generator Tube Rupture - FSAR Model - PTN 3 and 4

8. PTN-ENG-SENS-97-088, Revision 1, Engineering Evaluation Related to Pre-planned Alternative Monitoring for the Containment High Range Radiation Monitors.

2.2 Records Required

2.2.1 Records of meteorological conditions used to calculate dose rates and doses shall be kept on the attached worksheets or forms containing similar information.

2.2.2 A copy of the completed Dose Calculation Worksheet, or computer generated forms conveying similar information, shall be given to the Emergency Coordinator, and shall contain:

1. Meteorological conditions (wind speed, wind direction, and affected sectors).

2. Emergency Off-site Doses at 1, 2, 5 and 10 miles, including sectors affected.

3. Default values or actual measurements that were used for dose estimates.

2.2.3 Completed copies of the below listed item(s) constitute Quality Assurance Records and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. A form similar to Attachment 2 or computer generated forms conveying similar information.

2.3 Commitment Documents

2.3.1 None

3.0 RESPONSIBILITIES

3.1 The Emergency Coordinator is responsible for directing the performance of emergency off-site dose calculations during an emergency which involves a release of radioactivity to the environment.

3.2 The Chemistry Department representatives are responsible for performing the following:

3.2.1 Calculations in accordance with this procedure.

3.2.2 Ensuring that the Emergency Coordinator receives the most current dose calculations as soon as possible after request of emergency off-site dose information.

3.2.3 Performance of Reportable Quantity (RQ) calculations, as necessary.

3.2.4 Notifying the Chemistry Supervisor or designee as soon as practical for verification of release data. Notification to the Emergency Coordinator will not be delayed because of notification process with the Chemistry Supervisor.

3.2.5 Ensuring that the initial EOF Responders are updated with copies (e.g., facsimile) of dose calculations. The dose calculation summary sheet, if using the computer method, contains the minimum information needed by the initial EOF Responders. Attachment 2 contains the minimum information needed if using the manual calculation method.

4.0 DEFINITIONS

4.1 Core Overheating/Melting - Severe core damage, beyond gap failure, typically indicated by:

4.1.1 The core being uncovered, by coolant, for 30 minutes or more.

4.1.2 CHRRM reading 1.3 E+4 R/hr or more.

4.1.3 Valid Core Exit Thermocouple reading(s) in excess of 1700°F.

4.2 Deep Dose Equivalent (DDE) - Applies to External Whole Body Exposure and is the dose equivalent at a tissue depth of 1cm. The computerized version of this procedure also estimates a plume immersion dose (DDE), which is a best estimate of an in-plume survey meter reading.

4.3 Emergency Off-site Doses - The Total Dose (TEDE) and Thyroid Dose (CDE), calculated as either rates of exposure to the dose commitment or the total dose committed from the release.

4.4 Release - During any declared emergency, any effluent monitor increase of approximately ten times, or one decade above pre-transient values, or Health Physics detected airborne radioactivity levels in excess of 25 percent DAC outside of plant buildings due to failure of equipment directly associated with the declared plant emergency.

4.5 Thyroid Dose (CDE) - The Committed Dose Equivalent to an adult thyroid from inhaling the radioiodine in the plume.

4.6 Total Dose (TEDE) - The Total Effective Dose Equivalent, the sum of the doses to the whole body from immersion in a plume containing radioactive material, the CEDE from inhaling the plume, and an assumed four days of exposure to plume deposition (fallout).

5.0 PROCEDURE

CAUTIONS

- *Doses determined in this procedure will be given to the Emergency Coordinator, who will evaluate doses and plant conditions with criteria listed in 0-EPIP-20101, Duties of Emergency Coordinator.*
- *Dose Projections should be made on a best estimate basis by projecting the duration of the release, if possible. If no reasonable duration of release can be projected, the default value listed in Part D of Attachment 3 should be used.*
- *Releases greater than Off-site Dose Calculation Manual limits or Reportable Quantities shall require reports or notifications to the NRC even if no off-site action is required. Ensure reports are performed as required by 0-ADM-115, Notification of Plant Events.*
- *The following steps apply to the use of this procedure for the performance of a manual calculation. As soon as possible, the computerized Emergency Off-site Dose Calculation Method should be used for dose calculations. The instructions for using the computer program, which parallels this procedure, are in Enclosure 2.*

5.1 Discussion

5.1.1 During any emergency involving release of radioactivity to the environment, the Emergency Plan requires Emergency Off-site Doses be calculated for areas up to 10 miles from the plant. This information will be used in making Protective Action Recommendations and will be an input to the State of Florida Division of Emergency Management (DEM) in determining what off-site protective actions should be taken. When the Technical Support Center or the Emergency Operations Facility are operational, the function of dose calculation will be shifted to one of these locations.

5.1.2 The Chemistry Department Representative should use the computer dose calculation model in the Technical Support Center, when time and manpower resources are available, along with this procedure for estimating Emergency Off-site Doses when releases of radioactivity occur during an emergency. The computer model closely parallels this procedure. The instructions for using the computer program, which parallels this procedure, are in Enclosure 2. Additional instructions for use of the computer are located in the Emergency Off-site Dose Calculation User's Manual located in the Health Physics/Chemistry Area of the TSC and the EOF.

5.1.3 ERDADS may be used to display effluent monitor and meteorological data required by this procedure and the computerized Emergency Off-site Dose Calculation Method.

5.1.4 The various meteorological data processing methods deal with sea-breeze. Sea-breeze is a coastal phenomena where an artificial ceiling may exist. Our methods assume that this ceiling acts as a limit to vertical mixing; that is, the plume is below the ceiling. This leads to a slightly higher concentration for a given stability class. The computer program will state **Sea-breeze: Yes** when the procedure states **No impact**. The computer model is stating that sea-breeze may exist although there is no impact; the ceiling is too high to affect the vertical mixing within 10 miles of the plant.

5.1.5 The various release rate determination methods in the procedure and computer program require asking the Emergency Coordinator if the core is overheating or melting (typical indications listed in the definitions section). The purpose of the question is to determine:

1. if there is a core damage sequence in progress, or

2. if the damage has gone beyond gap failure?

<u>IF</u> there is overheating or melting in progress, <u>THEN</u> the off-site TEDE dose multiplier is increased to 4.4 to reflect the additional dose from the presence of particulates in the plume.

5.1.6 Pursuant to 40 CFR 302, Radionuclides are designated as a hazardous substance, which if released, other than federally permitted, (within Technical Specification limits) in a quantity equal to or greater than the revised Reportable Quantities (RQ) Table, requires notification to various Agencies.

5.2 Meteorological Conditions Determination

5.2.1 Complete applicable worksheets in Attachment 1. The three methods listed are in preferential order. Use the next method, in order to supplement any missing data. Indicate the method used on the selected worksheet in Attachment 2.

CAUTIONS

- ***All Met Tower Data for Wind Speed, Wind Direction, Delta Temperature, and Sigma-Theta are averaged over 15 minutes by the instrumentation for display on the strip charts and ERDADS.***
- ***Meteorological Wind Speed, Wind Direction, Delta Temperature, and Sigma-Theta values should vary with time, i.e., Chart Recorders in the Control Room should not be straight lining. Investigate data that is unchanging.***

1. Plant Meteorology Towers - Data from the primary and backup met towers is evaluated by following the instructions of Attachment 1, Part A. Use primary Met Tower data, with backup Met Tower data being used to supplement any primary Met Tower data.

NOTE

Meteorological data from the NWS is not required to be averaged.

2. National Weather Service (NWS) - Meteorological observations taken at the NWS are evaluated by following the instructions on Attachment 1, Part B.

3. Default Values - Daytime and nighttime default values are listed in Attachment 1, Part C.

5.3 Dose Calculation Worksheets

5.3.1 Reference Attachment 2. The worksheets, numbered 1 through 10, are tied to the Stability Class and Sea-breeze impact. The class and impact are noted on the first row of the worksheet.

5.4 Release Rate Determination

5.4.1 Perform Release Rate Calculations using Worksheets in Attachments 3 through 6 as appropriate. Indicate the method used on the selected dose calculation worksheet.

NOTES

- *Although grab sampling is the primary method, it is unlikely that results will be available in the early phases of an emergency situation. Dose assessment cannot be held up waiting grab sample results, therefore, the Effluent Monitor method should be used in the initial dose assessment. Grab Sampling should be performed as soon as possible.*
- *If the accident is a Loss of Coolant Accident (LOCA), a release estimate using the CHRRM Data Worksheet should be added to the release rates determined by Grab Sampling or Effluent Monitor Readings to account for the potential of unmonitored leakage, for example, through penetrations.*

1. Grab Sample - Grab Sample results are evaluated by following the instructions on Attachment 3, Part A.

NOTES

- *Effluent Monitor Data should be used when Grab Sample Data is not available or if there is insufficient time to perform Method 1, as in the early phases of an emergency situation.*
- *Since it will be difficult to analyze grab samples quickly, Effluent Monitor Data should be computed throughout the release and related to Grab Sample Data. This will permit a continuous release rate estimate even when grab sample data is unavailable. Iodine release rate factors may be modified if two or more grab samples indicate that the factors should be modified.*

2. Effluent Monitors - Effluent Monitor readings are evaluated by following the instructions on Attachment 3, Part B. SPING-4 data should be used in preference to associated PRMS data.

5.4.1 (Cont'd)

NOTE

The CHRRM monitor should be used in addition to Methods 1 or 2, if a loss of coolant accident (LOCA) has occurred. For example, if the CHRRM reading is high but the plant vent monitor reading is approximately normal, this probably indicates that containment isolation is preventing a release from containment to the plant vent. However, the FSAR design leak rate from containment should still be taken into consideration, as leakage from other penetrations may not register on effluent monitors.

3. Containment High Range Radiation Monitor (CHRRM) - CHRRM readings are evaluated by following the instructions on Attachment 3, Part C.

4. Default Values - default noble gas and iodine release rates are listed in Attachment 3, Part D, for the following accidents:

   a. Loss of Coolant (LOCA)

   b. Steam Generator Tube Rupture (SGTR)

   c. Spent Fuel Handling

5. Attachment 4 provides methods to adjust or replace the LOCA default release rates based on known plant parameters. Guidance is provided for coping with containment failure releases, either rapid depressurization or estimated penetration size failure.

6. Attachment 5 provides methods to adjust the steam generator tube rupture default release rates based on known plant parameters. Guidance is also provided for coping with an unmonitored release.

7. Attachment 6 provides a method, using factors in this procedure, to estimate a release rate from field team centerline survey meter readings.

5.5 Dose Rates and Projected Doses

NOTE

Contact Chemistry Supervisor or designee as soon as practical to verify release data after giving a copy of the dose calculation worksheet to the Emergency Coordinator. Do not delay notifications to the Emergency Coordinator.

5.5.1 Dose rates and projected doses are calculated by following the instructions on Attachment 2 selected at Subsection 5.3.

5.6 Computerized Emergency Off-site Dose Calculation Method

5.6.1 The computerized Emergency Off-site Dose Calculation Method should be used for dose calculations, (in preference to manual method). See Enclosure 2 for instructions on use of computer program.

5.7 Evaluating EPA Reportability

NOTE

Attachment 7 contains forms to assist in this activity.

5.7.1 Determine if the following condition has occurred during the Radioactive release:

NOTE

A Nuclear Incident means any occurrence of bodily injury, sickness, disease, death, loss of or damage to property or loss of use of property (Off-site Evacuation) resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear or byproduct material.

1. Dose exceeds any applicable Technical Specification, **AND** the release is not exempt under a nuclear incident.

5.7.2 If the condition in Substep 5.7.1.1 is not met, proceed to Subsection 5.8.

5.7.3 Using Radionuclide Reportable Quantities (RQs) listed in Appendix B to 40 CFR 302.4, determine if a RQ limit has been exceeded using the following criteria.

1. If the identity and quantity (in curies) of each Radionuclide in a mixture or solution is known, the ratio between the quantity released and the RQ for the Radionuclide must be determined for each Radionuclide. An RQ is reached if the sum of the ratios of the Radionuclides is equal to or greater than one. [Grab Sample method only]

2. If the identity of each Radionuclide in a released mixture or solution is known, but the quantity of one or more of the radionuclides is unknown, a RQ is reached if the total quantity (in curies) of the mixture or solution released is equal to or greater than the lowest RQ of any Radionuclide in the mixture or solution. (Methods other than Grab Sample]

3. If the identity of one or more of the Radionuclides in a released mixture or solution is unknown, a RQ is reached if the total quantity (in curies) released is either equal to or greater than one curie or the lowest RQ of any known individual Radionuclide in the mixture or solution, whichever is lower. [Methods other than Grab Sample]

5.7.4 If the release exceeds the permissible RQ limits, complete Attachment 7 accordingly.

5.7.5 Request the Chemistry Supervisor, or designee to notify the agencies listed in Attachment 7, of the release.

1. Provide each agency with the information required in Attachment 7.

2. Record Date/Time and name of person contacted for each agency.

5.7.6 This event shall be reportable to the NRC. Ensure notifications and reports required by 0-ADM-115, Notification of Plant Events, are made.

5.8 Continue Monitoring and Evaluation of Releases

NOTE

Significant wind direction changes (into new sector) or wind speed changes should be brought to the attention of the Emergency Coordinator for evaluation.

5.8.1 The Emergency Coordinator or designee shall monitor release rates and meteorological conditions.

5.8.2 If using the Manual Method (e.g., worksheets), dose rate estimates should be updated once every hour unless:

1. Monitor reading increases by two or more times,

OR

2. Stability class changes.

If the above conditions occur, then dose calculations should be re-evaluated.

5.8.3 If using the computerized version, dose calculation forecasts (to obtain projected dose PARs) should be performed every 15 or 30 minutes, depending on the selected Advection Step.

5.8.4 Comparisons between field monitoring results and plume calculations should be performed and the results of the comparisons may be used to modify the input data for the manual or computerized dose calculations.

5.8.5 Dose Calculation activities will remain in effect until the Emergency Coordinator designates otherwise.

END OF TEXT

ENCLOSURE 1
(Page 1 of 3)

SYSTEM PARAMETERS AND CONVERSION FACTORS

The following system parameters and conversion factors are provided for use in emergency response activities. Some values may be approximated in that the values have been rounded to the nearest tenth of an order of magnitude; for example, 1.2 E+04 rather than 12,345:

System Volumes

Containment 4.4 E+10 cc
Spent Fuel Pit: 60,000 ft3 (1.7 E+9 cc) Level Indicator: 650 gal/in 40 ft=312,000 gal
Accumulators 6545 gal each
RCS 70,000 gal
Steam Generators secondary 40,000 gal max 20,000 gal operating, primary 6921 gal max
Pressurizer 9725 gal max 5835 gal operating
RWST 320,000 gal
VCT 748 gal liquid and 200 ft3 gas
CCW 35,000 gal
Gas Decay Tank 525 ft3
Containment Sump 629,326 gal max 10 gal/in 0-32 in 1376 gal/in 32-489 in

System Flows

Steam Dump @ 1100 psi 28 lbm/sec Each ADV = 1.3 E+4 cc/sec
Aux Feed Flow 800 gpm each
Standby Feedwater 1350 gpm
Containment Exhaust 7000 scfm (3.304 E+6 cc/sec)
Spent Fuel Pit Exhaust 20,000 scfm (9.44 E+6 cc/sec)
RCP 88,500 gpm per pump
Air ejector 30 scfm (1.42 E+4 cc/sec)
Instrument Air Bleed U-3 20 scfm (9440 cc/sec) U-4 25 scfm (11800 cc/sec)
Safety Injection 375 gpm
Charging Pump 77 gpm each

Process Radiation Monitoring System

Monitor	Description	Units	Range Min - Max	Typical Background	Typical response factor (uCi/cc/cpm)
R-11	Containment Particulate	uCi/cc	1.0E-09 - 1.0E-06	1.0E-08	7.36E-12
R-12	Containment Gas	uCi/cc	1.0E-06 - 1.0E-03	1.0E-05	3.48E-08
R-14	Plant Vent Gas	cpm	0-300,000	500	5.0E-09
R-15	Air Ejector Gas	cpm	0-300,000	400	2.5E-08
R-17	CCW	cpm	0-250,000	750	2.0E-07
R-18	Liquid Rad Waste	cpm	0-250,000	5000	2.0E-08
R-19	S/G Blowdown	cpm	0-250,000	750	5.0E-09
R-20	Letdown	mr/hr	0.1 - 10,000	100	------------
DAM-1	Main Steam	uCi/cc	1.0E+00 - 1.0E+05	1.0E-01	------------
SPINGs					
Ch-5	Low Range Noble Gas	uCi/cc	1.0E-07 - 6.0E-02	5.0E-07	------------
Ch-7	Mid Range Noble Gas	uCi/cc	2.5E-02 - 4.0E+02	1.0E-04	------------
Ch-9	High Range Noble Gas	uCi/cc	1.0E+00 - 1.0E+05	1.0E-01	------------

ENCLOSURE 1
(Page 2 of 3)

SYSTEM PARAMETERS AND CONVERSION FACTORS

The Core:

≈ 8.7 E 7 Curies DEQ I-131 DEQ (assume 15% in the gap for estimating purposes)
≈ 3.5 E 8 Curies of 'core mix'(gross) noble gas

For LOCA

25% of total core iodine inventory is assumed to be available for release.
100% of total core gas inventory is assumed to be available for release.
Design base leak rate is 1273 cc/sec. (0.25% per day)
Dose at the site boundary for a LOCA is 93 Rem thyroid and 3.1 Rem whole body.

For Steam Generator Tube Rupture

Isolation of steam generators should occur within 30 minutes.
70,000 lbs of RCS will leak into the steam generator.
57,000 lbs of steam will be discharged into the atmosphere.
With 1% defective fuel:
9,500 equivalent curies of Xe-133 are released
3.9 equivalent curies of I-131 are released
78 equivalent curies of I-131 are deposited in the steam generator
Dose at the site boundary <1.0 Rem thyroid, <0.1 Rem whole body

Primary to Secondary Leak Rate

$$\text{Leak Rate (gallons/hour)} = \frac{\text{S/G } \mu\text{Ci/ml}}{\text{RCS } \mu\text{Ci/ml}} \times \frac{\text{Blowdown (lbm/hr)}}{\text{8.33 (lbm/gallon)}}$$

Ci/sec = (Leak Rate, gph)*(3785 ml/gal)*(2.78 E-04 hr/sec)*(RCS µCi/ml)*(1.0 E-6 Ci/µCi)

Conversion Factors

1 gallon = 8.33 lbm (@STP)=3785 ml   1 Ft^3 = 28317 cm^3

1 lb/Ft^3 x 0.0160 = g/cm^3 1CFM x 472 = cc/sec

1 lbm/hr steam x 0.126 = ml/sec condensed liquid

1 lb x 454 = grams

1 mph x 0.447 = meter/sec   1 meter/sec x 2.23 = miles per hour

1 mph ÷ 1.15 = knot   knot x 1.15 = mph   1 mile = 1609 meters

1 µCi/cc equilibrium noble gas = 3.6 E+5 mrem/hr (DDE) immersion dose rate

1 µCi/cc Iodine-131 (or mix as DEQ) = 1.3 E+9 mrem/hr (CDE) Adult Thyroid from inhalation

X/Q (FSAR default) = 1.5 E-4 sec/$meter^3$ (class F, 4.5 mph)

★1:2/JR/ev

ENCLOSURE 1
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SYSTEM PARAMETERS AND CONVERSION FACTORS

Use this method IF there is not radiological data (e.g., CHRRM, containment grab sample, etc.,) AND the accident has progressed past gap failure AND the containment has undergone catastrophic failure (e.g., know there should be pressure and there is none).

Note that the following method provides DOSES, not release rates. Doses based on stability class D and 4 mph wind speed.

REACTOR ACCIDENT CONSEQUENCE OVERVIEW
Containment Leakage

Core Condition	Containment Status	Mitigating System Status (*)	Acute Dose (rem) 1 Hour Release @ 1 mile (**) WB	THY
MELT Release From Core 4500°F	Early Total Failure (< 1hr)	No Mitigation	1000+	10^5+
		Mitigated	250	10^4
	Late Total Failure (2-12hr)		250	10^4
	Major Leakage (100% / day)		10	10^3
	Design Leakage		10^{-2}	1
Gap Release From Core 1500°F	Early Total Failure (< 1hr)	No Mitigation	50	10^4
		Mitigated	10	10^3
	Late Total Failure (2-12hr)		5	10^3
	Major Leakage (100% / day)		10^{-1}	10
	Design Leakage		10^{-4}	10^{-2}

* Sprays, filters
** 1 hour cloud immersion and inhalation plus 3 hours of ground shine

BASIS: NRC's Response Technical Manual RTM-91 Vol. 1, Rev. 1, pg C-2

★1:2/JR/ev

ENCLOSURE 2

OFF-SITE DOSE CALCULATIONS - COMPUTER METHOD

1.0 Discussion

1.1 The computer based Class A Dose Calculation Program utilizes inputs and processes similar to the manual procedure. However, the refinements available in the computer based process allow for a wider range of input information and mathematical complexity than available in the manual method. This procedure provides guidance for using the computer based process to derive calculated off-site doses in a manner similar to that discussed for the manual calculation. Personnel having expertise in dose calculation methodology may utilize this expertise in combination with the advanced methods available through the screen driven menus to modify and refine these basic calculations.

NOTE: If the EOF and TSC are manned and operational, dose assessment personnel at these locations should coordinate their efforts in order to calculate the most accurate available off site dose assessment.

A. Computer Startup

1. Energize the uninterruptible power supply to the computer, to prevent data loss if a power interruption occurs.

2. Ensure that the floppy disk drive is empty.

3. Turn on the display monitor, the printer, the computer and the print buffer if attached.

4. Acquire the Class-A User's Manual while computer is starting up.

5. Following system startup, the computer may prompt the user to enter the current date. If the prompt appears, then:

   a. Enter the current date in the displayed format and depress the ENTER key.

   b. Enter the current time (to the nearest whole minute) in the displayed format and depress the ENTER key.

6. WHEN the computer displays the C drive prompt (C>), THEN type FPL AND depress the ENTER key to initiate the dose assessment program.

ENCLOSURE 2
(Page 2 of 5)

OFF-SITE DOSE CALCULATIONS - COMPUTER METHOD

B. Perform Pre-Use QC Check

1. IF time and manpower permit, THEN a pre-use verification check using input data from the User's Manual should be performed prior to conducting dose calculations.

2. Exit the program to the DOS level at the completion of the pre-use check; type FPL and hit ENTER to restart the program.

C. Conducting Calculations

1. WHEN the plant site menu is displayed, THEN depress the function key to select the affected Turkey Point Plant.

2. WHEN the program asks, **Is this an exercise?**, THEN answer appropriately and depress the ENTER key.

3. WHEN the Main Menu is displayed, THEN select the displayed function key to start calculations.

4. WHEN prompted by the program, THEN depress Y and the ENTER key to reinitialize the data files.

   NOTE: Thirty minute advection time steps are normally used except for fuel handing accidents, for which 15 minute advection time steps should be used.

5. Select from the screen functions displayed to edit the accident type, reactor trip times and release start times in the format shown on the screen AND depress ENTER after each new entry.

   NOTE: Once advection time is selected it should not be changed while running the program to prevent generating errors.

6. WHEN the correct accident type, reactor trip, release start times, and advection time steps have been entered, THEN depress the displayed function key to accept the data.

7. WHEN the Run Mode Menu is displayed, THEN depress the displayed function key to enter the Actual Calculation Mode.

8. WHEN the Input Menu is displayed, THEN depress the displayed function key to bring up the Meteorological Data Menu.

ENCLOSURE 2
(Page 3 of 5)

OFF-SITE DOSE CALCULATIONS - COMPUTER METHOD

CAUTION: When determining the atmospheric stability class, the Class A computer program will select the most recently entered indicator (Delta-T or Sigma-Theta) of stability. Since Delta-T is the preferred indicator, ensure that Delta-T data is entered last when available.

9. Enter the meteorological data gathered in accordance with this procedure in the format shown using the displayed function keys **AND** depress **ENTER** after each new entry

10. **WHEN** all necessary meteorological data has been entered, **THEN** depress the displayed function key to accept the data and return to the Meteorological Data Menu.

11. Depress the displayed function key to accept the data and return to the Input Menu.

12. **WHEN** the Input Menu is displayed, **THEN** depress the displayed function key to bring up the Source Term Accident Information Menu.

    NOTE: If editing is required, edit the information in accordance with the displayed instructions.

13. Respond appropriately to the questions about Core Damage Situation and the Iodine Removal System Status.

14. **WHEN** the Source Term Summary Menu is displayed, **THEN** gather release rate information in accordance with this procedure **AND** enter the release rate information and source of information in accordance with the displayed instructions.

15. **WHEN** the input of release rate information has been completed, **THEN** depress the displayed function key to accept the data **AND** return to the Input Menu.

16. **IF** a final check of data accuracy is desired, **THEN** depress the displayed function keys to review the data and to return to the Input Menu.

17. Depress the appropriate function key and answer Y, ENTER to the screen prompt to begin calculations.

ENCLOSURE 2
(Page 4 of 5)

OFF-SITE DOSE CALCULATIONS - COMPUTER METHOD

18. WHEN the Output Menu is displayed, THEN depress the displayed function key to select **Print Reports**.

19. WHEN the Printed Report Menu is displayed, THEN depress the displayed function keys to select the desired reports and radial receptors.

    CAUTION: Ensure that the printer and buffer are on line and ready for use prior to proceeding with the printing task. If either device is not ready for use, the computer will exit the dose assessment program.

20. Depress any key to begin printing.

21. WHEN the Output Menu is displayed, THEN depress the displayed function key to select the Run Mode Menu.

22. WHEN the Run Mode Menu is displayed, THEN depress the displayed function key to select the Forecast Calculation Mode.

    NOTE: Two hour forecast periods are normally used unless the release period is expected to be other than 2 hours as specified by Emergency Management personnel.

23. Edit the forecast period as desired using the displayed instructions.

24. WHEN the forecast period has been accepted, the Input Menu: Forecast Calculation mode will be displayed, THEN Depress the displayed function keys to edit, review and summarize data as necessary.

25. WHEN all input data is acceptable, THEN depress the displayed function key to perform calculations AND answer **Y, ENTER** to the screen prompt.

26. WHEN the Forecast Calculation Mode Output Menu is displayed, THEN depress the displayed function key to select **Print Reports**.

27. WHEN the Printed Report Menu is displayed; THEN depress the displayed function keys to select the desired reports and radial receptors.

ENCLOSURE 2
(Page 5 of 5)

OFF-SITE DOSE CALCULATIONS - COMPUTER METHOD

CAUTION: Ensure that the printer and buffer are on line and ready!

NOTES:
- The Emergency Coordinator should normally be provided with a printout of actual calculated doses, forecast calculated doses and protective action recommendations. Dose calculation reports should reflect both whole body and thyroid doses at 1 mile, 2 miles, 5 miles, 7.5 miles and 10 miles (Select **ALL** and **1, 2, 5, 7.5, 10 Rdl Rctrs** from the Printed Report Menu).
- The technician should generally provide an update to the Emergency Coordinator every thirty minutes during periods of actual or potential off-site releases.

28. WHEN the Actual, Forecast and PAR Reports have been printed, THEN the dose calculation technician may return to the actual run mode menus to update information and repeat the dose assessment process as needed due to meteorological or release rate changes.

29. Return to the Source Term Menu and Input Displays for all subsequent calculations even if the data is not to be changed to review and accept the data, in order to assure that the Noble Gas Reduction factor is reset to its proper value.

ATTACHMENT 1
(Page 1 of 7)

METEOROLOGICAL DATA WORKSHEET

Part A - MET Tower Worksheet

1. Date and Time of observations:_________/____/____ , ______________

2. If using ERDADS, press the purple **RAD** key on the ERDADS keyboard. For a terminal outside the Control Room, to change from one unit to the other, type PUP (space) UNIT# (where # is either 3 or 4) and press EXEC (execute).

3. Copy the observations into the following table:

Desired Data	Source of the Met Data		Value	Unit
	Primary	Backup		
Wind Speed	10m Tower	So Dade (60m) Tower		mph
Wind (from) Direction	10m Tower	So Dade (60m) Tower		degrees
Primary Stability Class Indicator	So Dade (60m) Tower Delta-T, ΔT	////////////////		deg F / 50 meters
Alternate Stability Class Indicator	////////////////////	10m Tower Sigma-Theta		degrees
Ambient Air Temperature	ERDADS	Airport		degrees F

4. Using the Wind (from) Direction, circle the Affected Sectors in the table:

   NOTE: If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M. N, and P.

Wind From	Affected Sectors	Wind From	Affected Sectors	Wind From	Affected Sectors
348 - 11	H J K	123 - 146	P Q R	258 - 281	D E F
11 - 33	J K L	146 - 168	Q R A	281 - 303	E F G
33 - 56	K L M	168 - 191	R A B	303 - 326	F G H
56 - 78	L M N	191 - 213	A B C	326 - 348	G H J
78 - 101	M N P	213 - 236	B C D	**Note:** there is no sector I and O	
101 - 123	N P Q	236 - 258	C D E		

ATTACHMENT 1
(Page 2 of 7)

METEOROLOGICAL DATA WORKSHEET

Part A - Met Tower Worksheet

5. Using the Stability Class Indicator, determine and circle the Stability Class:

If using Delta-T, ΔT	If using Sigma-Theta, σ_θ	Stability Class
$\Delta T \leq -1.7$	$\sigma_\theta \geq 22.5$	A
$-1.7 < \Delta T \leq -1.5$	$22.5 > \sigma_\theta \geq 17.5$	B
$-1.5 < \Delta T \leq -1.4$	$17.5 > \sigma_\theta \geq 12.5$	C
$-1.4 < \Delta T \leq -0.5$	$12.5 > \sigma_\theta \geq 7.5$	D
$-0.5 < \Delta T \leq +1.4$	$7.5 > \sigma_\theta \geq 3.8$	E
$+1.4 < \Delta T \leq +3.6$	$3.8 > \sigma_\theta \geq 2.1$	F
$+3.6 < \Delta T$	$2.1 > \sigma_\theta$	G

6. Evaluate Seabreeze Impact, if any of the following four is No, then Impact is NO.

CIRCLE IMPACT: YES NO

a. Stability Class is A, B, or C
b. Time of day is 6 a.m. to 7 p.m.
c. Wind is from: $\geq$ 20 degrees to $\leq$ 220 degrees.
d. Observed Air Temperature is above (i.e., warmer than) value in table (default is YES)

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
66	68	73	77	80	84	86	85	84	80	74	69

7. Select the Dose Calculation Worksheet (Attachment 2).

If Stability Class is	And Seabreeze Impact is	Then Use Worksheet #	If Stability Class is	And Seabreeze Impact is	Then Use Worksheet #
A	YES	1	C	NO	6
A	NO	2	D	N/A	7
B	YES	3	E	N/A	8
B	NO	4	F	N/A	9
C	YES	5	G	N/A	10

8. Copy information to Attachment 2:
   a. **WIND DIRECTION, AFFECTED SECTORS** and **METHOD** to Line A.
   b. **WIND SPEED** to Lines 2 and 9.
   c. Place a check in the blank to the left of Met Tower on Line A.
9. This worksheet is completed, proceed to release rate determination, Attachment 3.

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ATTACHMENT 1
(Page 3 of 7)

METEOROLOGICAL DATA WORKSHEET

Part B - NWS Worksheet

In the event data is unavailable from the meteorological strip chart recorder or ERDADS, use the following procedure:

1. GATHER DATA

   A. Date:______________ Time:__________________ of observations

   B. Phone National Weather Services, using the commercial phone AND ask to be connected to lead forecaster. Commercial phone numbers are available in the Emergency Response Directory.

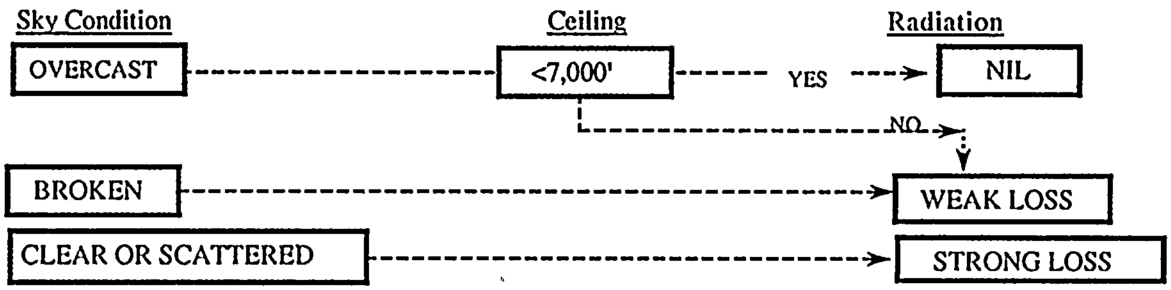
   C. Copy Current weather conditions as follows:

      Temperature: .... ________ °F
      WIND DIRECTION: .... ________ Degrees
      WIND SPEED: .... ________ (MPH)
      Sky Condition: Clear or Scattered: .... ____________
      Broken: .... ____________
      Overcast: .... ____________
      IF Broken or overcast, THEN copy ceiling height: .... ____________ Ft.

2. IF DAYTIME (1 hour after sunrise to 1 hour before sunset), THEN go to Step 4 (next page).

3. NIGHTTIME CALCULATIONS

   A. Determine Solar Radiation Characteristics:



   B. Circle Stability Category (D through G)

Solar Radiation	Less than 5	5, 6	7	8	9, 10	11	12 and above
	Wind Speed (mph)						
Nil	D	D	D	D	D	D	D
Weak Loss	F	E	E	D	D	D	D
Strong Loss	G	F	F	E	E	E	D

   C. Seabreeze Impact = No

   D. Go to Step 5

*1:2/JR/ev

ATTACHMENT 1
(Page 4 of 7)
METEOROLOGICAL DATA WORKSHEET

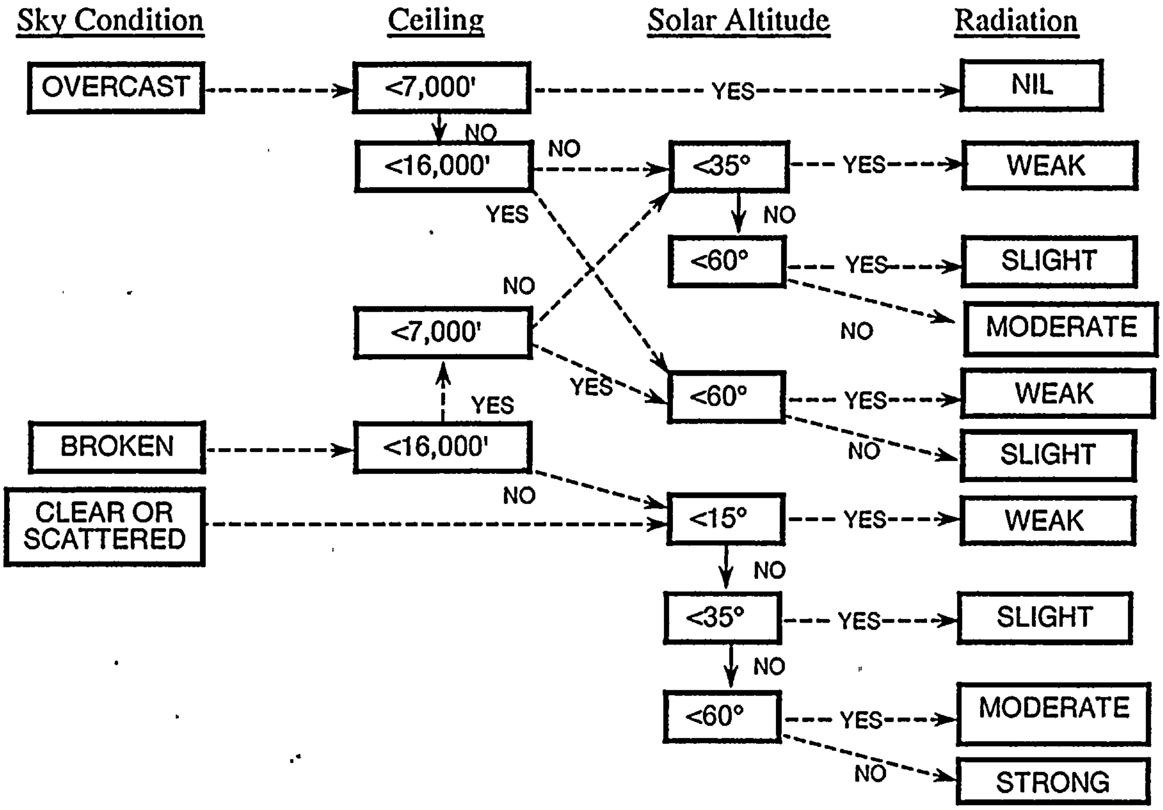
Part B - NWS Worksheet

4. DAYTIME CALCULATIONS:

A. Determine solar altitude (angle of sun above horizon) using Figure A-1 of this Attachment.

Circle Solar Altitude = <15 15 to <35 35 to <60 ≥60

B. Determine Solar Radiation Characteristics: (Place check mark next to appropriate box in radiation column)



C. Circle Stability Category (A through D)

Solar Radiation	Wind Speed (mph) 0,1	2,4	5,6	7	8	9,10	11	12	>12
Strong	A	A	A	B	B	B	C	C	C
Moderate	A	B	B	B	B	C	C	C	D
Slight	B	B	C	C	C	C	D	D	D
Weak	C	C	D	D	D	D	D	D	D
Nil	D	D	D	D	D	D	D	D	D

D. **IF** stability class is A, B, or C **AND** wind direction is from 20 degrees through east to 220 degrees, **THEN** seabreeze impact = Y, otherwise impact = N.

ATTACHMENT 1
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METEOROLOGICAL DATA WORKSHEET

Part B - NWS Worksheet

5. Using the Wind (from) Direction, circle the **AFFECTED SECTORS** in the table:

   NOTE: If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M. N, and P.

Wind From	Affected Sectors	Wind From	Affected Sectors	Wind From	Affected Sectors
348 - 11	H J K	123 - 146	P Q R	258 - 281	D E F
11 - 33	J K L	146 - 168	Q R A	281 - 303	E F G
33 - 56	K L M	168 - 191	R A B	303 - 326	F G H
56 - 78	L M N	191 - 213	A B C	326 - 348	G H J
78 - 101	M N P	213 - 236	B C D	**Note:**	
101 - 123	N P Q	236 - 258	C D E	there is no sector I or O	

6. Select the Dose Calculation Worksheet (Attachment 2).

If Stability Class is	And Seabreeze Impact is	Then Use Worksheet #	If Stability Class is	And Seabreeze Impact is	Then Use Worksheet #
A	YES	1	C	NO	6
A	NO	2	D	N/A	7
B	YES	3	E	N/A	8
B	NO	4	F	N/A	9
C	YES	5	G	N/A	10

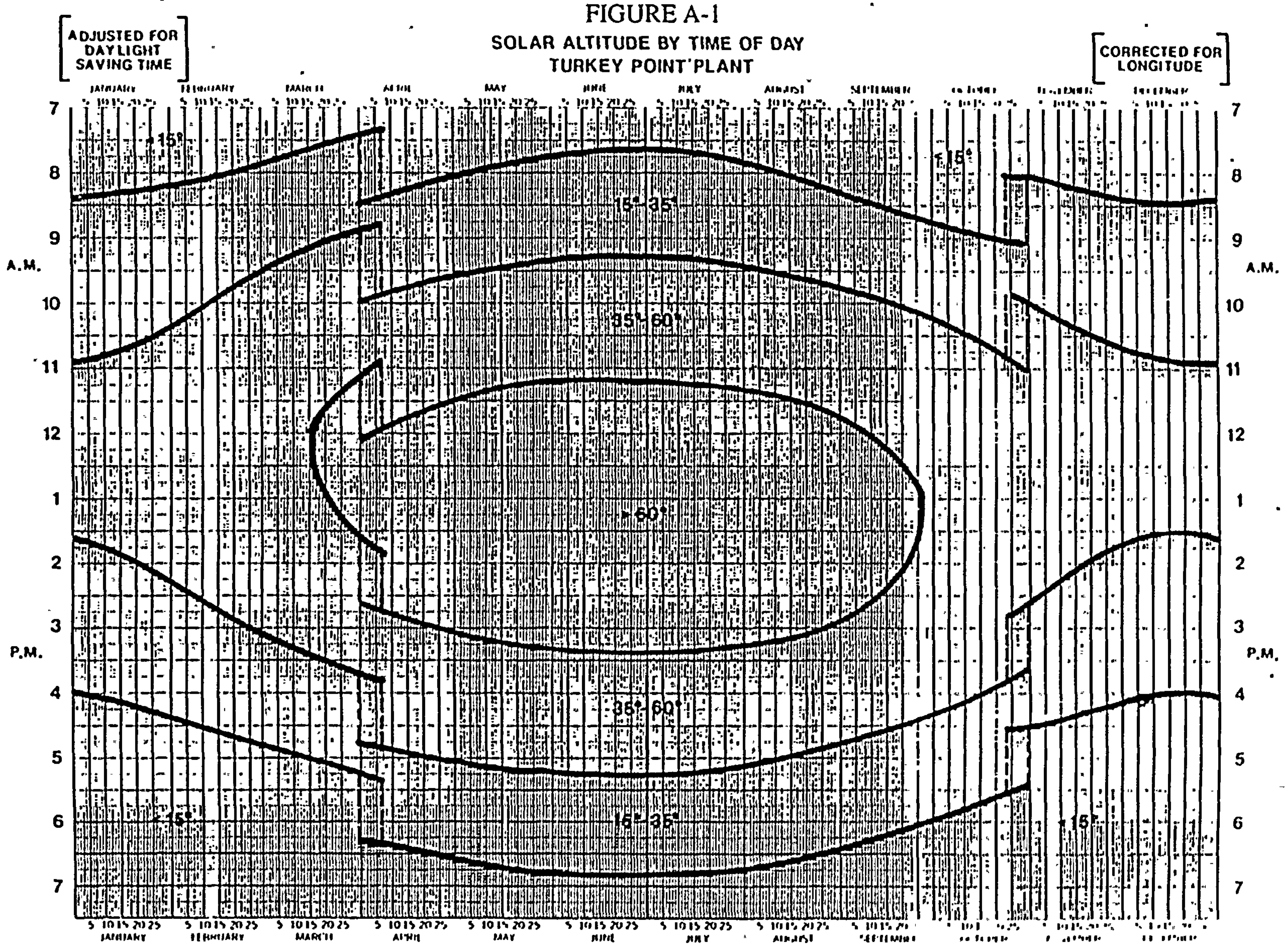
7. Copy information to Attachment 2.
   a. **WIND DIRECTION, AFFECTED SECTORS** and **METHOD** to Line A.
   b. **WIND SPEED** to Lines 2 and 9.
   c. Place a check in the blank to the left of NWS on Line A.

8. This worksheet is completed, proceed to release rate determination, Attachment 3.

ATTACHMENT 1 (Page 6 of 7)
METEOROLOGICAL DATA WORKSHEET

Part B - NWS Worksheet
FIGURE A-1

SOLAR ALTITUDE BY TIME OF DAY
TURKEY POINT PLANT



*1:2/JR/ev

ATTACHMENT 1
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METEOROLOGICAL DATA WORKSHEET

Part C - Default Met Worksheet

<u>NOTE</u>: This method is to be used only if Site Tower and National Weather Service Data is not available.

1. **WIND DIRECTION** may be based on local observations or other suitable methods of estimation. If Wind Direction is available, determine Affected Sectors, using the table below.

   IF WIND DIRECTION DATA IS NOT AVAILABLE, THEN AFFECTED SECTORS IS <u>ALL</u> (SECTORS)

   Observed Wind Direction____________, Affected Sectors____________ at Date________Time______

   <u>NOTE</u>: If the wind direction is directly on the edge of two sectors (e.g., 11°, 33°, 56°, etc.), an additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M, N, and P.

Wind From	Affected Sectors	Wind From	Affected Sectors	Wind From	Affected Sectors
348 - 11	H J K	123 - 146	P Q R	258 - 281	D E F
11 - 33	J K L	146 - 168	Q R A	281 - 303	E F G
33 - 56	K L M	168 - 191	R A B	303 - 326	F G H
56 - 78	L M N	191 - 213	A B C	326 - 348	G H J
78 - 101	M N P	213 - 236	B C D	**Note:**	
101 - 123	N P Q	236 - 258	C D E	there is no sector I or O	

2. <u>IF</u> Daytime Hours (1 hour after sunrise and 1 hour before sunset) <u>THEN</u>:

   Select DOSE CALCULATION WORKSHEET 8, (Stability Class E, Seabreeze Impact = N/A)

   Check DEFAULT method in Line A

   Wind Speed = 5 mph in line 2 and 9

   Copy Affected Sectors, from Step 1, to Line A

   Use of this method is complete, proceed to release rate determination, Attachment 3

3. <u>IF</u> Not Daytime Hours <u>THEN</u>:

   Select DOSE CALCULATION WORKSHEET 9, (Stability Class F, Seabreeze Impact = N/A)

   Check DEFAULT method in Line A

   Wind Speed = 5 mph in line 2 and 9

   Copy Affected Sectors, from Step 1, to Line A

   Use of this method is complete, proceed to release rate determination, Attachment 3

ATTACHMENT 2
(Page 1 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 1 STABILITY CLASS = A SEABREEZE IMPACT = YES UNIT ______

A. Met Summary: Wind Direction (from)__________ Affected Sectors__________
Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ________ Grab ________ Effluent Mon ________ Default
________ CHRRM ________ Attachment

Date and time of starting calculations:__________/__________

Line	Follow the instructions to calculate doses @					Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	______				SNF
2	Enter the **Wind Speed**, mph	______				SNF
3	Divide Line 1 by Line 2	______				
4	Iodine Dose Factors	2.2 E+ 4	8.1 E+3	2.2 E+3	7.8 E+2	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	______				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
	* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)					
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	______				SNF
9	Enter the **Wind Speed**, from Line 2 above	______				
10	Divide Line 8 by Line 9	______				
11	Enter the Particulate Factor **(PF)**	______				
12	Multiply Line 10 by Line 11	______				
13	Noble Gas Dose Factors	6.1	2.3	0.64	0.22	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	______				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

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ATTACHMENT 2
(Page 2 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 2 STABILITY CLASS = A SEABREEZE IMPACT = NO UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default

____________ CHRRM ____________ Attachment

Date and time of starting calculations:____________________/____________

Follow the instructions to calculate doses @						Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec					SNF
2	Enter the **Wind Speed**, mph					SNF
3	Divide Line 1 by Line 2					
4	Iodine Dose Factors	3.6 E+ 3	1.8 E+3	7.7 E+2	3.9 E+2	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours					SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec					SNF
9	Enter the **Wind Speed**, from Line 2 above					
10	Divide Line 8 by Line 9					
11	Enter the Particulate Factor **(PF)**					
12	Multiply Line 10 by Line 11					
13	Noble Gas Dose Factors	1.0	0.5	0.22	0.11	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE)**, mrem/hr					SNF
17	Enter **Duration** of release, hours					
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

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ATTACHMENT 2
(Page 3 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 3 STABILITY CLASS = B SEABREEZE IMPACT = YES UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default

____________ CHRRM ________ Attachment

Date and time of starting calculations:____________________/____________

Follow the instructions to calculate doses @						Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	____________				SNF
2	Enter the **Wind Speed**, mph	____________				SNF
3	Divide Line 1 by Line 2	____________				
4	Iodine Dose Factors	3.0 E+4	1.1 E+4	3.0 E+3	1.1 E+3	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE, mrem/hr**					SNF
6	Enter **Duration** of release, hours	____________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE), mrem**					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate, Ci/sec**	____________				SNF
9	Enter the **Wind Speed**, from Line 2 above	____________				
10	Divide Line 8 by Line 9	____________				
11	Enter the Particulate Factor (PF)	____________				
12	Multiply Line 10 by Line 11	____________				
13	Noble Gas Dose Factors	8.3	2.9	0.84	0.30	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE, mrem/hr**					SNF
17	Enter **Duration** of release, hours	____________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE), mrem**					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

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ATTACHMENT 2
(Page 4 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 4 STABILITY CLASS = B SEABREEZE IMPACT = NO UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ________ Grab ________ Effluent Mon ________ Default

________ CHRRM ________ Attachment

Date and time of starting calculations:________________/______________

Line	Follow the instructions to calculate doses @					Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	________				SNF
2	Enter the **Wind Speed**, mph	________				SNF
3	Divide Line 1 by Line 2	________				
4	Iodine Dose Factors	2.3 E+4	5.9E+3	1.1 E+3	5.7 E+2	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* **SNF** (State Notification Form); **PAR** (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	________				SNF
9	Enter the **Wind Speed**, from Line 2 above	________				
10	Divide Line 8 by Line 9	________				
11	Enter the Particulate Factor **(PF)**	________				
12	Multiply Line 10 by Line 11	________				
13	Noble Gas Dose Factors	6.4	1.6	0.31	0.15	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

★2:2/JR/ev

ATTACHMENT 2
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DOSE CALCULATION WORKSHEETS

WORKSHEET 5 STABILITY CLASS = C SEABREEZE IMPACT = YES UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default

____________ CHRRM ________ Attachment

Date and time of starting calculations:________________________/______________

Line	Follow the instructions to calculate doses @					Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	____________				SNF
2	Enter the **Wind Speed**, mph	____________				SNF
3	Divide Line 1 by Line 2	____________				
4	Iodine Dose Factors	5.9 E+4	1.7E+4	3.7E+3	1.5 E+3	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	____________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	____________				SNF
9	Enter the **Wind Speed**, from Line 2 above	____________				
10	Divide Line 8 by Line 9	____________				
11	Enter the Particulate Factor **(PF)**	____________				
12	Multiply Line 10 by Line 11	____________				
13	Noble Gas Dose Factors	16.0	4.6	1.1	0.42	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	____________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

★2:2/JR/ev

ATTACHMENT 2
(Page 6 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 6 STABILITY CLASS = C SEABREEZE IMPACT = NO UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ________ Grab ________ Effluent Mon ________ Default

________ CHRRM ________ Attachment

Date and time of starting calculations:____________________/____________

Follow the instructions to calculate doses @						Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	________				SNF
2	Enter the **Wind Speed**, mph	________				SNF
3	Divide Line 1 by Line 2	________				
4	Iodine Dose Factors	5.9 E+4	1.7E+4	3.1E+3	9.1 E+2	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	________				SNF
9	Enter the **Wind Speed**, from Line 2 above	________				
10	Divide Line 8 by Line 9	________				
11	Enter the Particulate Factor (PF)	________				
12	Multiply Line 10 by Line 11	________				
13	Noble Gas Dose Factors	16.0	4.6	0.88	0.26	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

★2:2/JR/ev

ATTACHMENT 2
(Page 7 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 7 STABILITY CLASS = D SEABREEZE IMPACT = N/A UNIT ______

A. Met Summary: Wind Direction (from)______________ Affected Sectors______________

Check method used: __________ Met Tower __________ NWS __________ Default

B. Release Rate determined by: ______________ Grab ______________ Effluent Mon __________ Default

______________ CHRRM ______________ Attachment

Date and time of starting calculations:________________________/________________

Line	Follow the instructions to calculate doses @ Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	Use Code *
1	Enter the **Iodine Release Rate**, Ci/sec	______________				SNF
2	Enter the **Wind Speed**, mph	______________				SNF
3	Divide Line 1 by Line 2	______________				
4	Iodine Dose Factors	1.6 E+5	5.9E+4	1.6E+4	5.7 E+3	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	______________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR

* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)

Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	______________				SNF
9	Enter the **Wind Speed**, from Line 2 above	______________				
10	Divide Line 8 by Line 9	______________				
11	Enter the Particulate Factor (PF)	______________				
12	Multiply Line 10 by Line 11	______________				
13	Noble Gas Dose Factors	44.0	17.0	4.4	1.6	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	______________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

★2:2/JR/ev

ATTACHMENT 2
(Page 8 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 8 STABILITY CLASS = E SEABREEZE IMPACT = N/A UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________
Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default
____________ CHRRM ____________ Attachment

Date and time of starting calculations:______________________/______________

Follow the instructions to calculate doses @						Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	____________				SNF
2	Enter the **Wind Speed**, mph	____________				SNF
3	Divide Line 1 by Line 2	____________				
4	Iodine Dose Factors	2.9 E+5	1.2E+5	3.6E+4	1.5 E+4	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	____________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	____________				SNF
9	Enter the **Wind Speed**, from Line 2 above	____________				
10	Divide Line 8 by Line 9	____________				
11	Enter the Particulate Factor **(PF)**	____________				
12	Multiply Line 10 by Line 11	____________				
13	Noble Gas Dose Factors	81.0	33.0	10.0	4.0	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE**, mrem/hr					SNF
17	Enter **Duration** of release, hours	____________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE)**, mrem					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

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ATTACHMENT 2
(Page 9 of 10)
DOSE CALCULATION WORKSHEETS

WORKSHEET 9 STABILITY CLASS = F SEABREEZE IMPACT = N/A UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default

____________ CHRRM ____________ Attachment

Date and time of starting calculations:____________________/____________

Follow the instructions to calculate doses @						Use Code *
Line	Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	
1	Enter the **Iodine Release Rate**, Ci/sec	____________				SNF
2	Enter the **Wind Speed**, mph	____________				SNF
3	Divide Line 1 by Line 2	____________				
4	Iodine Dose Factors	5.2 E+5	2.3E+5	7.7E+4	3.6 E+4	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE**, mrem/hr					SNF
6	Enter **Duration** of release, hours	____________				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE)**, mrem					PAR
* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)						
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	____________				SNF
9	Enter the **Wind Speed**, from Line 2 above	____________				
10	Divide Line 8 by Line 9	____________				
11	Enter the Particulate Factor (**PF**)	____________				
12	Multiply Line 10 by Line 11	____________				
13	Noble Gas Dose Factors	1.5 E+2	6.6E+1	2.2E+1	9.5E 0	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE, mrem/hr**					SNF
17	Enter **Duration** of release, hours	____________				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE), mrem**					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

ATTACHMENT 2
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DOSE CALCULATION WORKSHEETS

WORKSHEET 10 STABILITY CLASS = G SEABREEZE IMPACT = N/A UNIT ______

A. Met Summary: Wind Direction (from)____________ Affected Sectors____________

Check method used: ________ Met Tower ________ NWS ________ Default

B. Release Rate determined by: ____________ Grab ____________ Effluent Mon ________ Default

____________ CHRRM ____________ Attachment

Date and time of starting calculations:____________________/______________

Line	Follow the instructions to calculate doses @ Instructions for THYROID DOSES	1 mile	2 miles	5 miles	10 miles	Use Code *
1	Enter the **Iodine Release Rate**, Ci/sec	______				SNF
2	Enter the **Wind Speed**, mph	______				SNF
3	Divide Line 1 by Line 2	______				
4	Iodine Dose Factors	9.1 E+5	4.6E+5	1.7E+5	7.7E+4	
5	Multiply Line 3 by Line 4 to obtain **THYROID DOSE (CDE) RATE, mrem/hr**					SNF
6	Enter **Duration** of release, hours	______				SNF
7	Multiply Line 5 by Line 6 to obtain **THYROID DOSE (CDE), mrem**					PAR
	* SNF (State Notification Form); PAR (Protective Action Recommendation Worksheet)					
Line	Instructions for TOTAL WHOLE BODY DOSES	1 mile	2 miles	5 miles	10 miles	
8	Enter **Noble Gas Release Rate**, Ci/sec	______				SNF
9	Enter the **Wind Speed**, from Line 2 above	______				
10	Divide Line 8 by Line 9	______				
11	Enter the Particulate Factor **(PF)**	______				
12	Multiply Line 10 by Line 11	______				
13	Noble Gas Dose Factors	2.4E+2	1.2E+2	4.8E+1	2.2E+1	
14	Multiply Line 12 by Line 13					
15	Enter (Line 5 multiplied by 0.04)					
16	Add Line 14 and Line 15 to obtain **TOTAL DOSE (TEDE) RATE, mrem/hr**					SNF
17	Enter **Duration** of release, hours	______				
18	Multiply Line 16 by Line 17 to obtain **TOTAL DOSE (TEDE), mrem**					PAR
19	Forward this worksheet (or a copy) to the Emergency Coordinator {RM if done in EOF}					
20	Dose Calculations completed; continue monitoring releases and assessing doses.					

★2:2/JR/ev

ATTACHMENT 3
(Page 1 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part A - Grab Sample Data Worksheet

1. Date: __________ and Time ______________________ of Data, Unit ______________________
2. Ask the Emergency Coordinator for the following:
   a. Accident Type:____
   b. Potential Duration of Release (if unknown, use default):______________ hours
   c. Is the core overheating/melting? (circle): YES NO
3. IF the core is overheating or melting, THEN Particulate Factor (PF) = 4.4, else PF = 1.0; enter PF
4. Enter the Gross Noble Gas and Iodine-131 Deq, in µCi/cc for the affected/sampled pathways, into the table below:
   a. IF Iodine results are not available, THEN calculate as shown below, using the Iodine Release Rate Factor, found on Page 2 of 6.
   Noble Gas Conc X IRRF = Iodine Conc
   ____________NG(µCi/cc) X ____________IRRF = ____________Iodine (µCi/cc)
5. Determine pathway flow in cc/sec for plant vent and steam lines (if affected).
   a. For Plant Vent; calculate as shown below:
   Plant vent channel 10 flowrate (cfm) x 472 = plant vent flowrate (cc/sec)
   ____________PV Chl 10 X 472 = ______________________PV (cc/sec)
   IF Plant Vent Sping Ch. 10 data is not available, THEN use the Plant Vent Fan Configuration Table on Page 2 of 6.
   b. For Main Steam Lines, refer to Page 2 of 6.
6. Calculate Release Rates:

Pathway	Type	µCi/cc	x Flow cc/sec	x µCi to Ci =	Release Rate, Ci/sec Noble Gas	Release Rate, Ci/sec Iodine
Plant Vent	Noble Gas			I E -6		//////////////
	Iodines				//////////////	
Main Steam Lines	Noble Gas			I E -6		//////////////
	Iodines				//////////////	
Cond Air Ejector	Noble Gas		1.42E 4	I E -6		//////////////
	Iodines				//////////////	
U-3 Fuel Pool Vent	Noble Gas		9.43E 6	I E -6		//////////////
	Iodines				//////////////	

7. Calculate Site Release Rate:

Total the Release Rates using this Worksheet		
Enter other Release Rates (e.g., CHRRM/Other Unit)		
Add to obtain Site Release Rate		

8. Enter the Site Release Rates in Attachment 2.
   a. Place a check in the blank to the left of Grab in Line B to indicate this method.
   b. Enter the Noble Gas Release Rate into Line 8.
   c. Enter the Iodine Release Rate into Line 1.
   d. Enter the Duration (if 2 affected units, use longest) into Line 6 and Line 17.
   e. Enter the PF (Particulate Factor) (if 2 affected units, use largest) into Line 11.
9. This worksheet is done, follow the instructions on Attachment 2.

★2:2/JR/ev

ATTACHMENT 3
(Page 2 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part A - Grab Sample Data Worksheet

Iodine Release Rate Factors (IRRF)

Plant Condition	IRRF
LOCA and Emergency Containment Filter(s) in use	0.011
LOCA and Emergency Containment Filter(s) not in use	0.063
Fuel Handling	0.001
Steam Generator Tube Rupture	0.004
Waste Gas Decay Tank or VCT release	1E - 06

Plant Vent Exhaust Fan Configuration Table

CONTAINMENT PURGE	AUXILIARY BUILDING	SPENT FUEL PIT	RADWASTE BUILDING	LAUNDRY SYSTEM	PLANT VENT FLOW cc/sec
0	0	1	2	1	1.45 E+7
0	1	1	2	1	3.82 E+7
0	2	1	2	1	4.31 E+7
1	1	1	2	1	4.74 E+7
1	2	1	2	1	5.07 E+7
2	1	1	2	1	5.66 E+7
2	2	1	2	1	5.99 E+7

Main Steam Line Flow

I) Atmospheric Dump Valves (1 per line): Each 1.33 E+4 cc/sec
II) Each S/G safety relief valve (four per steam line): 1.1 E+5 cc/sec each
III) Exhaust from Each Aux Feed Pump: 3.4 E+3 cc/sec each
IV) IF time and data permits, THEN average the flow as shown below, ELSE assume a constant flow rate.

Main Steam Line Flow Averaging Method				
Pathway cc/sec	X	Amount of OPEN time, sec or min / Averaging Period: 1800 sec or 30 min	=	Average cc.sec
______ cc/sec	X	______	=	______ cc/sec

ATTACHMENT 3
(Page 3 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part B - Effluent Monitor Data Worksheet

1. Date: ____________ and Time ______________________________ of Data, Unit ____________________

2. Ask the Emergency Coordinator for the following:

   a. Accident Type: ____
   b. Potential Duration of Release (if unknown, use default): ________________ hours
   c. Is the core overheating/melting? (circle): YES NO

3. <u>IF</u> the core is overheating or melting, <u>THEN</u> Particulate Factor (PF) = 4.4, else PF = 1.0; enter PF ____________

4. Enter the monitor readings for the affected pathways in the table of Step 7:

   a. SPING-4 reading (already averaged) preferred over R-14, R-15.
   b. <u>IF</u> using R-14, R-15, <u>THEN</u> estimate the four chart points over prior 15 minutes.
   c. <u>IF</u> using DAM-1 (already averaged), <u>THEN</u> multiply the reading by the number of S/Gs feeding monitor:
      DAM-1 uCi/cc__________ x ____________ S/Gs being monitored = ______________________
      (DAM-1 value for Step 7)

5. Determine pathway flow in cc/sec for Plant Vent and Steam Lines (if affected).

   a. For Plant Vent; calculate as shown below:
      Plant vent channel 10 flowrate (cfm) x 472 = plant vent flowrate (cc/sec)
      ____________PV Chl 10 X 472 = ______________________________PV (cc/sec)
      <u>IF</u> Plant Vent Sping ch. 10 data is not available, <u>THEN</u> use the Plant Vent Fan Configuration Table on Page 4 of 6.
   b. For Main Steam Lines refer to Page 4 of 6.

6. Enter the Iodine Release Rate Factor (IRRF) in to the table below, Factors listed on Page 4 of 6.

7. Calculate Release Rates:

Pathway		Monitor Reading	x Cal x	Flow cc/sec x	µCi to Ci =	Noble Gas Rel. Rate	x IRRF =	Iodine Rel. Rate
Plant Vent	R-14		5 E-9		I E -6			
	SPING		1.0		I E -6			
Main Steam	DAM-1		1.0		I E -6			
Cond Air Ejector	R-15		2.47E-8	1.42E 4	I E -6			
	SPING		1.0	1.42E 4	I E -6			
#3 SFP Vent	SPING		1.0	9.43E 6	I E -6			

8. Calculate Site Release Rate:

Total the Release Rates using this Worksheet		//////	
Enter other Release Rates (e.g., CHRRM/Other Unit) if applicable		//////	
Add to obtain Site Release Rate		//////	

9. Enter the Site Release Rates in Attachment 2.
   a. Place a check on the blank to the left of Effluent Mon in Line B to indicate this method.
   b. Enter the Noble Gas Release Rate into Line 8.
   c. Enter the Iodine Release Rate into Line 1.
   d. Enter the Duration (if 2 affected units, use longest) into Line 6 and Line 17.
   e. Enter the PF (Particulate Factor) (if 2 affected units, use largest) into Line 11.
10. This worksheet is done, follow the instructions on Attachment 2.

ATTACHMENT 3
(Page 4 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part B - Effluent Monitor Data Worksheet

Iodine Release Rate Factors (IRRF)

Plant Condition	IRRF
LOCA and Emergency Containment Filter(s) in use	0.011
LOCA and Emergency Containment Filter(s) not in use	0.063
Fuel Handling	0.001
Steam Generator Tube Rupture	0.004
Waste Gas Decay Tank or VCT release	1E - 06

Plant Vent Exhaust Fan Configuration Table

CONTAINMENT PURGE	AUXILIARY BUILDING	SPENT FUEL PIT	RADWASTE BUILDING	LAUNDRY SYSTEM	PLANT VENT FLOW cc/sec
0	0	1	2	1	1.45 E+7
0	1	1	2	1	3.82 E+7
0	2	1	2	1	4.31 E+7
1	1	1	2	1	4.74 E+7
1	2	1	2	1	5.07 E+7
2	1	1	2	1	5.66 E+7
2	2	1	2	1	5.99 E+7

Main Steam Line Flow

I) Atmospheric Dump Valves (1 per line): Each 1.33 E+4 cc/sec
II) Each S/G safety relief valve (four per steam line): 1.1E +5 cc/sec each
III) Exhaust from Each Aux Feed Pump: 3.4E+3 cc/sec
IV) IF time and data permits, THEN average the flow as shown below, ELSE assume constant flow rate.

Main Steam Line Flow Averaging Method				
Pathway cc/sec	X	Amount of OPEN time, sec or min / Averaging Period: 1800 sec or 30 min	=	Average cc.sec
________ cc/sec	X	________	=	________ cc/sec

★2:2/JR/ev

ATTACHMENT 3
(Page 5 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part C - Containment High Range Radiation Monitor (CHRRM) Data Worksheet

(If both units are using this method, then complete one worksheet for each unit)

1. Date and time of starting this worksheet:_______________/_______________
2. Ask the Emergency Coordinator for the following:
   a. Is the core overheating/melting? (circle): YES NO
   b. Potential Duration of Release (if unknown, use default):_______________hours
3. IF the core is overheating or melting, THEN Particulate Factor (PF) = 4.4, else PF = 1.0; enter PF ____________
4. Obtain: Highest CHRRM reading:___________R/hr, Elapsed time since Reactor Trip:___________hours
5. IF using the pre-planned CHRRM alternate, estimate the CHRRM value:
   Alternate ___________R/hr x 1.3E+4 =_______________estimated CHRRM
6. Select the Conversion Factor (CF) using the Elapsed time for use in Step 7.

Elapsed Time, Hr	Conversion Factor	Elapsed Time, Hr	Conversion Factor
ET = Ø	1.6 E-6	2.0 < ET ≤ 4.0	9.0 E-6
Ø < ET ≤ 0.5	2.2 E-6	4.0 < ET ≤ 8.0	1.8 E-5
0.5 < ET ≤ 1.0	3.2 E-6	8.0 < ET	4.8 E-5
1.0 <ET ≤ 2.0	5.0 E-6		

CFA = Core Fraction Airborne

7. CHRRM __________R/hr X CF____________ = _____________(CFA) for use in Steps 9 and 11.
8. Determine Noble Gas Reduction Factor (NGRF), from Table; NGRF=_________________, for use in Step 9.
   a. Round down the elapsed time (et), in hours, since reactor trip.

et	NGRF	et	NGRF	et	NGRF	et	NGRF
0	1.0	>4 to ≤5	0.44	>9 to ≤10	0.26	>14 to ≤15	0.16
>0 to ≤1	0.90	>5 to ≤6	0.39	>10 to ≤11	0.23	>15 to ≤16	0.14
>1 to ≤2	0.70	>6 to ≤7	0.35	>11 to ≤12	0.21	>16 to ≤17	0.14
>2 to ≤3	0.6	>7 to ≤8	0.32	>12 to ≤13	0.19	>17 to ≤18	0.14
>3 to ≤4	0.5	>8 to ≤9	0.28	>13 to ≤14	0.18	>18	0.13

ICV = Iodine Conversion Value

9. Calculate:_______(CFA) X _______(NGRF) X 10.2 Ci/sec=____________Noble Gas Release Rate, Ci/sec.
10. IF the Emergency Containment Filter(s) IS in use, THEN (ICV) = 0.11; if NOT in use, then (ICV) = 0.63.
11. Calculate:_______(CFA) X _______ (ICV) =________Iodine Release Rate, Ci/sec.
12. Calculate Site Release Rate, Ci/sec:

		Noble Gas	Iodine
a.	Enter the Release Rates determined from this Worksheet		
b.	IF the other unit is AFFECTED, THEN enter its release rates		
c.	Add 11.a and 11.b to obtain Site Release Rates		

13. Enter the Site Release Rates in Attachment 2.
    a. Place a check in the blank to the left of CHRRM in Line B to indicate this method.
    b. Enter the Noble Gas Release Rate into Line 8.
    c. Enter the Iodine Release Rate into Line 1.
    d. Enter the Duration (if two affected units, use longest) into Line 6.
    e. Enter the PF (Particulate Factor) (if two affected units, use largest) into Line 11.
14. This worksheet is done, follow the instructions on Attachment 2.

ATTACHMENT 3
(Page 6 of 6)

RADIOACTIVE RELEASE WORKSHEET

Part D - Default Values for Radioactive Releases

1. Default data is listed by accident type.
   a. For the accident type and plant conditions, select the default data.
   b. Copy the default data to the selected worksheet in Attachment 2.
      I. Iodine Release Rate to Line 1
      II. Noble Gas Release Rate to Line 8
      III. Particulate Factor (PF) to Line 11
   c. Place a check in the blank to the left of default on Line B on the selected worksheet in Attachment 2.
2. This worksheet is done, follows the instructions on the selected worksheet in Attachment 2.

LOSS OF COOLANT ACCIDENT (LOCA)

Compare hours after reactor trip to table below; see Attachment 4 for methods to adjust these values based on known plant conditions.

Hours post-trip	Duration	Iodine Ci/sec	Noble Ci/sec	PF
0 to 2	2 hours	0.11	10.2	4.4
>2 to 8	2 hours	0.06	5.4	4.4
more than 8	2 hours	0.02	1.6	4.4

STEAM GENERATOR TUBE RUPTURE (SGTR)

Use the listed values until the affected generator is isolated; see Attachment 5 for methods to adjust the values based on known plant conditions.

Duration	Iodine Ci/sec	Noble Gas Ci/sec	PF
1/2 hour	0.0037	4.2	1.0

FUEL HANDLING

Multiply the below listed release rates by the number of known/estimated damaged fuel bundles:

Duration	Iodine Ci/sec	Noble Gas Ci/sec	PF
1/4 hour	0.0047	17.0	1.0

ATTACHMENT 4
(Page 1 of 4)

LOCA RELEASE RATE DETERMINATIONS WORKSHEET

Provides methods to adjust or replace the LOCA default release rates based on known plant parameters. Guidance is provided for coping with containment failure releases, either rapid depressurization or estimated penetration size failure.

NOTE

The following methods are provided for guidance. Conditions may warrant an approach different than shown; use the factors presented here and elsewhere in this procedure, as necessary, to estimate releases. Document the calculations in the applicable facilities logbook.

It must be understood that the methodology provided in Attachment 4 includes conservative assumptions, and is intended to provide a means to estimate an upper bound to the release, not an exact release rate.

This Attachment has three methods (LOCA-1 to LOCA-3), select the one that most closely matches the conditions listed below:

IF the CHRRM is operational **AND** containment integrity is not good **AND** an equivalent penetration diameter (0.25 to 2 inches) leak has been postulated, **THEN** a release rate can be estimated using the CHRRM method and LOCA-1.

NOTE

The next two methods are in response to a rapid decrease in containment pressure or rapid decrease in the CHRRM reading that was determined, by Operations or Engineering, not due to changes in equipment operation (e.g., additional containment sprays, coolers, etc.).

IF the CHRRM is operational **AND** containment pressure appears to have rapidly (~30 min.) fallen **AND** the CHRRM reading also fell during the same period as the pressure fall, **THEN** a release rate can be estimated using LOCA-2.

IF the CHRRM is operational **AND** containment pressure appears to have rapidly (~30 min.) fallen **AND** the CHRRM reading was either constant or increased during the same period as the pressure fall **AND** Engineering can estimate the percent (%) mass lost, **THEN** a release rate can be estimated using LOCA-3.

ATTACHMENT 4
(Page 2 of 4)

LOCA RELEASE RATE DETERMINATIONS WORKSHEET

Method LOCA-1

Use this method IF the CHRRM is operational AND containment integrity is not good AND an equivalent penetration diameter leak has been postulated.

METHOD: DATE:__________, TIME:__________, Unit:__________

1. Determine the release rates using the CHRRM worksheet, copy the noble gas and iodine release rates to line 4a and 4b, respectively.

2. Enter the equivalent penetration diameter:__________inches and the containment pressure: __________PSIG

3. From the table below, find and enter the release multiplier on line 4a and 4b.

Pen. dia. (inches)	Containment Pressure (if psig is between values, use next highest) 5 psig	10 psig	25 psig	50 psig
0.25	5.5	8	14	23
0.50	16	23	46	75
0.75	36	50	83	140
1.00	57	92	150	250
1.25	100	150	250	400
1.50	160	225	375	600
1.75	225	300	500	825
2.00	275	400	650	1000

4. Calculate Estimated Release Rate:

	(CHRRM method)		(multiplier)		(Estimated Release Rates)	
a. Noble Gas	__________	Ci/sec x	__________	=	__________	Noble Gas, Ci/sec
b. Iodine	__________	Ci/sec x	__________	=	__________	Iodine, Ci/sec

5. Enter the Estimated Release Rates into the previously selected Dose Calculation Worksheet (enter **LOCA-1** next to **Attachment** as method), or enter release rates as **Direct** entry if using the computer, to estimate Off-site doses.

Basis: **Multipliers** are a ratio of the flow rates from engineering letter JPE-PTPO-85-74, Figure XIII A, to the design basis flow (0.25%/day of 1.5E6 ft^3 ->1229 cc/sec)

ATTACHMENT 4
(Page 3 of 4)

LOCA RELEASE RATE DETERMINATIONS WORKSHEET

Method LOCA - 2

Use this method **IF** the CHRRM is operational **AND** containment pressure appears to have rapidly (~30) min.) fallen **AND** the CHRRM reading also fell during the same period as the pressure fall.

NOTES

- *A CHRRM drop of about 3 percent per hour may be due to radiological decay.*
- *The CHRRM may drop by as much as 10 percent very quickly if containment spray is actuated, due to Iodine washout.*

METHOD:

1. Date and time of starting this worksheet: ____________ / ________, Unit __________
2. Calculate Delta-CHRRM:

   Start CHRRM ________ - End CHRRM __________ = ________ Delta-CHRRM, R/hr
3. Calculate Duration:

   a. Clock Time End _______ - Clock Time Start __________ - _______ Delta-Clock (hours and/or minutes)

   b. Convert Delta-Clock to Delta-Seconds: ____________ Δ sec
4. Estimate Curies Lost:

   Delta-CHRRM ________ R/hr × 565 Ci N.G. per R/hr = ________ Noble Gas Curies Lost
5. Estimate Noble Gas Release Rate (loss rate):

   Noble Gas Curies lost _________ ÷ __________ Δ sec = __________ Noble Gas Ci/sec
6. Estimate the Iodine Release Rate (IRRF = Iodine Release Rate Factor, see Page 1 of Attachment 3):

   N.G. Ci/sec _______ × _______ (IRRF) = __________ Iodine Ci/sec
7. Enter the Estimated Release Rates into the previously selected Dose Calculation Worksheet (enter **LOCA-2** next to **Attachment** as method), or enter release rates as **Direct** entry if using the computer, to estimate Off-site doses.

Basis: Assumes CHRRM responding only to noble gas
Assumes rate of curies from core << curies lost through leak
6.25 E+5 R/hr = 100% core inventory noble gas ($1 \div C_{T-0}$, CF from 21026 CHRRM method)
3.53 E+8 curies = 100% core inventory noble gas (PTN UFSAR)
565 = 3.53 E+8 Ci ÷ 6.26 E+5 R/hr

★2:2/JR/ev

ATTACHMENT 4
(Page 4 of 4)

LOCA RELEASE RATE DETERMINATIONS WORKSHEET

Method LOCA - 3

Use this method IF the CHRRM is operational AND containment pressure appears to have rapidly (~30 min.) fallen AND the CHRRM reading was either constant or increased during the same period as the pressure fall AND Engineering can estimate the percent mass lost.

NOTE

Request Engineering to evaluate the percent mass lost in the release.

METHOD:

1. Date and time of starting this worksheet:______________/______________

2. Calculate average CHRRM reading (if CHRRM was constant, enter reading as Avg.)

   (Start CHRRM ______ + End CHRRM ______) ÷ 2 = ______ Avg CHRRM, R/hr

3. Estimate Noble Gas Curies in the containment:

   Avg CHRRM R/hr ______ × 565 Ci N.G. per R/hr = ______ Noble Gas Curies in ctmt

4. Calculate Duration:

   a. Clock Time End ______ - Clock Time Start ______ = ______ Delta-Clock (hours and or minutes)

   b. Convert Delta-Clock to Delta-Seconds: ______ Δ sec

5. Estimate Curies Lost:

   N.G. Curies in ctmt ______ × ______ % mass lost ÷ 100 = ______ Noble Gas Curies Lost

6. Estimate Noble Gas Release Rate (loss rate):

   Noble Gas Curies lost ______ ÷ ______ Δ sec = ______ Noble Gas Ci/sec

7. Estimate the Iodine Release Rate (IRRF = Iodine Release Rate Factor, see Page 1 of Attachment 3):

   N.G. Ci/sec ______ × ______ (IRRF) = ______ Iodine Ci/sec

8. Enter the Estimated Release Rates into the previously selected Dose Calculation Worksheet (enter **LOCA-3** next to **Attachment** as method), or enter release rates as **Direct** entry if using the computer, to estimate Off-site doses.

Basis: Assumes rate of curies from core ≈ curies lost through leak (constant CHRRM), or assumes rate of curies from core >curies lost through leak (increasing CHRRM), and same remaining assumptions as in LOCA-2.

ATTACHMENT 5
(Page 1 of 4)

STEAM GENERATOR TUBE RUPTURE WORKSHEET

SGTR Release Rate Determinations

Use this method to either estimate release rates or modify the Default release rates for a Steam Generator Tube Rupture Accident.

The default release rate is based on:

1. Complete break of one tube at the tube sheet, which is under water.
2. 380 gpm primary to secondary leak rate (average over 30 minute accident period).
3. 1 percent failed fuel.

   and

4. 100 percent of the noble gas in the RCS discharged to the steam generator is released to the atmosphere.
5. 5 percent of the iodine in the RCS discharged to the steam generator is released to the atmosphere.

NOTE

The following methods are provided for guidance. Conditions may warrant an approach different than shown; use the factors presented here and elsewhere in this procedure, as necessary, to estimate releases. Document the calculations.

IF any, or all, of the first three default basis are known to be different than stated above, THEN adjust the default release rate by using method SGTR-1.

IF RCS grab sample results, and 1° - 2° leak rate are known, THEN estimate the release rate using method SGTR-2.

IF secondary concentrations and steaming rates are known, THEN estimate the release rate using method SGTR-3.

Basis for Attachment 5:

380 gpm leak rate in SGTR-1 = ((7E+4 lbm (FSAR) / 46 lbm/ft3) * 7.48 gal ft3) / 30 min
p-mod = partition factor modifier, Westinghouse Study on effect of rupture site not covered by water indicates about a 4.6 times higher iodine release rate.
6.3E-5 = 1E-6 Ci/uCi x 3785 cc/gal /60 sec min
0.126 = (lbm/hr x 453.6 gram/lbm) / (1 gram/cc liquid * 3600 sec/hr)
addn'l ref: UFSAR analysis and JPE-LR 87-033

ATTACHMENT 5
(Page 2 of 4)

STEAM GENERATOR TUBE RUPTURE WORKSHEET

Method SGTR-1

INSTRUCTIONS:

1. VERIFY AND RECORD INFORMATION:

   a. Date:____________ and Time: ____________ of data, for Unit:____________

   b. Duration of Release per EC __________ hours (SGTR default = 0.5 hours; PF = 1.0)

   c. Percent of failed fuel: __________ [Default is 1%]

   d. Primary leak data, get both if possible:

      Number of failed tubes _______ [Default is 1]
      Leak Rate _____________ [Default is 380 gpm]

   e. Leak location (circle) above waterline or under waterline [Default is under waterline]

2. Determine primary leak rate flow modifier

   a. Estimated pri - sec leakrate if available (gpm) __________ DIVIDED BY 380 = _________

   b. Flow mod is the larger of Number of Failed Tubes or value calculated in Step 2a

3. For Iodine only, IF the break is above the waterline, THEN p-mod = 5, ELSE p-mod = 1 (circle one)

4. Adjust the default release rates:

	Default Ci/sec	x flow mod	x % failed fuel	x p-mod	= Release rate Ci/sec
Noble Gas	4.2	_______	_______	1	
Iodine	3.7 E-3				

5. IF performing manual calculations following this procedure, THEN enter the release rate estimated from this method into the dose calculation process.

6. If performing calculations using the computer program, use the Direct Entry source term option.

ATTACHMENT 5
(Page 3 of 4)

STEAM GENERATOR TUBE RUPTURE WORKSHEET

Method SGTR-2

Use this method if RCS grab sample results and $1^\circ - 2^\circ$ leak rate are known

INSTRUCTIONS:

1. VERIFY AND RECORD INFORMATION:

   a. Date:______________ and Time: ________________ of data, for Unit:______________

   b. Duration of Release per EC ____________ hours (SGTR default = 0.5 hours; PF = 1.0)

   c. RCS Gross Noble Gas Activity: ___________________ uCi/cc

   d. RCS I-131 Deq activity: ______________ uCi/cc

   e. Primary leak location (circle) above waterline or under waterline [Default is under waterline]

2. PERFORM CALCULATIONS

   ONLY FOR IODINE: IF the break is above the waterline, THEN p-mod = 5, ELSE p-mod = 1

	RCS activity uCi/sec	x $1^\circ - 2^\circ$ flow, gpm	x partition	x p-mod	x unit conversion	= Release rate Ci/sec
Noble Gas		________	1	1	6.3 E-5	
Iodine			0.05			

3. IF performing manual calculations following this procedure, THEN enter the release rate estimated from this method into the dose calculation process.

4. If performing calculations using the computer program, use the Direct Entry source term option.

ATTACHMENT 5
(Page 4 of 4)

STEAM GENERATOR TUBE RUPTURE WORKSHEET

Method SGTR-3

Use this method if secondary concentrations and steaming rates are known

1. VERIFY AND RECORD INFORMATION:

   a. Date:______________ and Time: _______________ of data, for Unit:_____________

   b. Duration of Release per EC ___________ hours (SGTR default = 0.5 hours; PF = 1.0)

   c. Secondary Steaming Rate: ____________, _________ (units; e.g., lbm/hr)

   d. Secondary Gross Noble Gas Activity: ___uCi/cc liquid sample, for use in Step 4

   e. Secondary I-131 Deq activity: ______________ uCi/cc liquid sample, for use in Step 4

   f. Primary leak location (circle) above waterline or under waterline [Default is under waterline]

2. Convert Steaming Rate to cc/sec liquid equivalent release rate

   IF in lbm/hr:__________lb/hr x 0.126 =___________ cc (liquid)/sec

   IF in lbm/sec:__________lb/sec x 454 =___________cc (liquid)/sec

   IF in volumetric units (e.g., Ft^3/time, **THEN** get Engineering to calculate liquid rates)

3. For Iodine only, **IF** the break is above the waterline, **THEN** p-mod = 5, **ELSE** p-mod =1 (circle selected p-mod)

4. Estimate the release rates:

	Sec activity µCi/cc	x Steaming Rate, cc/sec	x p-mod	x partition	x µCi to Ci	= Estimated Release Rates, Ci/sec
Noble Gas			1	10	1 E-6	
Iodine				0.05	1 E-6	

5. **IF** performing manual calculations following this procedure, **THEN** enter the release rate estimated from this method into the dose calculation process.

6. If performing calculations using the computer program, use the Direct Entry source term option.

ATTACHMENT 6
(Page 1 of 2)

FIELD TEAM MEASUREMENTS ASSESSMENT

This attachment provides methods to estimate a release rate from field team survey meter measurements and provides guidance on comparing field measurements to dose projections.

RELEASE RATE ESTIMATION

1. Date ________ and time __________ of starting this worksheet:

> **NOTE**
>
> *Survey meter Gamma (CLOSED WINDOW) results must be from plume centerline; that is, the maximum value from a lateral transverse of the plume.*

2. IF the survey meter measurement was at 1 mile value, THEN go to Step 4.

3. Estimate the 1 mile value:

   Estimated 1 mile value = Survey meter results × (downwind distance, miles)^{Z}

   Where the exponent Z = 2 for Stability Class A, B
   1.5 for Stability Class C, D
   1.0 for Stability Class E, F, G

   ____________ mr/hr × (__________ miles)$^{(\text{———}Z)}$ = ______ Estimated 1 mile mr/hr
   meter results downwind distance

4. Select the Dose Calculation Worksheet (DCW) for the met conditions at time of sampling.

   a. Use Wind Speed in Miles Per Hour, mph

   b. Copy from Line 13, the 1 mile Noble Gas Dose Factor (NGDF) for use in Step 5.

5. Estimate Noble Gas Release Rate (the Dose Calculation Worksheet in reverse):

   __________ mr/hr / __________ × __________ mph = __________ NG Ci/sec
   estimate 1 mile divide NGDF wind speed

6. Estimate Iodine Release Rate (IRRF = Iodine Release Rate Factor, see Page 1 of Attachment 3):

> **NOTE**
>
> *A similar process to that used to determine noble gas Ci/sec may be used to estimate an Iodine release rate. Substitute field estimated Thyroid Dose Rate in Step 3, substitute the Iodine Dose Factor (Dose Calc Worksheet line 4 value) for the NGDF in Step 5.*

   __________ x ________ = ______ Iodine (131 Deq) Ci/sec
   NG Ci/sec (IRRF)

7. Utilize the current meteorological conditions and appropriate Dose Calculation Worksheets (enter 6 next to Attachment as method), or enter release rates as Direct if using the computer, to estimate Off-site Doses from this attachment.

★2:2/JR/ev

ATTACHMENT 6
(Page 2 of 2)

FIELD TEAM MEASUREMENTS ASSESSMENT

Comparing Field Measurements to Dose Projections

NOTES

- *Reasonable **comparison** between Field Measurements and Dose Calculations is if the two are within an order of magnitude. Too many assumptions preclude better precision.*
- *A survey team measurements **off centerline** will yield a low estimated release rate. The Field Monitoring Coordinator (EOF) has a method for estimating centerline values for these situations.*

Survey Meter DDE Readings

The computerized dose calculation program estimates the **survey meter reading** DDE and for the pre-designated sampling locations (refer to Field Survey Map for descriptions of the locations). This Survey Meter Estimate is sum of immersion in plume of noble Gas, and plume shine from iodine and particulates. The noble gasses are the majority of the exposure source. The program adjusts for gap versus core mix of noble gasses in response to the Core Damage Situation question.

The manual method does not calculate a DDE from immersion in noble gas. Referring to a Dose Calculation Worksheet apropos to the met conditions, a value could be estimated by multiplying the value calculated on line 10 by the Dose Factors listed on line 13. These Dose Factors are based on a core mix of noble gasses, and include the X/Q for the prevailing meteorological conditions.

Thyroid CDE

Thyroid dose projections, both procedure and computer, area based on a release of I-131 deq Ci/sec. The field teams measure I-131 in the plume; their procedure has a time dependent factor to account for the dose from the other iodines. The factor starts at about 1.4 and decays to 1 over about 24 hours.

Dividing projected thyroid dose rate, mr/hr, by 1.3E + 9 will estimate the Iodine 131 (deq) concentration uCi/cc.

Time of Sample v. Time of Release

Time of field measurement minus (downwind distance, miles / wind speed, mph) will yield the **time** of the release rate estimated.

The computerized calculations use a time window 15 or 30 minutes long. Select the latest printout that has a Release Observation Time before the time estimated above.

Estimating Dose Rates or Concentrations at Other Distances (e.g., 1, 2, 5, 10 miles)

Estimated Value @ Dist x = Measured value times $(DWD/Dist\ x)^z$

Where: DWD = Measurement downwind distance, miles
Dist x = other distance, miles
Z = exponent based on stability class

(ref EPA-520, Rev. 6/79, Page 5.10)

ATTACHMENT 7
(Page 1 of 2)

REPORTABLE QUANTITY (RQ) RADIOACTIVE RELEASE DATA SHEET

Brief description of the event: ______________________________

____

____

____

Estimate of Quantity of Substance Released to environment: ____________

Isotopes released; Quantity and RQ Limit:

Nuclide	Curies	RQ Limit	Nuclide	Curies	RQ Limit
Cs-134	______	1.0	I-133	______	0.1
Cs-137	______	1.0	Xe-133	______	1000
Co-58	______	10.0	Xe-135	______	100
Co-60	______	10.0	______	______	______
I-131	______	0.01	______	______	______

Time and Duration of release:

Start Date/Time: ________/______ Stop Date/Time: ________/________

Medium released to:

Liquid: a) Discharge Canal (Lake Warren): ____________

b) Ground: ____________

Airborne Gaseous: a) Wind Speed: ______________MPH

b) Wind Direction (from): ____________degree

c) Downwind Sector: ____________

Any known or anticipated Acute or Chronic Health Risks (check one):

_______YES _______NO _______Unable to provide information

Any advice regarding medical attention necessary for exposed individual:

____

____

____

ATTACHMENT 7
(Page 2 of 2)

REPORTABLE QUANTITY (RQ) RADIOACTIVE RELEASE DATA SHEET

Any precautions to take as result of release:

____

____

____

Names and telephone number of personnel to be contacted for further information:

Name:	Plant No.	Beeper No.
______________	________	______
______________	________	______
______________	________	______

NOTE

See ERD for associated phone numbers.

Notifications made to:

a. Nuclear Plant Supervisor
   1) Date/Time:______________/__________
   2) Name of person given information:__________________

b. National Response Center
   1) Date/Time:______________/__________
   2) Name of person given information:__________________

c. State Emergency Response Commission
   1) Date/Time:______________/__________
   2) Name of person given information:__________________

d. Local Emergency Response Planning Committee (Community Emergency Coordinator)
   1) Date/Time:______________/__________
   2) Name of person given information:__________________

Completed by:

Name (Print/Initials):______________/__________

Date/Time:______________/__________

FINAL PAGE

Florida Power & Light Company

Turkey Point Nuclear Plant

0-EPIP-20201

Title:

Maintaining Emergency Preparedness - Radiological Emergency Plan Training

Safety Related Procedure

Responsible Department:	Emergency Preparedness
Revision Approval Date:	8/6/98
Periodic Review Due:	7/30/01
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TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure provides requirements for periodic training of individuals who may have to respond to a radiological emergency at Turkey Point Nuclear Plant.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Plant Procedures

1. 0-ADM-016, Fire Protection Program
2. 0-EPIP-20101, Duties of Emergency Coordinator
3. 0-EPIP-20104, Duty Call Notifications/Staff Augmentation
4. 0-EPIP-20110, Criteria for, and Conduct of Owner Controlled Area Evacuation
5. 0-EPIP-20112, Communication Network
6. 0-EPIP-20126, Off-Site Dose Calculations
7. 0-EPIP-20129, Emergency Radiation Team Response - OffSite
8. 0-HPS-026.1, Decontamination of Personnel
9. 0-HPS-090, Inventory of Health Physics Emergency Equipment

2.1.2 Regulatory Guidelines

1. 10 CFR 50.47
2. 10 CFR 50 Appendix E
3. NUREG 0654, Revision 1
4. American National Standard ANSI/ANS-3.8.4-1987

2.1.3 Miscellaneous Documents (PC/Ms, Correspondence, etc.)

1. Turkey Point Plant Radiological Emergency Plan

2. Training Department Administrative Guidelines

2.2 Records Required

2.2.1 Records documenting the Emergency Preparedness Training received by individuals are Quality Assurance records and, therefore, shall be retained in accordance with Quality Assurance records requirements.

2.3 Commitment Documents

2.3.1 QAO-PTN-90-054

3.0 RESPONSIBILITIES

3.1 The Protection Services Manager has the overall responsibility for Emergency Preparedness Training.

3.2 The Training Manager is responsible for the following:

3.2.1 Ensuring all Emergency Preparedness Training is conducted using the references listed herein with the exception of Security Force Training.

3.2.2 Training of all individuals requiring unescorted access onsite, describing the action to be taken by an individual discovering an emergency condition, the location of assembly areas, the identification of emergency alarms, and the action to be taken upon activation of those alarms.

3.2.3 Ensuring lesson plans are maintained current.

3.2.4 Ensuring training requirements are tracked.

3.3 The Emergency Preparedness Coordinator is responsible for ensuring accuracy in all Emergency Preparedness Training Programs.

3.3.1 The Emergency Preparedness Coordinator should coordinate with designated training instructors and assist with organizing lesson plan content.

3.3.2 The Emergency Preparedness Coordinator approves all Emergency Preparedness Lesson Plans and Training Schedules.

3.3.3 The Emergency Preparedness Coordinator should notify the Training Manager of changes in the Emergency Plan Implementing Procedures that justify additional training to emergency response personnel or which require changes to Emergency Preparedness Training Lesson Plans.

3.4 The Security Supervisor shall be responsible for ensuring Security Team personnel are trained using the Security Force Training Program requirements and this procedure.

3.5 Discipline Supervisors are responsible for ensuring their personnel attend the required training in accordance with this procedure, and qualifications are maintained current.

4.0 DEFINITIONS

4.1 Annual - Occurring once per calendar year (January 1 through December 31).

4.2 Emergency Response Directory (ERD) - The directory containing names and phone numbers of Emergency Response Organization personnel.

4.3 Emergency Response Facility (ERF) - Those facilities that would be activated to support response to an emergency situation. These facilities include the Technical Support Center, the Operations Support Center, and the Emergency Operations Facility.

4.4 Emergency Response Organization (ERO) - That portion of the FPL organization assigned responsibilities upon initiation of the Turkey Point Radiological Emergency Plan.

5.0 PROCEDURE

NOTES

- *This procedure does not cover periodic training requirements for plant personnel in performance of their daily job tasks.*
- *The matrix in Enclosure 1 does not include Supervisor Fitness for Duty Training, because Supervisor Fitness for Duty Training is administered to all personnel at the time of General Employee Training (GET).*
- *Any changes in required actions or response by emergency responders due to revisions in the emergency procedures shall be presented to those personnel on a periodic basis.*
- *Under extreme circumstances, the Emergency Coordinator has the authority to waive individuals emergency response training requirements.*
- *In order to maintain emergency preparedness, personnel working at Turkey Point Plant shall be familiar with certain preplanned actions in the Emergency Plan through training in the Turkey Point Emergency Plan Implementing Procedures.*
- *The Turkey Point Plant Radiological Emergency Plan is the governing document describing training requirements.*
- *Training governed by this procedure will be administered in accordance with Training Department Administrative Guidelines.*

5.1 Emergency Plan Training

5.1.1 General

1. Emergency Response Organization personnel shall receive initial training prior to being listed in the Emergency Response Directory and shall receive re-qualification or continuing training annually, unless otherwise specified in Enclosure 1.
2. For administrative and scheduling purposes, a 12 month training period plus 3 month grace period should be used. Training is required to be performed once per calendar year (January 1 through December 31).
3. As necessary, Emergency Response Organization personnel should receive training relevant to emergency plan changes as soon as practical. This training may be conducted through the use of special instruction memorandums, training briefs and/or classroom presentation.

5.1.2 Initial Training

1. Initial training should be formal classroom presentation on subjects identified in Enclosure 1.

2. Initial training should include an Emergency Response Facility tour and may include Job Performance Measure(s) or a practical demonstration.

3. Successful completion of initial training should be evaluated by written exam.

5.1.3 Continuing Training

1. Continuing training is normally in the form of lecture and may include, but is not limited to, the lessons per ERO position as identified in Enclosure 1.

2. Continuing training content may include facility tours, job performance measure(s), practical demonstrations, industry event reviews and drill critique reviews.

3. Successful completion of Continuing Training should be evaluated by written exam.

5.2 Severe Accident Management Guidelines (SAMG) Training

5.2.1 Enclosure 1 specifies the emergency response positions which require SAMG training.

5.2.2 Enclosure 2 specifies the training modules provided to responders designated in Enclosure 1 as Implementors, Evaluators, or Decision Makers of SAMG criteria.

5.2.3 Enclosure 2 specifies initial training requirements for SAMG Training.

5.2.4 Continuing training should be performed on a 2 year cycle.

5.2.5 Continuing training may be accomplished by participation in a table top drill.

5.2.6 SAMG training does not require a written test.

5.3 Tracking Process for Emergency Preparedness Training

5.3.1 The tracking process and responsibilities for Emergency Preparedness training will be performed as follows:

1. Training shall be accomplished in accordance with Subsections 5.1 and 5.2.

2. All documentation shall be maintained by the Training Department except for Security Records which shall be maintained by the Security Department.

3. All training requirements shall be tracked by the Nuclear Training Department.

5.4 State and Local Government Training

5.4.1 The Emergency Preparedness Coordinator shall provide training to the members of the offsite emergency organization as follows:

1. Training shall be made available to each contract local hospital at least once each calendar year. The content of that training should consist of radiological controls, medical consideration of contaminated injuries, and other topics as appropriate.

2. Training on the plant, its emergency response and the emergency action levels shall be made available to each State and local emergency management agency at least once each calendar year. This training may be in the form of a presentation, text, or other acceptable means.

5.5 Public Information Interface Training

5.5.1 The Emergency Preparedness Coordinator shall offer the local media at least once each calendar year, an overview of the plant, its emergency response, where to go to get news information and other pertinent data. This may be done in the form of a presentation, information packet, or by direct interfacing.

END OF TEXT

ENCLOSURE 1
(Page 1 of 10)

EMERGENCY PLAN TRAINING MATRIX

	NUCLEAR PLANT SUPERVISOR	ASST NUCLEAR PLANT SUPV.	NUCLEAR WATCH ENGINEER	SR REACTOR CONTROL OPERATOR	REACTOR CONTROL OPERATOR	SR NUCLEAR PLANT OPERATOR	NUCLEAR OPERATOR	NUCLEAR PLANT OPERATOR	ASST NUCLEAR PLANT OPERATOR	SHIFT TECHNICAL ADVISOR	CONTROL RM COMMUNICATOR (OFF DUTY STA)
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS	X	X	X	X	X					X	X
LESSON 3 - EMERGENCY CLASSIFICATION	X	X	X	X	X						
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS	X	X	X	X	X						
LESSON 5 - DOSE ASSESSMENT METHODOLOGY											
LESSON 6 - CONTAMINATED INJURED PERSON											
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING											
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY	X	X	X	X	X						
LESSON 9 - EVACUATION AND ACCOUNTABILITY	X	X	X	X	X						
LESSON 10 - ERDADS											
LESSON 11 - CORE DAMAGE (Procedure Review)											
LESSON 12 - TECH SUPPORT CENTER	X	X	X	X	X						
LESSON 13 - OPS SUPPORT CENTER						X	X	X	X		
LESSON 19 - EMERGENCY OPERATIONS FACILITY											
SAMG - DECISION MAKER											
SAMG - EVALUATOR											
SAMG - IMPLEMENTOR	X	X	X	X	X					X	X
SAMG - OVERVIEW											
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)											
FIRE BRIGADE TRAINING (1)						X	X	X	X		
RCA ACCESS TRAINING (RCAT)						X	X	X	X		
RESPIRATOR TRAINING						X	X	X	X		

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MR/dt/sw/ev

ENCLOSURE 1
(Page 2 of 10)
EMERGENCY PLAN TRAINING MATRIX

	ASSIST TO THE DUTY CALL SUPERVISOR	EMERG COORD (PLT MGR OR ALT)	TSC SUPERVISOR	TSC HEALTH PHYSICS SUPERVISOR	TSC OFFSITE TEAM LEADER	TSC HPN COMMUNICA-TOR	TSC HP OSC COMMUNICA-TOR	TSC CHEMISTRY SUPERVISOR	TSC DOSE ASSESS. TECHNICIAN	TSC DOSE ASSESS. RECORDER	TSC MAINTENANCE MANAGER
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS	X					X					
LESSON 3 - EMERGENCY CLASSIFICATION		X									
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS		X		X				X			
LESSON 5 - DOSE ASSESSMENT METHODOLOGY								X	X[2]		
LESSON 6 - CONTAMINATED INJURED PERSON				X							
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING				X	X						
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY		X	X	X				X			X
LESSON 9 - EVACUATION AND ACCOUNTABILITY		X		X							
LESSON 10 - ERDADS											
LESSON 11 - CORE DAMAGE (Procedure Review)											
LESSON 12 - TECH SUPPORT CENTER		X	X	X	X	X	X	X	X	X	X
LESSON 13 - OPS SUPPORT CENTER											
LESSON 19 - EMERGENCY OPERATIONS FACILITY											
SAMG - DECISION MAKER		X	X								
SAMG - EVALUATOR											
SAMG - IMPLEMENTOR				X				X			X
SAMG - OVERVIEW											
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)											
FIRE BRIGADE - TRAINING (1)											
RCA ACCESS TRAINING (RCAT)											
RESPIRATOR TRAINING											

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ENCLOSURE 1
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EMERGENCY PLAN TRAINING MATRIX

	TSC OPERATIONS MANAGER	TSC SECURITY SUPV	TSC STATE/COUNTY COMMUNICATOR	TSC EOF COMMUNICATOR	TSC TECHNICAL ASSIST TO THE EMERGENCY COORDINATOR	TSC ENS COMMUNICATOR	TSC SITE CORPORATE COMMUNICATOR	TSC PLANT DATA COMMUNICATOR	TSC ERDADS OPERATOR	TSC LEAD ENGINEER
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS			X		X	X				
LESSON 3 - EMERGENCY CLASSIFICATION	X				X					
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS	X				X					
LESSON 5 - DOSE ASSESSMENT METHODOLOGY										
LESSON 6 - CONTAMINATED INJURED PERSON										
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING										
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY	X	X								
LESSON 9 - EVACUATION AND ACCOUNTABILITY		X								
LESSON 10 - ERDADS								X	X3	X
LESSON 11 - CORE DAMAGE (Procedure Review)										
LESSON 12 - TECH SUPPORT CENTER	X	X	X	X	X	X	X	X	X	X
LESSON 13 - OPS SUPPORT CENTER										
LESSON 19 - EMERGENCY OPERATIONS FACILITY										
SAMG - DECISION MAKER	X									
SAMG - EVALUATOR										X
SAMG - IMPLEMENTOR										
SAMG - OVERVIEW										
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)										
FIRE BRIGADE TRAINING (1)										
RCA ACCESS TRAINING (RCAT)										
RESPIRATOR TRAINING										

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MR/dt/sw/ev

Procedure No.: 0-EPIP-20201	Procedure Title: Maintaining Emergency Preparedness - Radiological Emergency Plan Training	Page: 13	Approval Date: 8/6/98

ENCLOSURE 1
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EMERGENCY PLAN TRAINING MATRIX

	TSC DOCUMENT CONTROL PERSONNEL	TSC PLANT DATA STATUS BOARD KEEPER	TSC MECHANICAL SUPERVISOR	TSC ELECTRICAL SUPERVISOR	TSC I&C SUPERVISOR	TSC PROJECTS SUPV	TSC PROTECTION AND CONTROLS SUPERVISOR	TSC FIRE PROTECTION SUPERVISOR	TSC ENGINEER	TSC REACTOR ENGINEER	TSC ENG. REPRESENTATIVE
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS											
LESSON 3 - EMERGENCY CLASSIFICATION											
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS											
LESSON 5 - DOSE ASSESSMENT METHODOLOGY											
LESSON 6 - CONTAMINATED INJURED PERSON											
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING											
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY											
LESSON 9 - EVACUATION AND ACCOUNTABILITY											
LESSON 10 - ERDADS			X	X	X	X	X	X	X	X	X
LESSON 11 - CORE DAMAGE (Procedure Review)										X	X
LESSON 12 - TECH SUPPORT CENTER	X	X	X	X	X	X	X	X	X	X	X
LESSON 13 - OPS SUPPORT CENTER											
LESSON 19 - EMERGENCY OPERATIONS FACILITY											
SAMG - DECISION MAKER											
SAMG - EVALUATOR									X	X	X
SAMG - IMPLEMENTOR											
SAMG - OVERVIEW											
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)											
FIRE BRIGADE TRAINING (1)											
RCA ACCESS TRAINING (RCAT)											
RESPIRATOR TRAINING											

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ENCLOSURE 1

EMERGENCY PLAN TRAINING MATRIX

	TSC ENG COMMUNICATOR	TSC LICENSED OPERATOR SUPPORT	DUTY CALL SUPERVISOR	OSC SUPERVISOR	OSC RECORDER	OSC OPERATIONS SUPERVISOR	OSC CHEMISTRY SUPERVISOR	CHEM EMERG RESPONSE TEAM MEMBERS	PARAMEDICS/ PHYSICIANS ASSTS/E.M.T.'S	OSC HEALTH PHYSICS SUPERVISOR	HEALTH PHYSICS EMERG RESPONSE TEAM MEMBERS
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS			X								
LESSON 3 - EMERGENCY CLASSIFICATION											
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS											
LESSON 5 - DOSE ASSESSMENT METHODOLOGY								X[2]			
LESSON 6 - CONTAMINATED INJURED PERSON							X	X	X	X	X
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING										X	X
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY				X							
LESSON 9 - EVACUATION AND ACCOUNTABILITY										X	X
LESSON 10 - ERDADS	X										
LESSON 11 - CORE DAMAGE (Procedure Review)	X										
LESSON 12 - TECH SUPPORT CENTER	X	X									
LESSON 13 - OPS SUPPORT CENTER				X	X	X	X	X	X	X	X
LESSON 19 - EMERGENCY OPERATIONS FACILITY											
SAMG - DECISION MAKER											
SAMG - EVALUATOR											
SAMG - IMPLEMENTOR											
SAMG - OVERVIEW											
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)								X			
FIRE BRIGADE TRAINING (1)											X
RCA ACCESS TRAINING (RCAT)								X	X		X
RESPIRATOR TRAINING								X	X		X

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ENCLOSURE 1
(Page 6 of 10)
EMERGENCY PLAN TRAINING MATRIX

	OSC DOSE RECORDER	OSC HEALTH PHYSICS COMMUNICATOR	OSC MECHANICAL SUPERVISOR	MECH MAINT EMERG RESPONSE TEAM MEMBERS	OSC ELECTRICAL SUPERVISOR	ELEC MAINT EMERG RESPONSE TEAM MEMBERS	OSC I&C SUPERVISOR	I&C MAINT EMERG RESPONSE TEAM MEMBERS	SEC COMMAND POST OPERATIONS ADVISOR	SECURITY OFFICERS
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS										
LESSON 3 - EMERGENCY CLASSIFICATION										
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS										
LESSON 5 - DOSE ASSESSMENT METHODOLOGY										
LESSON 6 - CONTAMINATED INJURED PERSON										
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING										
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY										
LESSON 9 - EVACUATION AND ACCOUNTABILITY										X
LESSON 10 - ERDADS										
LESSON 11 - CORE DAMAGE (Procedure Review)										
LESSON 12 - TECH SUPPORT CENTER										
LESSON 13 - OPS SUPPORT CENTER	X	X	X	X	X	X	X	X		
LESSON 19 - EMERGENCY OPERATIONS FACILITY										
SAMG - DECISION MAKER										
SAMG - EVALUATOR										
SAMG - IMPLEMENTOR										
SAMG - OVERVIEW										
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)										
FIRE BRIGADE TRAINING (1)										
RCA ACCESS TRAINING (RCAT)				X		X		X		
RESPIRATOR TRAINING				X		X		X		X4

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ENCLOSURE 1

EMERGENCY PLAN TRAINING MATRIX

	ASSEMBLY AREA SUPERVISOR	OSC DOCUMENT CONTROL PERSONNEL	OSC STATUS BOARD KEEPER	OSC MECH GML	OSC ELECT GML	OSC I&C FIELD SUPERVISOR	RECOVERY MANAGER	EMERGENCY CONTROL OFFICER	NUCLEAR DIV DUTY OFFICER	EOF RM OPS ADVISOR	EOF TSC COMMUNICATOR
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS							X		X	X	
LESSON 3 - EMERGENCY CLASSIFICATION										X	
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS							X			X	
LESSON 5 - DOSE ASSESSMENT METHODOLOGY											
LESSON 6 - CONTAMINATED INJURED PERSON											
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING											
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY							X			X	
LESSON 9 - EVACUATION AND ACCOUNTABILITY	X										
LESSON 10 - ERDADS											
LESSON 11 - CORE DAMAGE (Procedure Review)											
LESSON 12 - TECH SUPPORT CENTER											
LESSON 13 - OPS SUPPORT CENTER		X	X	X	X	X					
LESSON 19 - EMERGENCY OPERATIONS FACILITY							X	X	X	X	X
SAMG - DECISION MAKER											
SAMG - EVALUATOR											
SAMG - IMPLEMENTOR											
SAMG - OVERVIEW							X			X	
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)											
FIRE BRIGADE TRAINING (1)											
RCA ACCESS TRAINING (RCAT)											
RESPIRATOR TRAINING											

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ENCLOSURE 1
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EMERGENCY PLAN TRAINING MATRIX

	EOF DOSE ASSESS COORDINATOR	EOF HOT RING DOWN COMMUNICATOR	EOF ERDADS OPERATOR	EMERGENCY INFORMATION MANAGER	EIM/ENC TECH ADVISORS	COUNTY EOC TECH ADVISORS	EOF HP MANAGER	EOF FIELD MONITORING COORDINATORS	EOF ENS/HPN COMMUNICATORS	EMERGENCY TECHNICAL-MANAGER
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS		X							X	
LESSON 3 - EMERGENCY CLASSIFICATION										
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS							X			
LESSON 5 - DOSE ASSESSMENT METHODOLOGY	X						X			
LESSON 6 - CONTAMINATED INJURED PERSON										
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING							X	X		
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY							X			
LESSON 9 - EVACUATION AND ACCOUNTABILITY										
LESSON 10 - ERDADS			X							
LESSON 11 - CORE DAMAGE (Procedure Review)										
LESSON 12 - TECH SUPPORT CENTER										
LESSON 13 - OPS SUPPORT CENTER										
LESSON 19 - EMERGENCY OPERATIONS FACILITY	X	X	X	X	X	X	X	X	X	X
SAMG - DECISION MAKER										
SAMG - EVALUATOR										
SAMG - IMPLEMENTOR										
SAMG - OVERVIEW										X
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)										
FIRE BRIGADE TRAINING (1)										
RCA ACCESS TRAINING(RCAT)										
RESPIRATOR TRAINING										

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ENCLOSURE 1

EMERGENCY PLAN TRAINING MATRIX

	EOF I&C ENGINEER	EOF ELECT ENGINEER	EOF MECH ENGINEER	EOF CIVIL ENGINEER	EOF NUCLEAR ENGINEER	EOF FUELS ENGINEER	EOF STATUS BOARD KEEPER	EMERGENCY SECURITY MANAGER	GOVERNOR'S ADVISOR	EOF TECH ASSISTANT TO THE RM
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X	X	X	X	X	X	X
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS										
LESSON 3 - EMERGENCY CLASSIFICATION										
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS										
LESSON 5 - DOSE ASSESSMENT METHODOLOGY										
LESSON 6 - CONTAMINATED INJURED PERSON										
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING										
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY										
LESSON 9 - EVACUATION AND ACCOUNTABILITY										
LESSON 10 - ERDADS	X	X	X	X	X	X				
LESSON 11 - CORE DAMAGE (Procedure Review)						X				
LESSON 12 - TECH SUPPORT CENTER										
LESSON 13 - OPS SUPPORT CENTER										
LESSON 19 - EMERGENCY OPERATIONS FACILITY	X	X	X	X	X	X	X	X 6.	X	X
SAMG - DECISION MAKER										
SAMG - EVALUATOR										
SAMG - IMPLEMENTOR										
SAMG - OVERVIEW										
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)										
FIRE BRIGADE TRAINING (1)										
RCA ACCESS TRAINING (RCAT)										
RESPIRATOR TRAINING										

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MR/dt/sw/ev

ENCLOSURE 1
(Page 10 of 10)

EMERGENCY PLAN TRAINING MATRIX

	EOF DOSE ASSESS RECORDER	EOF SUPERVISOR	EOF ADMIN SUPERVISOR	EOF ADMIN STAFF						
LESSON 1 - EMERGENCY PLAN OVERVIEW	X	X	X	X						
LESSON 2 - NOTIFICATIONS/ COMMUNICATIONS										
LESSON 3 - EMERGENCY CLASSIFICATION										
LESSON 4 - RADIOLOGICAL ASSMT PROT ACTION RECOMMENDATIONS										
LESSON 5 - DOSE ASSESSMENT METHODOLOGY										
LESSON 6 - CONTAMINATED INJURED PERSON										
LESSON 7 - ONSITE/OFFSITE RADIOLOGICAL MONITORING										
LESSON 8 - MGMT CONTROL OF EMERGENCIES AND RECOVERY										
LESSON 9 - EVACUATION AND ACCOUNTABILITY										
LESSON 10 - ERDADS										
LESSON 11 - CORE DAMAGE (Procedure Review)										
LESSON 12 - TECH SUPPORT CENTER										
LESSON 13 - OPS SUPPORT CENTER										
LESSON 19 - EMERGENCY OPERATIONS FACILITY	X	X	X	X						
SAMG - DECISION MAKER										
SAMG - EVALUATOR										
SAMG - IMPLEMENTOR										
SAMG - OVERVIEW										
RED CROSS MULTI MEDIA FIRST AID AND ADULT CPR OR EQUIVALENT AND BLOODBORNE PATHOGEN (5)										
FIRE BRIGADE TRAINING (1)										
RCA ACCESS TRAINING (RCAT)										
RESPIRATOR TRAINING										

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ENCLOSURE 2
(Page 1 of 1)

SAMG INITIAL TRAINING MATRIX

	Implementor Control Room Staff	Implementor TSC	Evaluator	Decision Maker	EOR Responders
Lesson 100 Overview for SAMG (2)	X	X	X	X	X (1)
Lesson 101 Executive Volume for the Control Room (CR) (2)	X				
Lesson 102 Severe Accident CR Guidance Initial Response (SACRG-1) (2)	X				
Lesson 103 Severe Accident CR Guidance After TSC is Functional (SACRG-2) (2)	X				
Lesson 104 Executive Volume for the TSC (2)			X		
Lesson 105 Diagnostic Flow Chart and Severe Challenge Status Tree (2)			X		
Lesson 106 Instrumentation and the SAMG (2)			X		
Lesson 107 SACRG-1 and SACRG-2 for the TSC (2)			X		
Lesson 108 Severe Accident Progression and Phenomena (2)	X	X	X	X	
Lesson 109 Severe Accident Guidelines Usage (SAG's) (2)			X		
Lesson 110 Severe Challenge Guidelines Usage (SCG's) (2)			X		

(1) Self Review (2) or Equivalent Self-Study Module

FINAL PAGE

*/WDJ/dt/sw/ev

50-250 superseded per Rev to 0 EPIP-20106 dtd 3/31/00
#003705240

Florida Power & Light Company

Turkey Point Nuclear Plant

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NO # 33

This procedure may be affected by an OTSC (On The Spot Change) verify information prior to use
Date Verified________ Initials________

0-EPIP-20106

Title:

Natural Emergencies

Safety Related Procedure

Responsible Department:	Emergency Preparedness
Revision Approval Date:	9/23/98
Periodic Review Due:	5/30/01
Implementation Date:	9/23/98

RTSs 95-0996P, 96-0997, 97-1406, 98-0470, 98-1114

'/1:2/JLR/bsc/bvc/bvc

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22	02/12/98	46	02/12/98	70	08/29/96		
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24	02/12/98	48	08/29/96	72	08/29/96		

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1.0 PURPOSE

1.1 This procedure provides instructions and guidelines for preparing, controlling, and recovering the plant following activation of the Emergency Plan for a natural emergency.

1.2 This procedure addresses tornadoes, hurricanes and earthquakes, but is to be used for any severe natural disturbance which results in Emergency Plan activation. Specific guidance is provided for coping with possible flood conditions associated with more intense hurricanes.

1.3 Procedural guidance for weather disturbances not meeting the criteria for activating the Emergency Plan are found in 0-ONOP-103.3, Severe Weather Preparation.

1.4 This procedure shall be used when the natural emergency meets the criteria in Table 1 of 0-EPIP-20101, Duties of Emergency Coordinator. Natural emergencies that do not meet the criteria of 0-EPIP-20101 shall be handled in accordance with 0-ONOP-103.3, Severe Weather Preparations.

2.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

2.1 References

2.1.1 Technical Specifications

1. Technical Specification 3.4.1.3, Reactor Coolant System - Hot Shutdown

2.1.2 Final Safety Analysis Report

1. FSAR, Section 2, Site and Environment, and Figures 1.2-3 and 1.2-4

2.1.3 Plant Drawings

1. 5610-C-1695, Network of Barriers for Main Plant External Flood Protection

2.1.4 Plant Procedures

1. 0-ADM-016.1, Transient Combustible and Flammable Substances Program
2. 0-ADM-215, Plant Surveillance Tracking Program
3. 3-ARP-097.DG, Diesel Generator Panel Annunciator Response
4. 4-ARP-097.DG, Diesel Generator Panel Annunciator Response
5. 0-ONOP-003.10, 125 VDC System - Location of Grounds
6. 0-ONOP-003.11, Auxiliary 125 VDC System - Location of Grounds
7. 3-ONOP-004, Loss of Offsite Power
8. 4-ONOP-004, Loss of Offsite Power
9. 3-ONOP-004.1, System Restoration Following Loss of Offsite Power
10. 4-ONOP-004.1, System Restoration Following Loss of Offsite Power
11. 3-ONOP-004.2, Loss of 3A 4KV Bus
12. 4-ONOP-004.2, Loss of 4A 4KV Bus
13. 3-ONOP-004.3, Loss of 3B 4KV Bus
14. 4-ONOP-004.3, Loss of 4B 4KV Bus
15. 0-ONOP-013, Loss of Instrument Air
16. 3-ONOP-019, Intake Cooling Water Malfunction
17. 4-ONOP-019, Intake Cooling Water Malfunction
18. 3-ONOP-023.2, Emergency Diesel Generator Failure
19. 4-ONOP-023.2, Emergency Diesel Generator Failure
20. 3-ONOP-041.7, Shutdown LOCA [Mode 3 (less than 1000 psig) or Mode 4]
21. 4-ONOP-041.7, Shutdown LOCA [Mode 3 (less than 1000 psig) or Mode 4]
22. 3-ONOP-041.8, Shutdown LOCA [Mode 5 or 6]

2.1.4 (Cont'd)

23. 4-ONOP-041.8, Shutdown LOCA [Mode 5 or 6]
24. 3-ONOP-050, Loss of RHR
25. 4-ONOP-050, Loss of RHR
26. 3-ONOP-075, Auxiliary Feedwater System Malfunction
27. 4-ONOP-075, Auxiliary Feedwater System Malfunction
28. 0-ONOP-103.3, Severe Weather Preparations
29. 0-OP-003.1, 125V Vital DC System
30. 3-OP-013, Instrument Air System
31. 4-OP-013, Instrument Air System
32. 0-OP-026, Cat 400 Operation
33. 0-OSP-012.1, Diesel Driven Service Water Pump Operability Test
34. 0-OSP-016.23, Diesel Driven Fire Pump Operability Test
35. 3-OSP-023.1, Diesel Generator Operability Test
36. 4-OSP-023.1, Diesel Generator Operability Test
37. 0-OSP-074.3, Standby Steam Generator Feedwater Pumps Availability Test
38. 0-OSP-102.1, Flood Protection Stoplog Inspection
39. 0-OSP-200.1, Schedule of Plant Checks and Surveillances
40. 0-PMI-103.1, Seismograph Quarterly Functional Check and Tri-Annual Battery Replacement
41. 0-EPIP-20101, Duties of Emergency Coordinator
42. 0-EPIP-20110, Criteria for and Conduct of Owner Controlled Area Evacuation
43. 0-EPIP-20112, Communication Network

2.1.5 Regulatory Guidelines

1. Station Blackout Guidelines:

    a. NRC Regulatory Guide 1.155, Station Blackout

    b. NUMARC 87-00, Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors

2.1.6 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. Turkey Point Radiological Emergency Plan
2. Security Force Instruction (SFI) 3002, Hurricane Preparedness
3. Turkey Point [Fossil] Plant, Units 1 and 2 Hurricane Plans
4. PC/M 87-212, EDG Enhancement Site Preparation
5. PC/M 89-124, Repair/Replace Stoplogs On East Side of Auxiliary Building
6. PC/M 90-390, Plant Perimeter Floodwell Repair
7. PC/M 90-449, CCW Area Pipe Trench Floodwells
8. PC/M 92-086, Secondary Containment of Unit 4 Turbine Lube Oil Reservoir
9. JPN-PTN-SECJ-88-079, Safety Evaluation Temporary External Flood Protection Barriers
10. JPN-PTP-90-1902, External Flood Protection Enhancement Program - Plant Drainage Evaluation
11. JPNS-PTN-90-0111, Turkey Point Units 3 and 4 RHR Pump Room Access Hatch Removals
12. JPNS-PTN-96-0352, dated May 13, 1996, Hurricane Shutdown Criteria
13. National Oceanic and Atmospheric Administration Information - Information on Area Tornado and Hurricane Reports
14. EP AD-007, Emergency Response Facilities and Equipment Surveillance

2.2 Records Required

2.2.1 Completed copies of the below listed item(s) constitute Quality Assurance Records and shall be transmitted to QA Records for retention in accordance with Quality Assurance Records Program requirements:

1. None

2.3 Commitment Documents

2.3.1 L-91-184, PRA Transmittal Letter to NRC, dated June 25, 1991

2.3.2 Turkey Point Plant Units 3 & 4 Probabilistic Risk Assessment Individual Plant Examination Final Report, dated June 21, 1991

2.3.3 Station Blackout

1. L-89-144, Information to Resolve Station Blackout
2. JPN-PTP-89-3253, Turkey Point Units 3 and 4 Response to NRC on Station Blackout Open Items
3. Turkey Point Units 3 and 4 - Safety Evaluation For Proposed Implementation Of The Station Blackout Rule (10CFR 50.63) (TAC Nos. 68618 and 68619), dated June 15, 1990
4. L-90-275, Implementation Of The Station Blackout Rule
5. L-90-338, Comments On NRC's Safety Evaluation for Station Blackout
6. L-90-56, Information To Resolve Station Blackout, dated March 29, 1990

2.3.4 L-94-107, dated May 5, 1994, Response to Generic Letter 87-02 concerning earthquake created relay chatter

3.0 RESPONSIBILITIES

3.1 It shall be the responsibility of the following individuals to protect personnel and the plant from the effects of the emergency and to comply with the steps outlined in Section 5.0 of this procedure:

3.1.1 Emergency Coordinator

3.1.2 Emergency Preparedness Coordinator

3.1.3 TSC Projects Supervisor

3.1.4 TSC Maintenance Manager

3.1.5 TSC Mechanical Supervisor

3.1.6 TSC I&C Supervisor

3.1.7 TSC Electrical Supervisor

3.1.8 TSC Operations Manager

3.1.9 TSC Chemistry Supervisor

3.1.10 TSC Health Physics Supervisor

3.1.11 TSC Security Supervisor

3.1.12 TSC Fire Protection Supervisor

3.1.13 TSC Supervisor

3.1.14 TSC Technical Assistant to the Emergency Coordinator

3.2 The Emergency Coordinator shall ensure notifications are performed per 0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR, for natural emergencies meeting emergency action level criteria.

3.3 The TSC Operations Manager and the TSC Maintenance Manager will report the status of hurricane preparations to the Emergency Coordinator. All other managers and supervisors will report the status of hurricane preparations to the Emergency Preparedness Coordinator, who will keep the Emergency Coordinator appraised.

4.0 DEFINITIONS

4.1 CATEGORY 1 HURRICANE: Hurricane with wind speed between 74 and 95 miles per hour (mph).

4.2 CATEGORY 2 HURRICANE: Hurricane with wind speed between 96 and 110 mph.

4.3 CATEGORY 3 HURRICANE: Hurricane with wind speed between 111 and 130 mph.

4.4 CATEGORY 4 HURRICANE: Hurricane with wind speed between 131 and 155 mph.

4.5 CATEGORY 5 HURRICANE: Hurricane with wind speed greater than 155 mph.

4.6 EYE: The center of a hurricane where calm prevails, with winds of no more than 20-30 mph and little or no rain.

4.7 HURRICANE: Same as a tropical storm, but the winds are over 73 mph and a well defined low barometric pressure center, called the EYE of the storm, is present.

4.8 HURRICANE ADVISORY: This is an information release put out every six hours, usually at 12 o'clock and 6 o'clock both day and night whenever a hurricane exists; the advisory is continually updated and this information is issued in the form of HURRICANE BULLETINS which are issued every 3 hours, day and night.

4.9 HURRICANE WARNING: This is a communication from NOAA, issued whenever a hurricane is between 12 and 24 hours from, and approaching, the U.S. coast and applies to an area approximately 50 miles either side of the expected landfall. This warning gives the expected time and location of landfall, as well as the hurricane's size, maximum winds, direction and speed of travel. The warning may also describe the coastal areas where high water, floods or high waves may be expected.

4.10 HURRICANE WATCH: This is a communication from NOAA, issued whenever a hurricane is between 24 and 48 hours from, and approaching, the U.S. coast and comprises an area approximately 100 miles either side of the expected landfall. It also gives the size, maximum winds, direction and speed of travel.

4.11 OWNER CONTROLLED AREA: That portion of the FPL property surrounding and including Turkey Point Plant which is subject to limited access and control as deemed appropriate by FPL.

4.12 POWER BLOCK: Structures comprising all permanent nuclear, power generation, and cooling structures, systems, and components within the Protected Area and permanent Safety Related or Quality Related utilities (e.g., air, water, and electric) both inside and outside the Protected Area.

4.13 TORNADO: A violently rotating column of air in contact with the ground, usually developing from severe thunderstorms or hurricanes.

4.14 TORNADO WARNING: This condition is declared once the surveillance means have shown that a tornado has been sighted. The area for which this warning is issued is usually smaller than that for which a watch is declared.

4.15 TORNADO WATCH: Meteorological conditions in the area described as favorable to the formation of tornadoes.

4.16 TROPICAL STORM: A weather disturbance of large size with winds of 39 to 73 mph, rotating in a counterclockwise direction, accompanied by torrential rains and an area of low barometric pressure.

4.17 TROPICAL STORM WARNING: This is a communication from NOAA issued whenever a tropical storm is 12 to 24 hours from and approaching, the U.S. coast.

5.0 PROCEDURE

CAUTIONS

- *Substantial portions of this procedure support Commitments 2.3.1. and 2.3.2. Do not delete material from this procedure without a full review of these commitments.*
- *Preparations for a hurricane are extensive. Start efforts early and take a conservative approach; pre-hurricane rain and winds may hamper preparation efforts.*
- *All unnecessary personnel in the Protected Area and all visitors in the Owner Controlled Area shall be required to leave when a hurricane warning is issued for the area. Flooding may make later evacuation impossible.*
- *If a hurricane passes directly over the plant area, do not assume the hurricane has passed when the winds subside and rain stops. This only means that the EYE of the hurricane is over the area, and within approximately one hour the winds will begin blowing again from the opposite direction as the second half of the hurricane passes.*
- *When a hurricane is near the area and high winds are occurring, or if there is significant likelihood that a tornado will strike the immediate plant site, keep all activities outside of the plant buildings to a minimum.*
- *Do not assume the emergency to be over until the receipt of official word from the NOAA/NWS that there is no longer a threat to the area.*

NOTES

- *The Emergency Coordinator has the authority to perform, or not to perform, the steps of this procedure as he deems necessary.*
- *Timely and efficient site preparations must be made prior to the issuance of the evacuation orders by the counties. Failure to do so, may result in a shortage of personnel to prepare the plant site for the hurricane.*
- *Testing of diesel equipment, with the exception of the EDG's, is not required if testing has been performed within the last 7 days.*
- *Walkdowns should not begin until approximately 24 hours into hurricane preparations to allow Maintenance an opportunity to initiate their tiedowns.*
- *Walkdowns should be completed approximately 24 hours before completing hurricane preparations to allow Maintenance the opportunity to close out the items.*
- *Personnel staying onsite through the hurricane should be onsite at least one full shift before the hurricane is projected to make landfall.*
- *The coordinates for Turkey Point are 25.3 Latitude and 80.2 Longitude.*

5.1 Weather Reports for Emergency Classification Determination

5.1.1 Reliable information on approaching severe weather disturbances is expected to be available from the following sources. Any method of notification from the National Oceanic and Atmospheric Administration/National Weather Service (NOAA/NWS) may be used to receive weather reports for emergency classification determination.

1. The NOAA/NWS will issue warnings received by the State of Florida Department of Emergency Management (DEM). The Florida DEM will issue an All Points Bulletin from the State Warning Point via ESATCOM. The Bulletin will identify areas to be affected by the severe weather and will be reliable for Control Room notification,

OR

2. The NOAA/NWS will issue warnings received by the FPL System Operations Power Coordinator's Office which will relay the information to the Turkey Point Units 3 and 4 Control Room. The Control Room will receive this information through one of the normal or emergency communication channels described in 0-EPIP-20112, Communications Network.

5.2 Tornado

5.2.1 For a tornado that has been sighted in the Owner Controlled Area or a tornado striking any Power Block structure, the Emergency Coordinator should perform the following:

Initials/Date

_____/________ 1. Instruct plant personnel to immediately seek safe shelter.

_____/________ 2. Consult 0-EPIP-20101, Duties of Emergency Coordinator, for direction.

_____/________ 3. Ensure that plant structures and equipment are surveyed for damage after the occurrence, and take appropriate action to maintain the units in a safe condition.

_____/________ 4. Request additional support via the Duty Call Supervisor to repair damaged equipment and commence clean-up.

5.3 Hurricane Warning

5.3.1 Emergency Coordinator responsibilities include the following:

Initials/Date

_____/________ 1. Consult 0-EPIP-20101, Duties of Emergency Coordinator, for direction.

_____/________ 2. Order all unnecessary work stopped.

NOTE

Although Emergency Response Facilities (ERF) are not required to be activated at an Unusual Event, the Emergency Coordinator may request ERF staffing.

_____/________ 3. Determine the need for additional staffing and consider alternative means of transportation for callout personnel to minimize the number of personal vehicles on site.

NOTE

All nonessential personnel in the Protected Area and all visitors in the Owner Controlled Area shall be required to leave when a Hurricane Warning is issued for the area.

_____/________ 4. Ensure the release of non-essential personnel in a phased, controlled manner as hurricane preparations are completed or as personal circumstances dictate.

_____/________ a. Release non-essential personnel giving sufficient time, in advance of severe weather to allow personnel to arrive safely at their homes and avoid any undue congestion with the public.

Initials/Date	5.3.1 (Cont'd)
_____/_________	5. Investigate the need for relocation of the TSC and/or OSC.
_____/_________	6. Establish a shift schedule for response personnel to provide for continuous plant support.
_____/_________	7. Brief the NPS on the personnel available for emergency teams and the capabilities/limitations of support.
_____/_________	8. Brief emergency response personnel on the following:
_____/_________	a. The storm
_____/_________	b. Safety precautions
_____/_________	c. Expected duties
_____/_________	d. Potential problems
_____/_________	e. Contingencies
_____/_________	f. Communications systems
_____/_________	9. Ensure adequate preparations are made by conferring with the following:
_____/_________	a. TSC Operations Manager
_____/_________	b. TSC Maintenance Manager
_____/_________	c. Emergency Preparedness Coordinator
_____/_________	10. Determine when it is safe for personnel to return to work and ensure appropriate notifications are made.

Initials/Date

5.3.1 (Cont'd)

11. The following guidelines should be considered for a Category 5 Hurricane Warning and may be considered for lesser category hurricanes:

NOTE

The Auxiliary Building is the preferred location for the TSC, but if flood levels are expected above 18 foot elevation the Cable Spreading Room, 4160V/480V rooms, or the Unit 4 EDG Building (upper floor) may be preferred.

_____/________ a. Direct the relocation of the TSC, Security personnel and OSC to suitable locations.

NOTE

- *Emergency Coordinator responsibilities should remain with (or be transferred back to) the Nuclear Plant Supervisor (NPS) upon the relocation of the TSC/OSC due to the lack of communication, assessment and support capabilities available.*
- *The Emergency Response Organization should remain at the relocated OSC and provide support resources, principally emergency teams, to the NPS during the storm.*

_____/________ b. Brief the NPS upon initiating relocation of the TSC/OSC, and transfer Emergency Coordinator duties to him.

_____/________ c. Relocate the following emergency response personnel to the Control Room:

_____/________ (1) TSC Dose Assessment Technician

_____/________ (2) EOF Communicator

_____/________ (3) TSC/ENS Communicator

_____/________ (4) ERDADS Operator

[illegible]

Initials/Date

5.3.1.11 (Cont'd)

_____/_________ d. Evaluate the oncoming storm and select desired guidelines and contingency actions for implementation:

_____/_________ (1) Discuss with the TSC Operations Manager the guidelines from Enclosure 3 and Enclosure 4 to determine if any should be implemented.

_____/_________ (2) Discuss with the TSC Maintenance Manager to select and prioritize desired guidelines from Step 5.3.4.

CAUTION

Evacuation of a remote station during the hurricane presents great risk to personnel; adequate provisions must be made ahead of time to minimize this risk.

e. Ensure that the following remote field stations are habitable and well equipped (tools, fuses, oil, filters) for local actions:

_____/_________ (1) 480V Load Center Rooms

_____/_________ (2) Auxiliary Building

_____/_________ (3) Cable Spreading Room

_____/_________ (4) EDG Buildings

Initials/Date

5.3.2 Emergency Preparedness Coordinator responsibilities include the following:

NOTE

The Emergency Preparedness Coordinator has overall responsibility for storm preparedness.

____/________ 1. Ensure the Emergency Coordinator is kept informed of the preparation status.

NOTE

Steps of this procedure may be only partially implemented based on management judgment.

____/________ 2. Ensure the instructions of this procedure are being properly and expeditiously implemented.

____/________ 3. Coordinate the following with the Human Resources Manager:

____/________ a. Plans to evacuate the families of emergency crews, so that those remaining can devote their full efforts to the plant.

____/________ b. Set up the camera system for Vice President updates.

____/________ c. Provide information to plant personnel in **TO THE POINT.**

____/________ 4. Collect staffing requirements from responsible departments to ensure completion of Attachment 1.

____/________ 5. Consider generation of an overtime letter which states that deviation from the 72 hour rule is probable.

____/________ 6. Perform frequent walkdowns of the plant site and exterior with various key mangers inspecting for and reducing potential missiles. [Reference Substep 2.1.5.1]

____/________ 7. Coordinate activities of the various plant departments to resolve working level problems that may arise during storm preparations and any licensing issues.

Initials/Date

5.3.2 (Cont'd)

8. Coordinate the following with the Materials Management Manager:

_____/________ a. Purchase and properly store a three day supply of the following for Operations, Maintenance, Security, and support personnel staying on site during the storm:

_____/________ (1) Food items

_____/________ (2) Water, beverages

_____/________ (3) Paper plates, cups

_____/________ (4) Plastic utensils

_____/________ (5) Paper towels

_____/________ (6) Soap

_____/________ b. Make arrangements for purchase of portable bedding for on site emergency responders, as required, by the Emergency Coordinator.

_____/________ c. Ensure all on site vehicles have been fueled, and gas storage tanks/diesel fuel storage tanks are full.

_____/________ d. Verify adequate supply of emergency items are available.

_____/________ e. Wrap, elevate, relocate, or otherwise protect spare motors and other parts or tools that may be required for recovery.

_____/________ f. Verify the gas cylinders are properly secured in the gas house outside the protected area (southwest of main truck gate and south of the Hazardous Waste Building).

_____/________ 9. Coordinate with the Business Systems Manager the need to make arrangements for any offsite vendors for personnel, services, or supplies, as needed, to support recovery efforts immediately following the storm.

Initials/Date

5.3.2 (Cont'd)

_____/________ 10. Coordinate the following with the Safety Supervisor:

_____/________ a. Inspect the site for potential safety hazards.

_____/________ b. Inspect life lines for adequacy.

_____/________ c. Ensure medical support and adequate medical supplies are available.

_____/________ d. Investigate the relocation of the Onsite Medical Facility to the OSC.

_____/________ 11. Coordinate with the Maintenance Manager to make arrangements with all outside contractors within plant responsibility to remove, tie down, or otherwise secure equipment and material to keep it from blowing away.

_____/________ 12. Perform communications checks of all emergency communication systems in accordance with EPAD-007, Emergency Response Facilities and Equipment Surveillance.

_____/________ a. Prestage Emergency Communications Systems (satellite telephone system, etc.) as required for post-storm use in Control Room.

_____/________ 13. Arrange for personnel trained in communications equipment to be onsite during the hurricane.

_____/________ 14. Make arrangements for televisions/radios, and required antenna systems to monitor media broadcasts of news and weather information.

_____/________ 15. Establish a means of communications with the fossil plants.

_____/________ 16. Assist the Emergency Coordinator in determining the need for additional staffing.

_____/________ 17. Assist the Emergency Coordinator in investigating the need for relocation of the TSC and OSC.

_____/________ 18. <u>IF</u> it is necessary to relocate the TSC and OSC, <u>THEN</u> determine alternate locations for relocation and ensure that the location is available.

_____/________ 19. Ensure the TSC and OSC are fully prepared with supplies and emergency equipment in accordance with EPAD-007, Emergency Response Facilities and Equipment Surveillance, for possible activation.

Initials/Date 5.3.2 (Cont'd)

NOTE

County EOCs declaring a Level 3 status may be indicative of a severe threat by an approaching storm.

____/____ 20. Establish a point of contact with Dade County and NOAA/NWS to obtain periodic status reports on the following:

____/____ a. Tropical storm/Hurricane

____/____ b. County storm preparations (evacuation plans, etc.)

____/____ c. Police and fire/rescue unit availability

____/____ d. County water supply

____/____ (1) Determine the need to isolate the county water supply based upon declared contamination or possible contamination through communications with the county.

____/____ (2) IF it is necessary to isolate the water supply, THEN request a clearance issued to the NPS to close Raw Water Storage Tank Inlet Isolation Valves 730 and 885.

____/____ 21. Ensure a siren restoration/inspection crew is on standby at the EOF.

____/____ 22. Provide information to the EOF for press releases as soon as practical, and verify press releases are distributed as appropriate.

____/____ 23. Discuss with the Emergency Coordinator/Recovery Manager the need to partially or fully staff the . EOF/ENC.

____/____ 24. Ensure the EOF has established contact with the FPL storm center, located adjacent to the EOF.

____/____ 25. Periodically update the Hurricane Information Line with updates from the National Hurricane Center.

Initials/Date

5.3.2 (Cont'd)

____/_____ 26. Ensure all required activities from 0-ONOP-103.3, Severe Weather Preparations, have been completed as necessary.

____/_____ 27. Install life lines between important operating areas of the plant in case personnel must be sent to these areas during high winds.

____/_____ 28. Contact FPL Aviation or FPL Storm Center through EOF to arrange for helicopters to bring support personnel and equipment to the site immediately after passage of the storm.

____/_____ 29. Establish phone numbers for personnel to call following the hurricane and ensure these numbers are provided to plant personnel.

____/_____ 30. Establish a staging location for those employees not staying onsite to meet following the hurricane and ensure the location is known to plant personnel.

____/_____ 31. Contact St. Lucie management, Juno Beach Staff or elsewhere to arrange for relief workers following the hurricane.

____/_____ 32. Keep plant personnel appraised of storm status.

____/_____ 33. Perform the site facilities responsibilities of Step 5.3.13.

34. The following guidelines should be considered for a Category 5 Hurricane Warning, and may be considered for lesser category hurricanes:

____/_____ a. Make preparations, as directed, to relocate the TSC and OSC:

____/_____ (1) Dismiss TSC/OSC staff who are not on the Emergency Response Teams and are not required to assure the effectiveness of the emergency response organization. Notify appropriate managers.

Initials/Date

5.3.2.34.a (Cont'd)

_____/_______ (2) Coordinate with the TSC Maintenance Manager to move all portable emergency equipment and supplies to a location accessible from the new TSC/OSC location.

_____/_______ (3) Establish dedicated phone lines to the Control Room from the relocated TSC/OSC and ensure sufficient portable radios and cellular phones are available, or contact the FPL Miami Radio Shop and/or Telecommunications to locate additional radio equipment.

_____/_______ (4) Coordinate with the Nuclear Materials Management Manager to stage bedding, food, and water at a location accessible from the new TSC/OSC location.

_____/_______ (5) Establish a berthing area and an area for eating and drinking in the Cable Spreading Room or other designated location.

_____/_______ (6) Ensure a continuous path of access is maintained from the Auxiliary Building to the New Electrical Equipment Room to the Cable Spreading Room.

5.3.3 TSC Projects Supervisor responsibilities include the following:

_____/_______ 1. Survey construction sites (if applicable) to ensure all light material is either tied down or placed indoors.

_____/_______ 2. Survey site laydown areas to secure or remove loose objects.

_____/_______ 3. Check tie downs on all temporary/portable buildings/structures that could be damaged by strong winds and consult facility drawings to ensure all structures are checked.

_____/_______ 4. Ensure that PTF hurricane preparations are satisfactory so as not to impact the nuclear units and coordinate walkdowns at the island laydown areas.

_____/_______ 5. Coordinate with the Emergency Coordinator the need to augment FPL manpower with craft personnel, if available.

Initials/Date — 5.3.3 (Cont'd)

_____/________ 6. Ensure the Land Utilization and Facilities Supervisor completes the following:

_____/________ a. Make arrangements (including with any outside contractor within Land Utilization responsibility) to remove, tie down, or otherwise secure equipment and material to keep it from blowing away.

_____/________ b. Ensure that equipment is immediately available following passage of storm force winds to clear Palm Drive following the hurricane.

_____/________ c. Stage water trailer in a secure location.

_____/________ d. Survey the Sea Survival area and secure or remove loose material.

_____/________ e. Secure canal pumps.

_____/________ f. Ensure dumpsters are emptied prior to the closure of the county landfills.

_____/________ g. Once dumpsters are emptied, coordinate with Mechanical Maintenance to remove/relocate the dumpsters.

5.3.4 TSC Maintenance Manager responsibilities include the following:

_____/________ 1. Ensure the Emergency Coordinator is kept informed of the preparation status.

NOTE

Individuals appointed to emergency teams with personal considerations that can be addressed by the Company should be identified to the Human Resources Manager.

_____/________ 2. Solicit volunteers for emergency staffing and coordinate activity with the Emergency Preparedness Coordinator to resolve any personal considerations.

_____/________ 3. Contact additional Maintenance Department personnel that are necessary for hurricane preparations.

Initials/Date

5.3.4 (Cont'd)

_____/________ 4. Establish emergency teams to meet the following criteria:

_____/________ a. Provide for emergency maintenance.

_____/________ b. Provide for around-the-clock coverage.

_____/________ 5. Establish backup crews for contingency support.

6. The following guidelines should be considered for a Category 5 Hurricane Warning, and may be considered for lesser category hurricanes:

_____/________ a. Assist the Emergency Coordinator in establishing a shift schedule for response personnel, and preposition reliefs to preclude the need to move personnel during the storm.

_____/________ b. Establish a tool and spare parts area in a secure location where a minimum but sufficient number of tools will be available for each maintenance discipline's use.

Initials/Date

5.3.4.6 (Cont'd)

____/______ c. Discuss with the Emergency Coordinator what additional protection may be required for the following areas:

____/______ (1) 4KV Bus Rooms:

____/______ (a) Seal all doors and penetrations on the 18 foot elevation. Consider at least sandbagging, possibly welding the doors.

____/______ (b) Provide a means for measuring water level in the rooms.

____/______ (2) AFW Cage:

____/______ (a) Extend or plug the lube oil reservoir vents to prevent water intrusion.

____/______ (b) Bag the pump governors to protect against water intrusion.

____/______ (c) Bag the alternate shutdown communications headset and handset connections.

____/______ (3) Unit 4 EDG Building:

____/______ (a) Remove decking and install a ladder so access between the upper and lower levels is possible without travel outside.

____/______ (b) Seal and sandbag the ground floor doors.

Initials/Date 5.3.4.6.c (Cont'd)

CAUTION

Due to the exposed location of the Unit 3 EDG fuel oil transfer pumps, the Unit 3 EDGs may not be available for an extended period in the storm. Priority should be placed on protecting the Unit 4 EDGs, then protecting Unit 3 EDGs as time permits.

____/______ (4) Unit 3 EDG Building:

____/______ (a) Provide as much flood protection as possible without impeding the ability of personnel to evacuate toward the turbine building.

____/______ (b) Create a sandbag and herculite floodwall to protect from flooding of the radiator compartment.

____/______ (5) Auxiliary Building:

____/______ (a) Bag alternate shutdown headset and handset connections.

____/______ (b) Provide a means for measuring water level in the building.

____/______ (c) Consider sandbags around MCCs so as to allow access but prevent flooding at low levels.

____/______ (d) Sandbag pipe trenches under the outer walls of the CCW rooms and the SI pump room as required.

____/______ (e) Seal outer doors (consider sandbags where appropriate).

____/______ (f) Consider covering the MCCs under areas where water leakage has been known to occur (under ceiling joints).

Initials/Date | 5.3.4.6.c (Cont'd)

_____/_________ (6) Auxiliary Building 10 Foot Elevation:

_____/_________ (a) Bag alternate shutdown headset and handset connections.

_____/_________ (7) Electrical Equipment Room:

_____/_________ (a) Provide a means for measuring water level in the room.

_____/_________ (b) Sandbag at the door to the Auxiliary Building so as to allow access but prevent flooding at low levels.

_____/_________ (8) Component Cooling Water Pump Rooms:

_____/_________ (a) Protect components from water and wave action as much as possible (e.g., via sandbagging).

_____/_________ (b) Check that area deckplates are bolted down and hurricane clips installed.

_____/_________ (9) A MCCs:

_____/_________ (a) When Operations no longer requires access, shield or wrap the MCCs in protective material to minimize water intrusion.

_____/_________ (b) Sandbag to allow access but prevent flooding at low levels.

_____/_________ (10) B MCC Rooms:

_____/_________ (a) Seal the doors when Operations no longer requires access.

_____/_________ (11) Computer Room:

_____/_________ (a) Seal the doors when Operations no longer requires access.

Initials/Date — 5.3.4.6.c (Cont'd)

_____/_________ (12) Spent Fuel Pit Pumps:

_____/_________ (a) Bag the non-running motors to protect against water intrusion.

_____/_________ (b) Sandbag and herculite the entrance to the heat exchanger rooms.

_____/_________ (13) Non-Vital DC Battery and Bus Rooms:

_____/_________ (a) Seal the doors when Operations no longer requires access.

_____/_________ (14) Turbine Building:

_____/_________ (a) Walkdown and bag appropriate equipment (including alternate shutdown headset and handset connections) to protect against water intrusion.

_____/_________ (b) Verify deckplates are securely bolted down and hurricane clips installed.

_____/_________ (c) Verify any 18 foot elevation outer wall penetrations are securely plugged.

_____/_________ d. Provide support for the remote stations referenced in Enclosure 4:

CAUTION

Portable pumps and generators may be used in manned locations only if exhaust gases can be safely directed outside.

_____/_________ (1) Station Maintenance personnel and equipment (tools, fuses oil, filters) at remote stations that may require dewatering.

Initials/Date

5.3.4.6.d (Cont'd)

(2) **IF** possible, **THEN** position electricians and equipment to provide continuous voltage indication supporting early ground detection at remote stations where ground isolation may be required to measure grounds and voltages.

_____/________ (a) Control Room

_____/________ (b) Cable Spreading Room

_____/________ (c) 480V Load Centers A-D rooms

_____/________ (d) Auxiliary Building

_____/________ (3) Deploy portable generators where needed.

_____/________ (4) Provide materials at remote stations to allow sealing of leaking penetrations (such as door thresholds), water collection and water removal.

_____/________ (5) Ensure adequate food and water is provided at remote stations for the duration of tropical storm force winds.

_____/________ e. Provide facilities for the collection of human waste at remote stations, TSC/OSC and the Control Room (since the sewage system may be out of service).

_____/________ f. If relocation of the OSC/TSC is necessary, and if space permits, coordinate with the Emergency Preparedness Coordinator the relocation of desks and chairs as required to the new OSC/TSC.

5.3.5 TSC Mechanical Supervisor responsibilities include the following:

NOTES

- *The combined capacity of pumps (a) through (f) below should equal or exceed 4900 GPM with pumps (a) and (b) making up the bulk of this capacity. The capacity of pumps (g) and (h) should equal or exceed 250 GPM each.*
- *The installation of drain plugs and portable dewatering pumps is intended for larger hurricanes where the storm surge might result in plant flooding (Category 4 and 5). Full or partial implementation, particularly the installation of dewatering pumps in the condenser pits, may be considered for lesser storms.*

1. Install portable dewatering pumps, portable electric generators with fuel supplies, and associated suction and discharge hoses in the following areas:

Initials/Date

5.3.5.1 (Cont'd)

_____/_________ a. Unit 3 Condenser Pit Sump (locate at northeast corner near existing sump; suction 2-25', 1-90 degree elbow, 1-30' with strainer and footer valve; discharge 2-25').

_____/_________ b. Unit 4 Condenser Pit Sump (locate at northeast corner near existing sump; suction 4-25', 2-90 degree elbows, 1-30' with strainer and footer valve; discharge 2-25').

NOTE

All other pumps should have the following associated equipment; suction 2-25' with strainer and footer valves, discharge 4-25'.

_____/_________ c. On the floor, just east of Unit 3 HDP.

_____/_________ d. On the floor, just east of Unit 4 HDP.

_____/_________ e. By Unit 3 Blowdown Flash Tank.

_____/_________ f. In Catch Basin #15 (in RCA west of Unit 4 West Electrical Penetration Room).

_____/_________ g. Unit 3 CCW Pump Room north end.

_____/_________ h. Unit 4 CCW Pump Room south end.

_____/_________ i. Unit 3 RHR Room Sump.

_____/_________ j. Unit 4 RHR Room Sump.

_____/_________ k. Auxiliary Building Sump.

_____/_________ l. Unit 3 EDG Floor Drains.

CAUTION

If exhaust gases can be safely directed outside, portable pumps and generators may be used in manned locations.

_____/_________ m. Unit 3 4KV A and B Bus Switchgear Room.

_____/_________ n. Unit 4 4KV A and B Bus Switchgear Room.

_____/_________ o. Radwaste Building Truck Bay with discharge to Radwaste Building Floor Drain to #2 WHT.

Initials/Date 5.3.5 (Cont'd)

NOTES

- *Drain plug installation should not be initiated unless the approaching hurricane is judged to present imminent potential of external flooding.*
- *Early rains may cause standing water in some areas which obscures drains and hampers drain plug installation. Installation must start early, but should be worked after or concurrent with the deployment of portable dewatering pumps.*

_____/________ 2. Install drain plugs per Enclosure 2 after or during installation of portable dewatering pumps as necessary based on the potential for flooding (normally category 4 or 5).

NOTES

- *Stoplog installation should not be initiated unless the approaching hurricane is judged to present imminent potential of external flooding.*
- *Sandbags should be placed at the bottom of the stoplogs, as necessary, to prevent water intrusion through gaps between stoplog and floor.*
- *Sandbag dikes may be used to fortify either side of a stoplog.*
- *" *" indicates with Hold Down Pin installed.*
- *TPCW areas do not require flood protection. Floodwalls are identified in Drawing 5610-C-1695.*
- *Do not install stoplogs that may impede personnel from performing other duties until preparations have been completed.*

_____/________ 3. Install stoplogs on plant flood protection walls as follows:

_____/________ a. Stoplogs 1* and 2 - South of Unit 4 Steam Generator Feed Pump Room.

_____/________ b. Stoplog 3 - Southeast of Unit 4 Lube Oil Reservoir.

_____/________ c. Stoplog 5 - Entrance to Unit 4 Condenser Pit.

_____/________ d. Stoplogs 6 and 7 - East of Unit 4 Main Transformer.

Initials/Date		5.3.5.3 (Cont'd)
____/________	e.	Stoplog 8 - Southeast of Unit 3 Lube Oil Reservoir.
____/________	f.	Stoplogs 9* and 10 - South Wall of Unit 3 Condenser Pit.
____/________	g.	Stoplog 11 - Entrance to Unit 3 Condenser Pit.
____/________	h.	Stoplogs 12 and 13 - East of Unit 3 Main Transformer.
____/________	i.	Stoplogs 14 and 15* - Between Unit 3 4160 Volt Switchgear Room and EDG Building.
____/________	j.	Stoplog 16* - Entrance to Unit 3 Spent Fuel Pit Heat Exchanger Room (sandbags as required at both lower corners).
____/________	k.	Stoplog 17* - Entrance to Unit 3 New Fuel Storage Area.
____/________	l.	Stoplog 18* - Entrance to Auxiliary Building Chemical Storage Area (East door to BAST Room).
____/________	m.	Stoplog 19* - Entrance to Unit 3 Component Cooling Water Pump Area.
____/________	n.	Stoplog 20* - Entrance to Unit 4 Component Cooling Water Pump Area.
____/________	o.	Stoplog 21* - Entrance to Unit 4 New Fuel Storage Area.
____/________	p.	Stoplog 22* - Entrance to Unit 4 Spent Fuel Pit Heat Exchanger Room.
____/________	q.	Radwaste Building Stoplogs.
____/________		(1) Stoplog SL-1 - Northeast door to Radwaste Building.
____/________		(2) Stoplog SL-2 - Southeast door to Radwaste Building.
____/________		(3) Stoplog SL-4 - Top and Bottom - Overhead doorway Truck Ramp to Radwaste Building.

Initials/Date 5.3.5 (Cont'd)

CAUTION

Prior to sandbagging manhole covers, ensure no personnel are in the tendon galleries.

____/_____ 4. Ensure east tendon gallery manhole covers (one per unit) are installed and covered with sandbags.

____/_____ 5. Remove sandblast booth.

6. Close the following outside doors, inflate seals and install latch pins where applicable:

____/_____ a. Cable Spreading Room (Doors 132-1, 132-2 and 104-3 to roof)

____/_____ b. Unit 3 New Fuel Storage Room (rollup door)

____/_____ c. Unit 4 New Fuel Storage Room (rollup door)

____/_____ d. Unit 3 Spent Fuel Pit/Install Latch Pins

____/_____ e. Unit 4 Spent Fuel Pit/Install Latch Pins

____/_____ f. Unit 3 CCW Surge Tank Room

____/_____ g. Unit 4 CCW Surge Tank Room

____/_____ h. West Auxiliary Building Main Passageway to Turbine Building (Door 58-2)

____/_____ i. Unit 3 480 V Load Center Room (Door 96-1)

____/_____ j. Unit 4 480 V Load Center Room (Door 94-1)

____/_____ k. Unit 3 4160V Switchgear Room (Doors 70-1, 70-2, 71-1)

____/_____ l. Unit 4 4160 V Switchgear Room (Doors 67-1, 67-2, 68-1)

Initials/Date		5.3.5.6 (Cont'd)
____/________	m.	CVCS Holdup Tank Enclosure (2)
____/________	n.	3A EDG Room (Doors 73-1, 75-1)
____/________	o.	3B EDG Room (Doors 72-1, 74-1)
____/________	p.	East Auxiliary Building Main Passageway to Unit 4 CCW Room (Door 58-1)
____/________	q.	Control Building Elevator Vestibule (4)
____/________	r.	Containment Purge Supply Fan Room
____/________	s.	Auxiliary Building Laundry Room (Door 46-2)
____/________	t.	Intake Storage Room (1)
____/________	u.	Unit 3, B MCC Room (Doors 63-1, 63-2)
____/________	v.	Unit 4, B MCC Room (Doors 61-1, 61-2)
____/________	w.	Unit 3 Electrical Penetration Rooms (Doors 20-1 South, 19-1 West)
____/________	x.	Unit 4 Electrical Penetration Rooms (Doors 26-1 North, 27-1 West)
____/________	y.	Generator Exciter Switchgear Enclosures (2)
____/________	z.	Radwaste Building Doors (East, North, Loading Ramp, Elevator)
____/________	aa.	Condensate Polisher/E Load Center/B43 MCC Building
____/________	bb.	Computer Room (Doors 62-1, 62-2)
____/________	cc.	DC Enclosure Building
____/________	dd.	Boric Acid Storage Room (Door 41-1)

Initials/Date	5.3.5.6 (Cont'd)
____/______	ee. Safety Injection Pump Rooms (2)
____/______	ff. Amertap Control Center/4G MCC Enclosure (2)
____/______	gg. C Bus - 4160 Volt Switchgear Enclosure (2)
____/______	hh. Nuclear Gas House (1)
____/______	ii. Control Room to Auxiliary Building Roof (Door 108 A-2)
____/______	jj. Control Room to Fan Room (Doors 108 A-3, 108 A-4)
____/______	kk. Load Center F & G Enclosures (2)
____/______	ll. Unit 4 EDG Building (Doors 133-1, 133-3, 138-1, 138-2, 136-1, 141-1)
____/______	mm. Dry Storage Warehouse
	7. Verify the following roof hatches are installed and bolted in place.
____/______	a. Auxiliary Building - Stairwell to 10 ft. elevation
____/______	b. Auxiliary Building - RHR Pump and Hx Rooms
____/______	c. Auxiliary Building - Monitor Tank Room
____/______	d. Auxiliary Building - Demin Cubicles
____/______	e. Auxiliary Building - BA Evaporator Rooms
____/______	f. Radwaste Building
____/______	8. Ensure main passageways are cleared.

Initials/Date 5.3.5 (Cont'd)

NOTE

If unable to secure any of the items in Substeps 5.3.5.9 through 5.3.5.10 below, store them in the Machine Shop, Maintenance Shop or Dry Storage Building.

9. Remove items from areas subject to high winds, for example:

_____/_________ a. Loose trash and debris

_____/_________ b. Tools

_____/_________ c. Sheet metal

_____/_________ d. Empty containers, trash cans, drums

_____/_________ e. Unnecessary hoses, electrical cords, welding cable

_____/_________ f. Temporary power panels

_____/_________ g. Lumber, pallets, platforms, work stations

_____/_________ h. Cleaning equipment

_____/_________ i. Portable resin funnels on Auxiliary Building roof

10. Tie down or secure the following loose equipment:

_____/_________ a. Gas trailers (N_2 Trailer in RCA, etc.)

_____/_________ b. Portable dewars

_____/_________ c. Ladders

_____/_________ d. Needed hoses, electrical cords

_____/_________ e. Gang boxes

_____/_________ f. Signs

Initials/Date 5.3.5 (Cont'd)

NOTE

Chemicals/oil should be stored securely above any expected flood level and in locations which will withstand expected winds.

_____/_________ 11. Store all chemical drums in the chemical waste building or other secure building, and oil drums in the oil house and/or chemical waste building.

_____/_________ 12. Fuel and tie down the diesel instrument air compressors and stage additional secured fuel drums/tanks adjacent to the compressors.

_____/_________ 13. Consult Engineering for additional preparation requirements for empty tanks (i.e., installing temporary tie down anchors). Engineering will provide such additional requirements on a cases by cases basis.

_____/_________ 14. Check and if necessary, clean fuel oil tank roof vents to assure adequate pressure relief.

_____/_________ 15. Bolt or otherwise secure the hatches on the chemical feed tanks.

_____/_________ 16. **IF** the Unit 3 **OR** Unit 4 Hydrogen Recombiner is in operation, **THEN** the Hydrogen Recombiner shall be secured from service **AND** the attached hoses isolated and disconnected from the permanently installed piping flanges.

_____/_________ 17. Clean the intake trash pit.

_____/_________ 18. Tie down intake trash rakes and hoists in such a manner that they are secure, yet readily available if needed.

_____/_________ 19. Dog the intake area gantry crane, the cask crane and the turbine deck gantry crane and ensure the hooks are fully raised.

Initials/Date

5.3.5 (Cont'd)

20. Designate storm duty vehicles and perform the following:

_____/________ a. Establish a designated location for storm duty vehicles inside the Protected Area and RCA.

_____/________ b. Ensure these vehicles are serviced and fueled.

_____/________ c. Move unnecessary vehicles outside the Protected Area.

_____/________ 21. Remove or adequately secure scaffolding that would be exposed to high winds.

_____/________ 22. Tie down or remove portable toilets, air compressors, and gangboxes; wire the gangboxes shut.

_____/________ 23. Disassemble and remove temporary buildings not having tie-downs (i.e., the wooden buildings at the containment equipment hatches).

_____/________ 24. Move valuable equipment to high ground.

_____/________ 25. <u>IF</u> winds greater that 120 mph are expected, <u>**THEN**</u> ensure the Water Treatment Plant ECOLOCHEM trailers are tied down.

_____/________ 26. Move Hydrazine Tank into small Chemical Storage Building east of Unit 4 EDGs.

_____/________ 27. Ensure personnel/equipment ramps over conduits on Aux Building Roof, Control Room Roof, and other locations are, bolted down, tied down, or removed and stored in secure locations.

_____/________ 28. Secure any plywood doors on the Issues Warehouse.

_____/________ 29. Take portable bedding to Control Room six hours before hurricane is projected to hit.

_____/________ 30. Establish emergency staffing to meet the staffing plans outlined in Attachment 1.

_____/________ 31. Perform the site facilities duties of Step 5.3.13.

Initials/Date

5.3.6 TSC I&C Supervisor responsibilities include the following:

____/____ 1. Position sandbags in the following areas to control any potential flooding or inleakage that may develop as necessary based on the potential for flooding, normally a Category 4 or 5 (numbers are approximate):

NOTE

When constructing dikes use Figure 1 for guidance.

____/____ a. 4KV A and B Bus Switchgear Rooms (50 each door)

____/____ b. Turbine Area 18 ft Elevation - North and South Ends (500 each)

____/____ c. Computer Room (60)

____/____ d. Auxiliary Building East - West Hallway/Laundry Room Door, SI Pump Room Doors (50 each door)

____/____ e. BAST Room Door (30)

____/____ f. Radwaste Building Doors (50 each door)

____/____ g. HP Building, Maintenance Building, Nuclear Administration Building, Nuclear Entrance Building, Training Building doors (30 each)

____/____ h. CCW Rooms (200 each)

____/____ i. Dry Storage Warehouse (100)

____/____ j. TSC (100)

____/____ k. If resources permit, the following areas may also be done:

____/____ (1) Machine Shop

____/____ (2) Nuclear Materials Issue Warehouse

____/____ (3) Central Receiving Facility

Initials/Date

5.3.6.1.k (Cont'd)

_____/_________ (4) Main Truck Gate Entry Building

_____/_________ (5) Water Treatment Gate Entry Building

_____/_________ (6) Security Emergency Diesel Generator Enclosure.

_____/_________ 2. Verify the gas cylinders are properly secured in the Gas House inside the RCA (East of Unit 4 Dearator).

_____/_________ 3. Establish emergency staffing to meet the staffing plans outlined in Attachment 1.

5.3.7 TSC Electrical Supervisor responsibilities include the following:

_____/_________ 1. Ensure all doors to plant transformer control panels, outdoor electrical cabinets, etc. are closed and secured.

_____/_________ 2. Coordinate with System Protection to ensure the switchyard is prepared for severe weather.

_____/_________ 3. Determine if prestaging of portable generators is necessary (OSC, etc.).

_____/_________ 4. Provide tarpaulins and ropes at various locations throughout the Auxiliary Building, and a supply of plastic film (pliofilm) in the Control Room, Cable Spreading Room, 4KV Switchgear Rooms and Computer Room.

_____/_________ 5. Verify that the hatch cover/grating above each Heater Drain Pump, Condensate Pump, Steam Generator Feed Pump, and Auxiliary Transformer is secured.

Initials/Date 5.3.7 (Cont'd)

NOTES

- *Before locking dampers closed or installing protective covers, ensure Operations will not require use of the blocked fans.*
- *When the vent fans listed in Substep 5.3.8.17 are stopped, the following air intake, exhaust, or vent openings should be closed off.*
- *Protective covers on these dampers are required only if the dampers are inoperable.*

6. Verify that the dampers of those openings equipped with dampers are locked in the closed position.

_____/_________ a. Spent Fuel Pit Inlet Air Vents

_____/_________ b. New Fuel Storage Room Fan Inlet Vent

_____/_________ c. Spent Fuel Pit Heat Exchanger Room Fan Inlet Vent

_____/_________ d. Spent Fuel Pit Heat Exchanger Room Exhaust Vent

_____/_________ e. Containment Purge Supply Fan Air Intake

_____/_________ 7. Secure electrical service to temporary facilities.

_____/_________ 8. Protect the phone equipment rooms located in the support buildings (i.e., sandbags, visqueen, caulking).

NOTES

- *Removal of the microwave dish antenna may require crane support.*
- *The microwave dish antenna on the NAB should be removed if winds are projected to exceed 140 mph.*
- *The ESATCOM dish antenna on the NAB should be removed if winds are projected to exceed 125 mph.*

_____/_________ 9. Coordinate removal of the microwave dish on the NAB.

_____/_________ 10. Coordinate removal of the ESATCOM dish on the NAB.

_____/_________ 11. Provide weather protection for Lighting Panels, Fire Protection Panels, and Distribution Panels as appropriate.

_____/_________ 12. Establish emergency staffing to meet the staffing plans outlined in Attachment 1.

_____/_________ 13. Perform the site facilities duties of Step 5.3.13.

Initials/Date

5.3.8 TSC Operations Manager responsibilities include the following:

_____/________ 1. Ensure the Emergency Coordinator is kept informed of the preparation status.

NOTE

Individuals appointed to emergency teams with personal considerations that can be addressed by the Company should be identified to the Human Resources Manager.

_____/________ 2. Solicit volunteers for emergency staffing to resolve any personal conflicts and coordinate staffing with the Emergency Preparedness Coordinator.

_____/________ 3. Establish emergency teams to meet the staffing plans outlined in Attachment 1.

NOTES

- *Substeps 5.3.8. 4 through 5.3.8.14 are commitments. [Commitment - Step 2.3.3]*
- *Station Blackout commitments do not allow the use of RHR when only 1 EDG is available to power both units, therefore, if more than 1 EDG starts and picks up load following the Loss of Offsite Power, RHR may be restarted.*

_____/________ 4. Place the units in an optimum configuration to maintain plant safety in preparation for the arrival of the hurricane. To determine the optimum plant configuration, consideration should be given to the probability of the storm being a Categories 3, 4 and 5 prior to landfall, diameter of the projected area involving hurricane force winds, the uncertainty of the projected track of the hurricane, the timeframe between forecast and projected landfall, the current plant operating configuration, and the timeframe for Operations to make the desired mode change.

_____/________ a. __IF__ the unit(s) are in Mode 1, 2 or 3 __AND__ the storm is projected to reach a Category 1 or 2, __THEN__ the unit(s) shall be placed in HOT STANDBY (Mode 3) at least two (2) hours before the projected onset of sustained hurricane force winds at the site and both units shall remain off-line for the duration of the hurricane force winds (or restoration of reliable offsite power). Continued cooldown in accordance with Substep 5.3.8.4.b. is also acceptable.

Initials/Date

5.3.8.4 (Cont'd)

_____/_________ b. **IF** the unit(s) are in Mode 1, 2 or 3 **AND** the storm is projected to reach Category 3, 4, or 5 prior to landfall, **THEN** the units shall be shutdown, maintaining RCS temperature between 343°F and 350°F Tave. and steam generator pressure greater than 85 psig. RHR should be placed in service and AFW should be aligned and operable. These plant conditions shall be established at least two (2) hours before the projected onset of sustained hurricane force winds at the site and both units shall remain off-line for the duration of the hurricane force winds (or restoration of reliable offsite power).

_____/_________ c. **IF** the unit(s) are in Mode 4, 5 or defueled, **THEN** the Emergency Coordinator will determine the optimum configuration to maintain plant safety.

_____/_________ 5. Perform a review of the EOOSL for equipment out of service for maintenance or testing to identify those whose redundancy is desired to support reliable plant operation during the storm, and ensure work is prioritized to promptly restore such equipment to an operable status.

_____/_________ 6. Review 0-OSP-200.1, Schedule of Plant Checks and Surveillances, and 0-ADM-215, Plant Surveillance Tracking Program, for Technical Specification surveillance requirements, and conduct all surveillances, if possible, that will come due during the storm.

_____/_________ 7. Determine if and when operator rounds on outside equipment are to be temporarily suspended during the storm, and document instructions in the Night Orders.

NOTE

EDG's should be run for at least one hour at greater than 50 percent load.

_____/_________ 8. Perform an operability run of each EDG using 3/4-OSP-023.1, Diesel Generator Operability Test, **AND** return the diesel generators to standby service at least 24 hours prior to projected onset of sustained hurricane force winds at the site.

Initials/Date

5.3.8 (Cont'd)

9. Fill the following tanks:

_____/________ a. Condensate Storage Tanks

_____/________ b. Raw Water Tanks

_____/________ c. Demineralized Water Storage Tank

_____/________ d. Primary Water Tanks

_____/________ e. Refueling Water Storage Tanks

f. Circulating Water Pump Lube Water Storage Tank

_____/________ 10. Verify battery chargers and applicable station vital batteries are operational using 0-OP-003.1, 125V VITAL DC SYSTEM.

_____/________ 11. Ensure that adequate inventories of nitrogen, and carbon dioxide are available to accommodate a unit shutdown and subsequent startup.

12. Review the following procedures in preparation for a Station Blackout, loss of Instrument Air, loss of offsite power or loss of intake cooling water:

_____/________ a. 3/4-ONOP-004, Loss of Offsite Power

_____/________ b. 0-ONOP-013, Loss of Instrument Air

_____/________ c. 3/4-ONOP-019, Intake Cooling Water Malfunction

_____/________ d. 3/4-ONOP-041.7, Shutdown LOCA [Mode 3 (less than 100 psig) or Mode 4]

_____/________ e. 3/4-ONOP-041.8, Shutdown LOCA [Mode 5 or 6]

_____/________ f. 3/4-ONOP-050, Loss of RHR

_____/________ 13. Remind FPL System Operations of the importance of expeditiously re-establishing power to the site if a Loss of offsite Power or Station Blackout occurs.

_____/________ 14. Perform a test run of the Security diesel using 0-OP-026, CAT 400 OPERATION.

_____/________ 15. Make all permissible liquid and gaseous releases before the hurricane is within two hours of the plant to minimize waste water and waste gas inventories.

_____/________ 16. Open redundant outdoor 480V receptacle circuit breakers using Enclosure 1, and issue a clearance to the NPS on all breakers opened.

Initials/Date 5.3.8 (Cont'd)

NOTES

- *Fans may be operated on a selected basis as operating conditions dictate.*
- *Do not allow Maintenance to secure dampers on fans which may be needed.*

17. Stop the vent fans listed below so the TSC Electrical Supervisor may lock close dampers and install protective covers:

_____/_________ a. Spent fuel pit ventilation fan

_____/_________ b. New fuel storage room vent fan

_____/_________ c. Spent fuel pit heat exchanger room vent fan

_____/_________ d. Containment purge supply and exhaust fans

_____/_________ e. Auxiliary building supply vent fans

_____/_________ f. Containment penetration cooling fans, if not required

_____/_________ g. Diesel generator room vent fans - verify in automatic

_____/_________ 18. Consult Engineering for additional preparation requirements for empty tanks (i.e., filling of tank) on a case by case basis and ensure tanks are vented to atmosphere where practicable.

_____/_________ 19. Ensure adequate inventories of chemicals (such as boric acid, ammonia, hydrazine) are available and staged in a secure area that will minimize exposure to high winds and water.

20. **IF** personnel are relocated to areas containing Halon Systems, **THEN** perform the following steps:

_____/_________ a. Issue a clearance to the NPS to isolate Halon Systems including battery backup power supplies.

_____/_________ b. Notify the TSC Fire Protection Supervisor to issue required Fire Protection Impairments.

Initials/Date	5.3.8 (Cont'd)
____/________	21. Verify Unit 3 and Unit 4 cask washdown area drains are closed by having drain covers installed and bolted.
____/________	22. Shutdown Amertap Systems and tag open power supply breakers to all pumps and valves. Issue a clearance to the NPS.
____/________	23. **IF** applicable, **THEN** suspend all fuel movement **AND** place all refueling equipment in a safe condition.
____/________	24. When the hurricane is less than six (6) hours from the plant, arrange to have portable bedding brought to the Control Room and other suitable locations.
____/________	25. Start all traveling screens at the approach of the storm.
____/________	26. Ensure the CAT 400 Security Diesel is in standby using 0-OP-026, Cat 400 Operation, prior to the evacuation of CAS/SAS.
____/________	27. Issue a clearance to the NPS on the Intake Gantry Crane, Cask Crane, and Turbine Gantry Crane to require post hurricane testing.
____/________	28. Perform a test run of the diesel driven SSGFP using 0-OSP-74.3, Standby Steam Generator Feed Pumps Availability Test.
____/________	29. Perform a test run of the diesel driven fire pump using 0-OSP-016.23, Diesel Driven Fire Pump Operability Test.
____/________	30. Perform a test run of the diesel driven service water pump using 0-OSP-012.1, Diesel Driven Service Water Pump Operability Test.
____/________	31. Perform a test run of the Diesel Instrument Air Compressors using 3/4-OP-013, Instrument Air System.
____/________	32. Ensure nitrogen bottles for MSIVs, steam dump to atmosphere valves, and AFW flow control valves are filled and properly secured.

Initials/Date

5.3.8 (Cont'd)

33. The following guidelines should be considered for a Category 5 Hurricane Warning, and may be considered for lesser category hurricanes:

_____/________ a. Assist the Emergency Coordinator in establishing a shift schedule for response personnel and preposition reliefs to preclude the need to move personnel during the storm.

_____/________ b. Determine with the Emergency Coordinator and/or NPS, if any of the guidelines from Enclosure 3, Operations Guidelines for Category 5 Hurricane with Significant Flooding, and Enclosure 4, Loss of Communications - Remote Station Guidelines, should be implemented.

_____/________ 34. Annotated steps of this procedure and applicable plant procedures may be used to restore the plant to a normal configuration upon discontinuation of the emergency.

5.3.9 TSC Chemistry Supervisor responsibilities include the following:

_____/________ 1. Arrange to have the fuel oil storage tanks for the Emergency Diesel Generators topped off.

_____/________ 2. **IF** required, **THEN** isolate acid and caustic sources when adequate inventories of acid and caustic are available.

_____/________ 3. **WHEN** the hurricane is less than two hours from the plant, **THEN** ensure the NPS has terminated all radioactive release permits.

_____/________ 4. Ensure Staffing Plans are in place to meet the positions specified in Attachment 1.

_____/________ 5. Perform the site facilities duties of Step 5.3.13.

5.3.10 TSC Health Physics Supervisor responsibilities include the following:

_____/________ 1. Instruct Health Physics personnel to inspect outside areas for radioactive materials that need to be stored inside or protected from severe weather.

_____/________ 2. Instruct Health Physics personnel to inspect the low level Radwaste Storage Warehouse and Radwaste Building and consider moving highly contaminated components stored at ground level to a higher elevation.

Initials/Date

5.3.10 (Cont'd)

_____/________ 3. Temporarily store all contaminated waste at the RCA Waste Segregation Building in a C-van and coordinate securing C-vans.

4. The following guidelines should be considered for a Category 5 Hurricane Warning, and may be considered for lesser category hurricanes:

_____/________ a. Perform detailed surveys of the main passageways and establish suitable work areas if the TSC/OSC is relocated to the Auxiliary Building.

_____/________ b. Locate sufficient HP supplies and equipment (including monitoring instrumentation) in the Auxiliary Building to support the emergency teams.

_____/________ c. Temporarily relocate the RCA control point to the door between the New Electrical Equipment Room and the Auxiliary Building two hours prior to the approach of the storm and secure the normal entrances to the RCA.

_____/________ 5. Determine the need for batteries to support air sampling and acquire from Issues Warehouse as necessary.

_____/________ 6. Acquire the Health Physics instrumentation list for inventory tracking purposes.

_____/________ 7. Ensure radioactive waste processing and ventilation is terminated prior to and during the hurricane.

_____/________ 8. Collect radioactive sources from buildings not designed as Class 1 structures (Issues Warehouse, Florida City Substation, Nuclear Maintenance Building, etc.), and store them in the Auxiliary Building, or other suitable structures. (Special Nuclear Materials may remain in the warehouse based on location and size).

_____/________ 9. Distribute assigned dosimetry to personnel assigned to stay onsite during the hurricane.

_____/________ 10. Ensure survey instruments are staged in the sheltering locations.

_____/________ 11. Ensure Staffing Plans are in place to meet the positions specified in Attachment 1.

_____/________ 12. Perform the site facilities duties of Step 5.3.13.

Initials/Date

5.3.11 TSC Security Supervisor responsibilities include the following:

_____/________ 1. Ensure that all visitors have been evacuated in an orderly manner form the Owner Controlled Area in accordance with 0-EPIP-20110, Criteria for and Conduct of Owner Controlled Area Evacuation.

_____/________ 2. Maintain an accurate list of personnel who are to remain on site and verify this list against a Security printout of personnel on site.

_____/________ 3. Coordinate the deployment of Security personnel during the severe weather.

_____/________ 4. Verify that the CAT 400 Security Diesel is in standby.

_____/________ 5. Prepare for the Suspension of Safeguards, as necessary.

_____/________ 6. Perform the site facilities duties of Step 5.3.13.

_____/________ 7. If safe to do so, have outside patrol make frequent checks of Palm Drive between the plant and SW 117th Avenue to ensure that roadway is open. Advise the NPS if the road is closed. When patrol must be suspended, bring the patrol vehicle inside the protected area.

_____/________ 8. Open FPL parking lot to all employees and make announcement over Plant Page encouraging employees to move their vehicles to the highest available parking area.

5.3.12 TSC Fire Protection Supervisor responsibilities include the following:

_____/________ 1. Fuel all fire protection equipment.

_____/________ 2. Relieve personnel as directed.

3. Conduct a tour of Fire Watch Posts and the Plant to ensure the following are performed:

_____/________ a. Fire protection equipment storage areas are secured.

_____/________ b. All fire hose cabinet doors are shut and secured.

_____/________ c. All fire hose reels are secured from moving.

_____/________ d. All local alarm panel doors are closed.

_____/________ e. All compensatory hoses are tied down.

_____/________ f. All portable fire extinguishers are properly secured or tied down.

Initials/Date — 5.3.12 (Cont'd)

_____/________ 4. Ensure at least two crews of fire watch personnel are available onsite to support post hurricane activities immediately following the hurricane.

_____/________ 5. Document a review of the transient combustibles placed in the power block per 0-ADM-016.1, Transient Combustible and Flammable Substances Program.

_____/________ 6. Upon notification of recovery process, the Fire Watch Shift Supervisor should:

_____/________ a. Notify and call in needed personnel.

_____/________ b. Conduct a tour of all posts.

_____/________ c. Return to normal shift schedule and staffing.

5.3.13 Site Facilities Responsibilities:

_____/________ 1. Responsibility for the site facilities are as follows:

a. Emergency Preparedness Coordinator:

_____/________ (1) Central Receiving Facility

_____/________ (2) Issues Warehouse

_____/________ (3) Overflow Building

_____/________ (4) Nuclear Processing Building

_____/________ (5) Old I&C Building (with the exception of the TSC)

_____/________ (6) Fab Shops/Trailers (as assigned)

b. TSC Mechanical Supervisor:

_____/________ (1) Nuclear Administration Building

_____/________ (2) Machine Shop Building

Initials/Date	5.3.13.1 (Cont'd)
	c. TSC Electrical Supervisor:
____/________	(1) Nuclear Maintenance Building
	d. TSC Chemistry Supervisor:
____/________	(1) WTP Nuclear Chemistry/Chemical Storage
____/________	(2) Cold Chemistry Lab
	e. TSC Health Physics Supervisor:
____/________	(1) RCA Control Point Building
____/________	(2) Dry Storage Warehouse
____/________	(3) Radwaste Building
____/________	(4) RCA Dressout Building
	f. TSC Security Supervisor:
____/________	(1) Nuclear Entrance Building
____/________	(2) Main Truck Gate Entry Building
____/________	(3) Water Treatment Gate Entry Building
____/________	(4) Security Emergency Diesel Generator Enclosure
	g. TSC Supervisor:
____/________	(1) Technical Support Center
	h. TSC Technical Assistant to the Emergency Coordinator:
____/________	(1) Nuclear Training Building

Initials/Date | 5.3.13 (Cont'd)

_____/_________ 2. Ensure that the following steps are taken to secure the facility prior to evacuation:

NOTE

The individuals responsible for these actions are listed in Substep 5.3.13.1.

_____/_________ a. Verify high value items are stored off the ground floor and away from windows:

_____/_________ (1) Computers and peripherals

_____/_________ (2) Laboratory equipment

_____/_________ (3) Instruments

_____/_________ (4) Photocopying equipment

_____/_________ (5) Communications equipment

_____/_________ b. Verify that plant documents are stored off of the ground floor and away from windows:

_____/_________ (1) Plant procedures

_____/_________ (2) Engineering drawings

_____/_________ (3) Quality Assurance records

_____/_________ (4) Personnel records

_____/_________ (5) Procurement documentation

_____/_________ (6) Contracts, invoices, budget information

_____/_________ (7) Maintenance documents

_____/_________ (8) FSAR, Tech Specs, Vendor Manuals

_____/_________ c. Verify that sandbags required per Substep 5.3.6.3 have been or are being installed satisfactory.

Initials/Date

5.3.13.2 (Cont'd)

_____/_________ d. Nonessential equipment is deenergized.

_____/_________ e. Windows and glass doors are boarded over, as time permits.

_____/_________ f. Window blinds are closed.

_____/_________ g. Doors to rooms having windows are closed.

_____/_________ h. Outside doors are shut securely.

_____/_________ i. Grounds around the facility are free of potential hazards.

5.4 Earthquake

5.4.1 When information is received that an earthquake has occurred, the Emergency Coordinator should perform the following:

NOTES

- *The Seismic Recorders are located in the Unit 3 South Electrical Penetration Room approximately four feet below 18' elevation deck plates.*
- *I&C personnel should reference 0-PMI-103.1, Seismograph Quarterly Functional Check and Tri-Annual Battery Replacement, for developing film from the Seismic Recorder.*
- *The Seismograph can detect if an earthquake has occurred and the severity of the event. When determining severity, the Recorder's film must be developed. The film can determine if the Seismic Design Basis was exceeded and if the plant may continue safe operation.*

_____/_________ 1. Notify I&C Department to develop film from the Seismic Recorder.

_____/_________ 2. Have I&C forward developed film to Engineering to evaluate seismic event against the seismic design basis.

_____/_________ 3. Perform plant walkdowns/inspections to determine any detrimental effects from the event.

_____/_________ 4. Implement the Emergency Plan as necessary in accordance with 0-EPIP-20101, Duties of Emergency Coordinator.

Initials/Date

NOTE

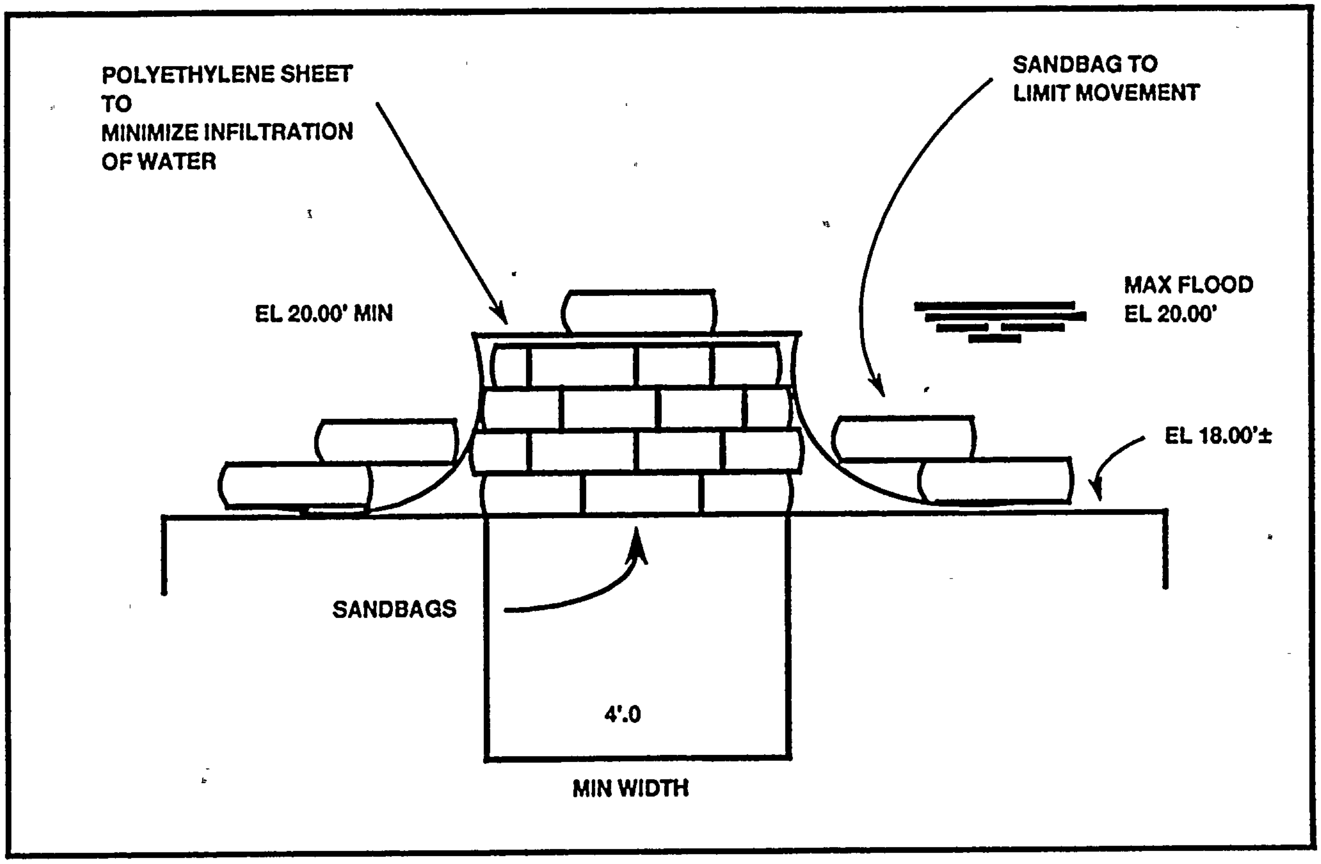
The effects of earthquake shock waves can create relay chatter which can result in alarms and equipment out of service due to relay actuation. Mercury level switches also exhibit momentary earthquake shock wave actuations and can create false level alarms (high or low).

_____/________ 5.4.2 Use the sequence of events recorders to identify relay chatter events and level switch related problems. Resetting of the relays may have been automatic or may require manual resetting if the relay has a lockout feature.

END OF TEXT

FIGURE 1
(Page 1 of 1)

DETAILS FOR FLOOD PROTECTION DIKE



Side View of Typical Sandbag Dike

NOTES:

1. The location of dikes placed along walls shall be chosen to limit obstructions with the mounted items to walls. Care shall be used when placing dikes to insure equipment/components are not obstructed.

2. Polyethylene sheets should have a minimum thickness of 4 mils.

3. Sandbag size and placement should be determined by field personnel based on availability and positioned to provide dike dimensions similar to those shown above.

4. Position sandbags used to protect doors on the side of the door that will allow opening the door and maintaining access.

ENCLOSURE 1
(Page 1 of 2)

480 VOLT RECEPTACLE LIST

NOTE

The following breakers are to be verified tagged and opened per Substep 5.3.8.17 of this procedure. The TSC Operations Manager has responsibility to ensure this is completed.

BREAKER NO.	RECEPTACLE NO./LOCATION
30653	17 and 17A, Unit 3 Containment
30661	5, West End, Aux. Building East-West Passageway
30674	6, 6A and 6B East End and Exterior East Wall of Aux. Bldg
30736	7, North End, Aux. Building North-South Passageway
30905	11 and 12, North End of Intake Area
30760	8, Unit 3 Cask Wash Area (See Footnote 1)
34341	Unit 3 Condensate Polisher Area Receptacles
40653	17 and 17A, Unit 4 Containment
40903	15 and 16, Intake Area (at Traveling Screens)
44341	Unit 4 Condensate Polisher Area Receptacles
0870	9, South End of Aux. Building North-South Passageway
0871	10, Unit 4 Cask Wash Area (See Footnote 1)
1023	13, Water Treatment Plant Area
B1605	01 and 02 Radwaste Control Area, West Wall
B1704	03, Radwaste North-South Passageway, North End
B2028	Radwaste North-South Passageway, South End and Outside Receptacles

ENCLOSURE 1
(Page 2 of 2)

480 VOLT RECEPTACLE LIST

BREAKER NO.	RECEPTACLE NO./LOCATION
Panel 3P14, Bkr 1	Two Receptacles Outside North Wall and Two Outside East Wall of No. 3 4160 Switchgear Room
Panel 3P14, Bkr 2	One receptacle at Southeast Corner No. 3 Auxiliary Transformer
Panel 3P14, Bkr 3	One Receptacle at No. 3 Bowser Filter One Receptacle West of 3A MSRH One Receptacle at Southwest Corner of Condensate Retubing Pit, Ground Level (See Footnote 2)
Panel 3P14, Bkr 4	One Receptacle in Auxiliary Feedwater Pump Area One Receptacle East of 3D MSRH
Panel 3P14, Bkr 5	One Receptacle, Turbine Deck, West Side Between Units 3 & 4 One Receptacle Under South End of Steam Platform
Panel 3P14, Bkr 6	One Receptacle on Mezzanine Level at Panel 3P14 One Receptacle at Northeast Corner of Turbine Deck
Panel 3P14, Bkr 7	One Receptacle at Northwest Corner of Turbine Deck
Panel 4P14, Bkr 1	One Receptacle at East Wall No. 4 4160 Room
Panel 4P14, Bkr 2	One Receptacle at Southeast Corner No. 4 Auxiliary Transformer
Panel 4P14, Bkr 3	One Receptacle at South Side of Condensate Retubing Pit, Ground Level One Receptacle East of Bowser Filter One Receptacle West of 4A MSRH
Panel 4P14, Bkr 4	One Receptacle East of 4D MSRH One Receptacle East of No. 4 SGFW Pump Room
Panel 4P14, Bkr 5	One Receptacle at Southwest Corner of Turbine Deck One Receptacle Under South Edge of Steam Platform
Panel 4P14, Bkr 6	One Receptacle on Mezzanine Level at Panel 4P14 One Receptacle on Turbine Deck, South of Control Room Door
DP10-5	Fan Room Area Receptacles
DP10-6	Fan Room Area Receptacles and DP441

Footnote 1: Power Supply to Emergency Spent Fuel Pit Cooling Water Pumps
Footnote 2: Power Supply to Lube Oil Reservoir Oil Renovators (DeLaval)

ENCLOSURE 2
(Page 1 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

NOTE

If a drain plug cannot be properly installed in a drain, install a sandbag dike at least two feet high around the drain.

DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
2	2"	Equipment Drain	South of No. 4 Instrument Air Compressor	Remove pipe clamps and relocate equip drain lines
3	2"	Equipment Drain	On the east side of the Unit 4 Instrument Air Receiver	Loosen threaded drain pipe and loosen clamp on half-inch drain pipe
5	4"	Floor Drain	West of 4B Heater Drain Pump	Cut off the TPCW drain; unthread and remove the Heater Drain Pump drain pipe
6	4"	Hub Drain	East of 4S Instrument Air Compressor	Cut Instrument Air drains; relocate small drain tube
9	4"	Floor Drain	East of CV-4-1515 (by FI-4-5120)	None
11	4"	Hub Drain	Under 4-30-788 (South of 4A RHDT)	Inflatable plug
12	4"	Floor Drain	Under B Breathing Air Compressor	Inflatable plug
13	4"	Hub Drain	South side of 4B RHDT	None
14	4"	Floor Drain	By CV-4-1504	None
15	2"	Equipment Drain	Inside Unit 4 Silica Analyzer cabinet	None
16	4"	Floor Drain	West of Unit 4 Silica Analyzer cabinet	None
18	4"	Floor Drain	By column J-35 in the walkway outside of the Unit 4 SGFW Pump Room	None
19	4"	Hub Drain	Under valve 4-60-212 (CV-4-2203 bypass valve)	None
20	4"	Floor Drain	South of Unit 4 Generator Hydrogen Gas Dryer	None

ENCLOSURE 2
(Page 2 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
21	4"	Hub Drain	South of 4A MCC by the corner of the wall	None
22	4"	Floor Drain	North of 4A Isophase Bus Fan	None
23	4"	Equipment Drain	South of #3 Instrument Air Compressor	Cut drain pipes or loosen clamps; turn threaded drains out of the way; inflatable plug needed
24	4"	Floor Drain	By valve 3-50-562 (3B HDP suction valve)	None
25	2"	Equipment Drain	On the northeast corner of the Unit 3 Instrument Air Dryer	Loosen clamp and move threaded drain out of the way; inflatable plug needed
26	2"	Equipment Drain	On the west side of the U3 Heater Drain Pump Foundation	Move threaded drains out of the way
27	4"	Floor Drain	East of CV-3-1515	None
29	4"	Hub Drain	Under Valve 3-30-788 (South of 3A RHDT)	Inflatable plug
30	4"	Floor Drain	West of the Chemical Addition pumps	None
32	2"	Hub Drain	East of Chemical Addition Tanks	None
33	2"	Hub Drain	East of Chemical Addition Tanks	None
34	4"	Hub Drain	South of 3B RHDT	None
35	4"	Floor Drain	By CV-3-1504	None
38	4"	Floor Drain	Outside the entrance to 4B 4160 Volt Switchgear Room	None
39	2"	Equipment Drain	Inside the Unit 3 Silica Analyzer cabinet	None
40	4"	Floor Drain	In the Walkway by Fire Locker Number 1	None
41	4"	Floor Drain	West of C AFW Pump in the Walkway	None
44	2"	Equipment Drain	At the south end of the Unit 4 Gland Steam Condenser	Loosen clamp and move drain pipe
45	4"	Floor Drain	By the Unit 3 Generator Hydrogen Alarm Panel	None
46	4"	Hub Drain	Behind Valve 3-60-212 (CV-3-2203 Bypass Valve)	None
47	4"	Floor Drain	South of the Unit 3 Generator Hydrogen Gas Dryer	None

ENCLOSURE 2
(Page 3 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
48	4"	Floor Drain	North of the 3A Isophase Bus Fan	None
49	4"	Hub Drain	South of the 3A MCC Non-vital side	None
52	4"	Floor Drain	Outside the entrance to 3A 4160 Volt Switchgear Room	None
63	8"	Outlet pipe of Catch Basin 15	In the RCA, West of the Unit 4 West Electrical Penetration Room	Install temporary pump in the catch basin with discharge routed to outside the Flood Protection Barrier concurrent with plug installation
68	4"	Floor Drain	North end of Unit 3 CCW Room in the Valve Pit	None
69	4"	Floor Drain	By the North Pedestal of 3B CCW Heat Exchanger	None
70	4"	Floor Drain	Just south of 3B CCW Heat Exchanger	None
71	4"	Floor Drain	Unit 3 CCW Room by 3B CCW Pump	None
72	4"	Floor Drain	Unit 4 CCW Room just east of the Aux Building Doors	None
73	4"	Floor Drain	Unit 4 CCW Room in the Pump Area	None
74	4"	Floor Drain	Unit 4 CCW Room just North of 4B CCW Heat Exchanger	None
75	4"	Floor Drain	By the South Pedestal of 4B CCW Heat Exchanger	None
76	4"	Floor Drain	South end of Unit 4 CCW Room in the valve pit	None
77	3"	Floor Drain	Unit 4 Bowser Lube Oil Conditioner under Valve 4-40-020 in the southeast corner	None
78	3"	Floor Drain	Unit 4 Bowser Lube Oil Conditioner on the north side of the conditioner under FG-4-3401	None
79	3"	Hub Drain	Unit 4 Bowser Lube Oil Conditioner to the east of the Unit 4 Lube Oil Transfer Pump	None
80	3"	Hub Drain	Outside the northeast corner of the Unit 4 Bowser Lube Oil Conditioner pit	Cut drain line

ENCLOSURE 2
(Page 4 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
83	3"	Floor Drain	In the Unit 4 SGFW Pump Room on the south end between the motors	None
84	3"	Equipment Drain	Just North of 4A SGFW Pump	Unthreaded drain pipe; use inflatable plug
85	3"	Floor Drain	In the Unit 4 SGFW Pump Room just west of valve 4-20-218 (4B SGFW Pump discharge check valve) under the deck plate	None
86	2"	Equipment Drain	Just north of 4B SGFW Pump	Unthreaded drain pipe; use inflatable plug
87	2"	Equipment drain	In the southwest corner of the Unit 4 Generator Seal Oil Pit	Loosen clamps to move drain pipe; use inflatable plug.
88	3"	Floor Drain	In the northwest corner of the Unit 4 Auxiliary Transformer Pit	None
89	3"	Floor Drain	Just north of the Unit 4 Auxiliary Transformer Pit	None
90	3"	Hub Drain	In the southeast corner of the Unit 3 Bowser Lube Oil Conditioner Pit under Valve 3-40-025.	Inflatable plug
91	3"	Floor Drain	In the Unit 3 Bowser Lube Oil Conditioner Pit just north of the conditioner under FG-3-3401	None
92	3"	Hub Drain	In the Unit 3 Bowser Lube Oil Conditioner Pit just east of the Unit 3 Lube Oil Transfer Pump	None
93	3"	Hub Drain	In the northeast corner of the Unit 3 Bowser Lube Oil Conditioner Pit	Cut Pipe
96	3"	Floor Drain	In the Unit 3 SGFW Pump Room on the south end between the motors	None
97	3"	Equipment Drain	Just north of 3A SGFW Pump	Loosen unions and threaded drain pipe if required; use inflatable plug.
98	3"	Floor Drain	In the Unit 3 SGFW Pump Room just west of Valve 3-20-218 (3B SGFW Pump discharge check valve) under the deck grating	None
99	2"	Equipment Drain	Just north of 3B SGFW Pump	Loosen unions to move drain pipe out of the way.

ENCLOSURE 2
(Page 5 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

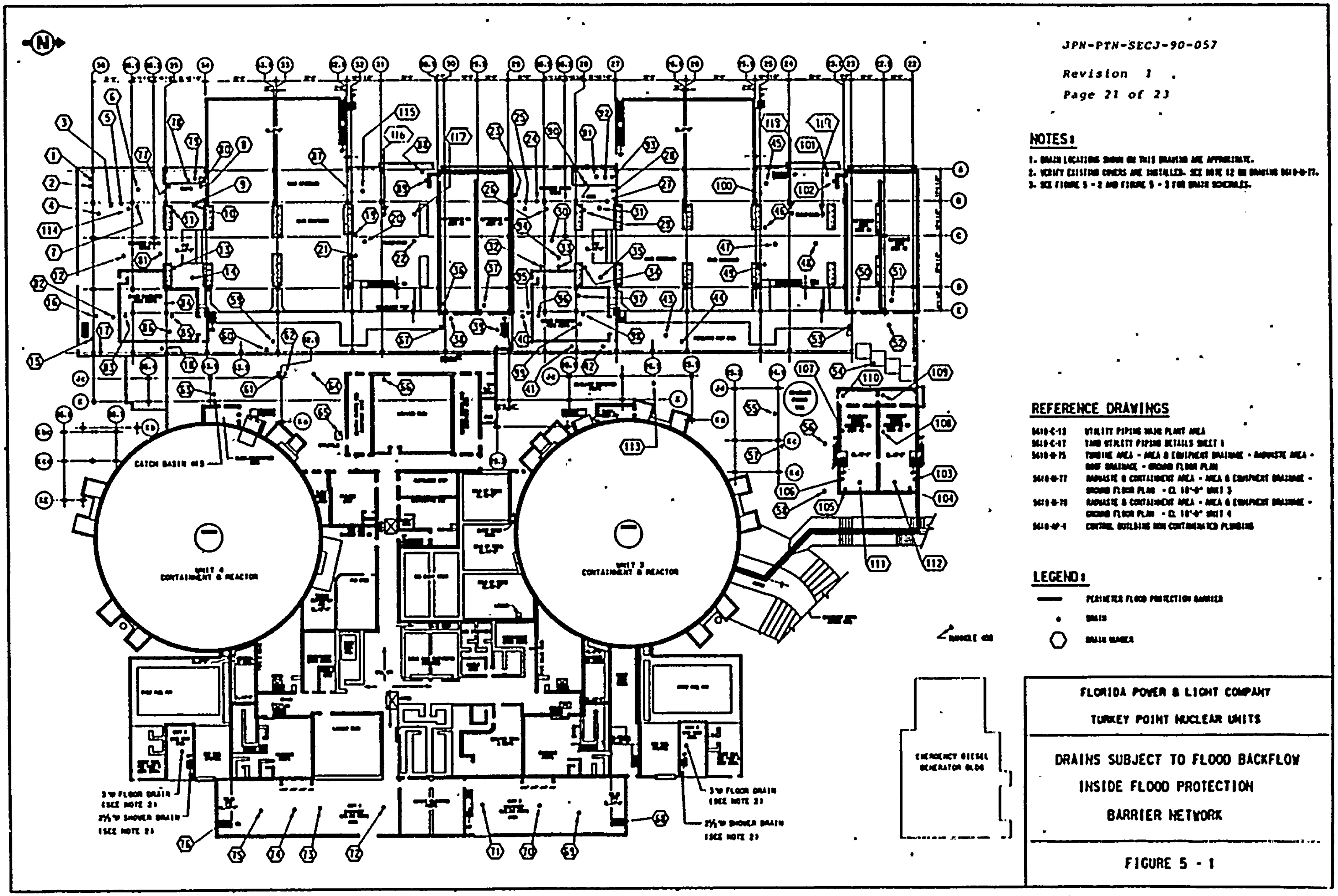
DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
100	3"	Equipment Drain	In the southwest corner of the Unit 3 Generator Seal Oil enclosure	None
101	3"	Floor Drain	In the northwest corner of the Unit 3 Auxiliary Transformer Pit	None
102	3"	Floor Drain	Just north of the Unit 4 Auxiliary Transformer Pit	None
103	2"	Hub Drain	In the 3A EDG Room under C air receiver	Move threaded drains out of the way; use inflatable plug.
106	2"	Hub Drain	In the 3B EDG Room under C air receiver	Inflatable plug
107	3"	Floor Drain	In the 3B EDG Room just east of the electrical control room	None
108	4"	Floor Drain	In the 3A EDG Room just east of the Electrical Control Panel	None
109	2"	Hub Drain	In the 3A EDG Radiator Room on the southeast side of the radiator	None
110	2"	Hub Drain	In the 3B EDG Radiator Room on the southeast side of the radiator	None
111	4"	Floor Drain	In the 3B EDG Room under the air dryer skid	None
112	4"	Floor Drain	In the 3A EDG Room under the air dryer skid	None
114	2"	Equipment Drain	Between the 4A and 4B Heater Drain Pumps on the west side of the foundation	None
115	4"	Floor Drain	To the northeast of the Unit 4 Generator Hydrogen Alarm Panel	None
116	4"	Floor Drain	East of the Unit 4 Generator Seal Oil enclosure	None
117	4"	Floor Drain	East of the Unit 4 AuxiliaryTransformer Pit	None
118	4"	Floor Drain	East of the Unit 3 Generator Seal Oil enclosure	None
119	4"	Floor Drain	East of the Unit 3 Auxiliary Transformer pit	None

ENCLOSURE 2
(Page 6 of 8)

DRAIN PLUGS LOCATIONS AND INSTALLATION

DRAIN ID	SIZE	DESCRIPTION	LOCATION	NOTES
NNA	12"	Manhole #3B Inlet Pipe	West of the New Unit 4 EDG Building	Buried Plug inlet pipe on west side of the manhole.
NNA	2"	Floodwell Drain	Unit 3 CCW Pipe Trench	Plug 2" drain line in bottom of trench Floodwell. Drain line is north of centerline in Floodwell. Coordinate removing deckplates with Mechanical Maintenance or Projects Department. Contact Health Physics prior to entering the trench.
NNA	2"	Floodwell Drain	Unit 4 CCW Pipe Trench	Plug 2" drain line in bottom of trench Floodwell. Drain line is south of centerline in Floodwell. Coordinate removing deckplates with Mechanical Maintenance or Projects Department. Contact Health Physics prior to entering the trench.
NNA	8"	Catch Basin #15 Outlet Pipe	West of Unit 4 West Electrical Penetration Room near Column Line K-33.9	Plug 8" Outlet Pipe in Catch Basin.

ENCLOSURE 2
(Page 7 of 8)
DRAIN PLUGS LOCATIONS AND INSTALLATION



ENCLOSURE 2
(Page 8 of 8)
DRAIN PLUGS LOCATIONS AND INSTALLATION

FIGURE 1
DETAIL FOR PLUGGING FLOOR DRAINS

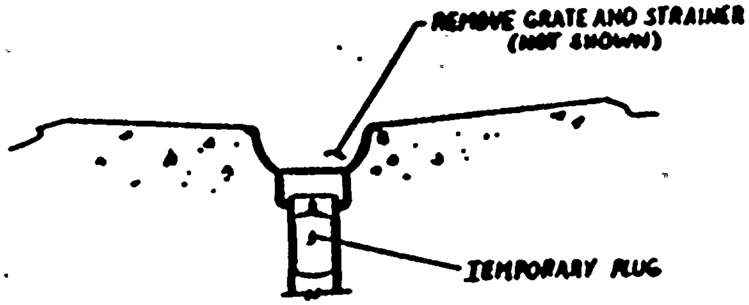


FIGURE 2
DETAIL FOR PLUGGING HUB DRAINS
AND EQUIPMENT DRAINS

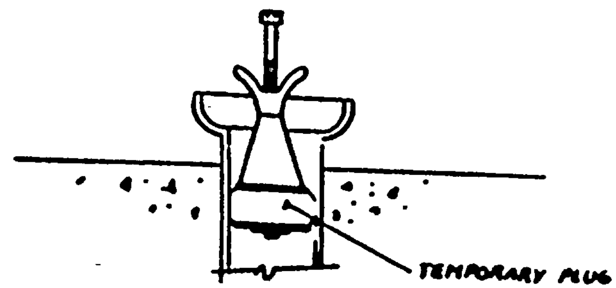


FIGURE 3
DETAIL FOR PLUGGING CATCH BASIN
OR MANHOLE DRAIN PIPE

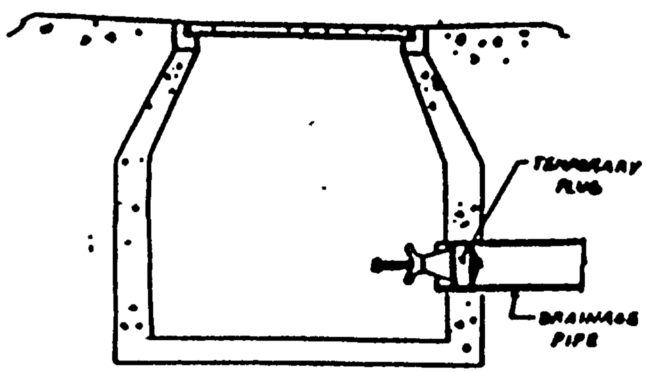
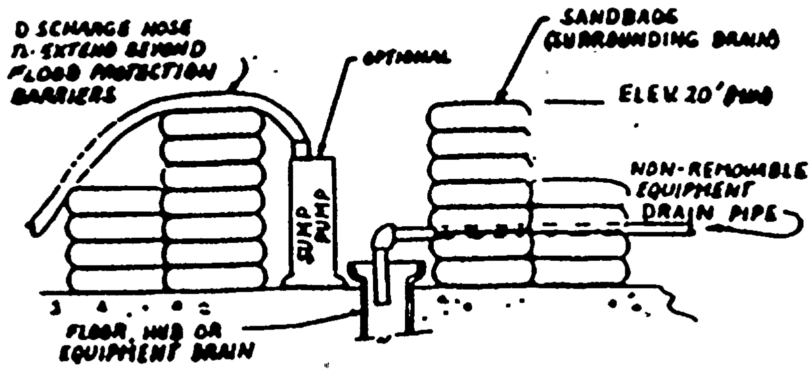


FIGURE 4
DETAILS FOR FLOOD PROTECTION
IN WHICH
DRAIN CANNOT BE PLUGGED



ENCLOSURE 3
(Page 1 of 15)

OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

1.0 DISCUSSION

1.1 This enclosure provides guidelines for Plant Operations before, during, and after a Category 5. hurricane with significant flooding outside of the design basis. The degree to which these guidelines are used is per NPS discretion after consultation with the Emergency Coordinator.

1.2 The guidelines address .plant damage - particularly from flooding - outside of the plant design basis. The focus is on personnel safety and maintaining the RCS below 350°F to minimize RCP seal degradation. The following core cooling contingencies are addressed for the units initially in Mode 5:

1.2.1 RHR Loops

1.2.2 AFW Train 2

1.2.3 AFW Train 1 (pre-throttled)

1.2.4 Bleed and Feed

1.3 In addition, measures are presented for maintaining essential equipment and instrumentation and safely deploying personnel at remote stations.

2.0 PREPARATION

2.1 Modes 1-4

2.1.1 Shutdown/cooldown to approximately 300°F in accordance with *-GOP-103, Power Operation to Hot Standby/*-GOP-305 Hot Standby to Cold Shutdown:

1. Do not open the main generator disconnects in the switchyard; do open the main generator links in case backfeed is required later.

2. Purge the generator with carbon dioxide; shutdown seal oil and lube oil systems.

3. Isolate steam generator blowdown.

4. Maintain steam generators at approximately 70 percent narrow range level.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

NOTE

The following evolution throttles auxiliary feedwater and steam flows under natural circulation conditions with the RCS at approximately 300°F. The purpose is to prepare for a beyond-design scenario where neither RHR cooling nor AFW flow control valve operation are possible. The objective is to throttle flows to maintain RCS temperature and steam generator levels at near-equilibrium.

2.1.2 Throttle steam flow and AFW train 1 flow for natural circulation conditions with the RCS at approximately 300°F. If both units were initially in Modes 1-4, coordinate between units to perform this evolution simultaneously:

1. Place AFW train 1 flow control valves in manual with zero demand.
2. Start AFP "A" in accordance with *-OP-075, Auxiliary Feedwater System.
3. Open all MSIV Bypass MOVs.
4. Open *-043 and *-044, hogger jet ejector main steam isolation valves.
5. Stop all running NCC and CRDM fans.
6. Stop all running RHR pumps and RCPs for up to one hour per Tech Spec 3.4.1.3.
7. Verify natural circulation:
   a. RCS subcooling based on core exit TCs - Greater than 30°F
   b. S/G pressures - Stable or Decreasing
   c. RCS hot leg temperatures - Stable or Decreasing
   d. Core exit TCs - Stable or Decreasing
   e. RCS cold leg temperatures - Within 35°F of saturation temperature for S/G Pressure.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.1.2 (Cont'd)

8. Make the following adjustments until steam generator levels and RCS average temperature are as close as possible to equilibrium.

   a. Close the steam dump to atmosphere valves.

   b. Throttle open *-072, hogger jet ejector main steam isolation valve. If needed, add other dummy steam loads (such as water box air ejectors or steam trap drains) to allow throttling of *-072.

   c. Take local control of CV-*-2816, CV-*-2817, and CV-*-2818, AFW train 1 flow control valves, and throttle them open while closing the main feedwater bypass valves.

   d. Continue Steps b and c until steam generator levels are maintained at approximately 70 percent and RCS average temperature is maintained at approximately 300°F with steam dump to atmosphere valves and main feedwater bypass valves closed.

   e. Lock the train 1 AFW flow control valves in the throttled position.

9. Stop AFP "A" in accordance with *-OP-075, Auxiliary Feedwater System, and maintain steam generator levels with the main feedwater bypass valves.

10. Return AFW to standby in accordance with *-OP-075, Auxiliary Feedwater System, leaving the train 1 AFW flow control valves locked in the throttled position.

11. Start desired RHR pump.

12. Start desired NCC and CRDM fans.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.1.3 Continue plant cooldown to Mode 5 in accordance with *-GOP-305, Hot Standby to Cold Shutdown:

1. Fill the pressurizer to 90 percent narrow range level.

CAUTIONS

- ***Do not make up to the RCS during the cooldown (except to compensate for known leakage) or an overfill situation may result upon plant heat up.***
- ***Maintain pressurizer temperature as high as possible above RCS temperature without challenging the OMS set point or exceeding a 320°F differential.***

2. Cooldown on RHR until pressurizer level drops to 22 percent.
3. Maintain the plant on RHR in Mode 5; do not heat up.

2.1.4 See Subsection 2.4, Prepare Equipment and Station Personnel on Each Unit, for further preparatory guidelines.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.2 Mode 5

2.2.1 IF the RCS is NOT filled and vented, THEN perform the following:

CAUTION

Drain down condition with steam generators unavailable and RCS integrity breached is the most dangerous plant configuration during the storm. The following actions should begin early and be given high priority:

1. Commence immediate action to restore steam generator operability (replace man ways, etc.).
2. Simultaneously commence action to restore RCS integrity (if breached)
3. When RCS integrity is achieved, commence fill and vent per *-OP-041.8, Filling and Venting the Reactor Coolant System.

2.2.2 IF the RCS is filled and vented, THEN perform the following:

1. Establish containment integrity as soon as possible.
2. Maintain RCS temperature as low as possible.
3. Draw a pressurizer bubble per *-OP-041.2, Pressurizer Operation.
4. Maintain pressurizer temperature as high as possible above RCS temperature without challenging the OMS set point or exceeding a 320°F differential.
5. Secure steam generators from wet lay up, if applicable.
6. Maintain steam generators at approximately 70 percent narrow range level.
7. Line up AFW and place it in standby per *-OP-075, Auxiliary Feedwater System.
8. See Subsection 2.4, Prepare Equipment and Station Personnel On Each Unit, for further preparatory guidelines.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.3 Mode 6

2.3.1 IF the reactor is NOT defueled, THEN perform the following:

1. Terminate all fuel transfer operations and secure fuel transfer equipment.
2. Transfer the conveyor cart to the spent fuel pit.
3. Close the tube gate valve.
4. Establish containment integrity.
5. Maintain RCS temperature as low as possible.
6. Fill the cavity to normal band.
7. Select further preparatory actions as applicable from Subsection 2.4, Prepare Equipment and Station Personnel On Each Unit.

2.3.2 IF the reactor is defueled, THEN perform the following:

1. Maintain the spent fuel pit temperature as low as possible.
2. Verity the spent fuel pit level is in the normal band.
3. Verify the transfer canal is filled (at least on the spent fuel pit side) with the transfer tube gate valve closed.
4. Select further preparatory actions as applicable from Subsection 2.4, Prepare Equipment and Station Personnel On Each Unit.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.4 Prepare Equipment and Station Personnel On Each Unit:

2.4.1 Determine whether splitting the CCW headers is necessary to minimize missile vulnerability of exposed piping and/or splitting CCW to the Safety Injection Pumps so that each unit supplies its own Safety Injection Pumps.

2.4.2 Observing *-OP-30, Component Cooling Water System, precautions, isolate CCW to selected non-essential de-energized equipment.

2.4.3 Isolate containment to the extent practical.

2.4.4 Verify the spent fuel pit level and temperature are satisfactory.

2.4.5 Test the Diesel Driven Fire Pump in accordance with 0-OSP-012.1, Diesel Driven Service Water Pump Operability Test.

2.4.6 To allow pressurizer backup heater operation, place the keylock switch on the back of 3D/4D load center in bypass and reset the lockout relay in the appropriate electrical penetration room.

2.4.7 Personnel should be positioned at the following remote stations to perform local actions:

1. Auxiliary Building (if tenable)-1 SRCO/SRO, 4 SNPO/NO
2. Each unit's 480V Vital Load Center Room (also includes 4kv rooms)-1 SRCO/SRO, 2 SNPO/NPO/TO's
3. Unit 3 EDG Building-2 SNPO/NPO/TO's
4. Unit 4 EDG Building -4 SNPO/NPO/TO's
5. Cable Spreading Room-1 SRCO/SRO, 4 SNPO/NPO/TO's
6. Inverter Room-2 NWE/SRCO/RCO's not involved in Control Room duties.

ENCLOSURE 3

OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

2.4.8 Determine whether assigning experienced supervisory operators to the remote stations is necessary.

2.4.9 Ensure these personnel are in position prior to the arrival of the storm and have appropriate safety equipment, materials to stop flooding or make minor repairs, and needed keys (such as ICCS, vital area).

2.4.10 Ensure remote station personnel responsible for ground isolation have a copy of the breaker list and relevant ONOPs.

NOTE

Enclosure 4 provides guidance for personnel at remote stations in case all communications with the control room are lost. Each station should have a full copy so that each knows what the others plan to do if communications are lost.

2.4.11 Instruct remote station personnel to continuously monitor local conditions and equipment status; Enclosure 4 is to be used if (and only if) all communication between the control room and remote stations is lost.

2.4.12 Turn off selected non-essential loads to minimize the potential for bus grounding in accordance with Technical Specification requirements.

ENCLOSURE 3

OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

3.0 MITIGATION

CAUTION

As the hurricane passes, no personnel should be allowed to leave stations. Exceptions should be conducted using applicable guidance contained in 0-EPIP-20111, Re-Entry.

NOTES

- *EOPs and ONOPs should be carefully evaluated during a Category 5 hurricane since these procedures assume that most areas of the plant are accessible. Deviations from procedures shall comply with approved administrative procedures.*
- *Control Room personnel should constantly monitor their equipment in case it grounds or is secured by an operator performing ground isolation from a remote station.*

3.1 IF Offsite Power is lost, THEN perform the following:

3.1.1 Consult *-ONOP-004, Loss of Offsite Power.

3.1.2 Locally open *-358 and close LCV-*-115C since LCV-*115C will fail as is.

3.2 IF all AC is lost, THEN perform the following:

3.2.1 Consult *-ONOP-004, Loss of Offsite Power, and *-ONOP-050, Loss of RHR.

3.2.2 IF RHR was is service, THEN see loss of RHR guidance below.

3.2.3 Determine the need to save sufficient capacity to start an EDG prior to using the spare battery for DC loads.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

3.3 IF all DC power is lost in addition to loss of all AC, THEN perform the following:

3.3.1 Consult the TSC about the possibility of having I&C obtain instrumentation readings from the Hagan racks and other locations.

3.3.2 Consult the TSC about the possibility of having Electrical operate MOV's from dead breakers using portable generators/transformers.

3.4 IF RHR is lost, THEN perform the following:

NOTE

If RCS temperature rises above the value initially established in Section 2, Preparation, of Enclosure 4, pressurizer level should be allowed to rise. The plant should stabilize at approximately the conditions established during the natural circulation evolution performed in Section 2.

3.4.1 Consult *-ONOP-050, Loss of RHR.

3.4.2 IF use of AFW becomes necessary, THEN train 2 should be used as long as possible.

3.4.3 Determine whether using other available control valves or the manual isolation valves to the hogger jet ejector are necessary if steam dump to atmosphere valves cannot be used to throttle steam.

3.4.4 Maintain steam generators between 40 percent and 70 percent narrow range level and RCS average temperature less than 350°F.

3.4.5 IF AFW train 2 is lost, THEN perform the following:

1. Consult *-ONOP-075, Auxiliary Feedwater System Malfunction.
2. Open MOV-*-1403.
3. Close MOV-*-1405.

3.4.6 Maintain steam generators between 40 percent and 70 percent narrow range level and RCS average temperature less than 350°F.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

3.4.6 (Cont'd)

NOTE

After running an auxiliary feedwater pump, approximately three hours is required for the governor oil pressure to completely bleed down. While less than three hours bleed-down time may be adequate to prevent overspeed upon restart, the risk of losing the pump or having to perform a local reset of the overspeed trip must be weighed against the benefit gained and the alternatives available.

1. Cycle MOV-*-1403 for steam generator level control if necessary.
2. If local actions appear necessary, consult the Emergency Coordinator.
3. Request the TSC to begin researching bleed and feed contingencies.

3.5 **IF** CCW is lost, **THEN** perform the following:

3.5.1 Stop any running RHR pump.

3.5.2 Consult *-ONOP-030, Component Cooling Water Malfunction.

3.5.3 If CCW is lost on one unit, determine whether cross-tying CCW system is necessary.

3.5.4 If CCW is lost on both units, connect service water to the charging pumps. If service water is not available and charging pump operation is required, alternate charging pumps to minimize pump heat up.

3.5.5 Review loss of RHR and loss of spent fuel pit cooling guidance.

3.6 **IF** ICW is lost, **THEN** perform the following:

3.6.1 Stop any running RHR pump

3.6.2 Consult *-ONOP-019, Intake Cooling Water Malfunction.

3.6.3 Review loss of CCW guidance.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

3.7 IF Instrument Air is lost, THEN perform the following:

3.7.1 Consult 0-ONOP-013, Loss of Instrument Air.

3.7.2 After verifying letdown isolation and any running charging pump go to maximum speed, perform the following:

1. Stop any running charging pump.
2. Open *-358, manual bypass around LCV-*-115B
3. Close LCV-*-115C.

3.7.3 After verifying HCV-*-758 failed open resulting in RCS cooldown and pressurizer level drop, perform the following:

1. Throttle CCW to the RHR heat exchanger to return RCS temperature and pressurizer level to the values initially established in Section 2, Preparation, of Enclosure 3.

3.7.4 Cycle charging pumps as needed to maintain the desired pressurizer level.

NOTE

AFW flow control valves, PORVs, and steam dump to atmosphere valves will go to backup nitrogen upon a loss of Instrument Air.

3.7.5 Place AFW Train 2 flow controllers in MANUAL to conserve nitrogen.

3.8 IF Spent Fuel Pit Cooling is lost and boiling occurs, THEN possible sources of makeup include RWST purification pumps, primary water pumps, CVCS holdup tank pumps, the water treatment plant, service water, fire water, and portable pumps.

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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

NOTE

0-ONOP-16.10, Pre-Fire Plan Guidelines and Safe Shutdown Manual Actions, contains valuable information on equipment in rooms and their power supplies. This information may be useful if a room is flooding and equipment in it needs to be de-energized.

3.9 IF plant flooding is imminent, THEN perform the following:

3.9.1 For Auxiliary building flooding:

1. De-energize the remaining MCCs
2. Open *-358 and close LCV-*115C on both units
3. Evacuate through the New Electrical Equipment Room to the Cable Spreading Room.

3.9.2 For Turbine Building Flooding, start the 3A EDG and run it in idle in case the 3A MCC floods.

3.9.3 For Computer Room flooding, de-energize ERDADS.

3.10 Refer to Enclosure 4, Loss of Communications - Remote Station Guidelines, if all onsite communications are lost.

ENCLOSURE 3
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OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

4.0 **RECOVERY**

CAUTION

The site is likely to present unforeseen hazards to recovery teams, such as weakened structures, faulted piping, electrical hazards, dispersed hazardous chemicals, and an absence of fire fighting capability. Recovery teams and general access must be controlled to minimize risk.

4.1 Dispatch, as necessary, teams to search for missing personnel, assess damage, and perform repairs on critical systems once tropical storm force winds recede.

4.2 Determine which of the following guidelines are applicable before energizing plant equipment:

NOTE

If electrical equipment is needed for plant or public safety before a full operability assessment can be completed.

4.2.1 No electrical equipment should be re-energized until it is checked by an electrician.

4.2.2 **IF** reactor safety is challenged **AND** time does not permit equipment recovery actions (such as rinse and dry, megger), **THEN** energize the minimum equipment necessary to meet the challenge and, if possible, station a watch at a safe distance from the equipment.

4.2.3 Spare motors may be available from the nuclear units, fossil units, or Issues Warehouse, and if time permits, install spares to allow wetted motors to be recovered.

ENCLOSURE 3

OPERATIONS GUIDELINES FOR CATEGORY 5 HURRICANE WITH SIGNIFICANT FLOODING

4.2.4 For electrical components wetted by the storm surge or wave action, have Electrical perform a fresh water rinse, dry, and megger, as necessary, and after successful meggering, energize any installed heaters.

4.2.5 For electrical components wetted, by rain, have Electrical dry and megger the equipment, as necessary, and after successful meggering, energize any installed heaters.

4.3 Remove all stop logs and drain plugs to allow any trapped water to drain out as soon as practical.

NOTE

Federal, state, or local assistance may be required in the wake of the storm due to damage to plant systems and impaired site access.

4.4 Make required reports and transmit a prioritized list of needs to outside agencies as soon as communications are re-established.

NOTE

Priority must be placed on the restoration of electrical power and establishing or maintaining RCS or spent fuel pit cooling support systems (depending on where the fuel is).

4.5 Restore the plant to a normal configuration upon discontinuation of the emergency, using annotated steps of this procedure and applicable plant procedures.

ENCLOSURE 4

LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

1.0 480V LOAD CENTER ROOM OPERATOR

NOTE

These instructions are provided in case all communications are lost between the Control Room and your station. Before resorting to these default instructions, attempt to contact the Control Room on all communications circuits. Use of these instructions must be tempered by your understanding of the current situation and good judgement.

1.1 Monitor the 4KV Bus Rooms for flooding and the 480V Load Center Rooms for water intrusion and attempt to contain or divert minor flooding to keep it away from the buses.

CAUTION

Even if a 4kv bus feeder breaker is tripped, breaker control power is normally present and presents an electrical safety hazard.

1.2 IF flooding of a bus is imminent, THEN trip the feeder breaker for that bus and remain out of that bus's room.

1.3 Continually check the 4KV buses for grounds in accordance with *-ONOP-005.4, 4KV Bus *A, *B, or *D Ground, and if a ground is detected, perform ground isolation:

1.3.1 IF the 4KV ground is isolated to a non-load center load, THEN leave the breaker open.

ENCLOSURE 4

LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

NOTES

- *If a remote station operator observes that a load center or MCC is deenergized, then he will locally perform ground isolation. He will expect the 480V Load Center Room Operator to reenergize the load center or MCC, as discussed below.*
- *If a ground is localized to H Load Center, both feeder breakers should be opened to isolate the ground. When re-energizing the load center, only one feeder breaker should be closed for the first five minutes. If no ground is detected, then the other feeder breaker may be closed.*

1.3.2 IF the 4KV ground is isolated to a load center, THEN perform the following:

1. IF the 480V ground is isolated to a non-MCC Load, THEN leave the breaker open.
2. IF the ground is isolated to an MCC, THEN perform the following:
   a. Open the MCC's feeder breaker(s) for ten minutes.
   b. Attempt to reclose the feeder breaker(s) after ten minutes.
   c. IF the ground is NOT present, THEN leave the breaker closed.
   d. IF H MCC ground is still clear after 5 minutes, THEN close the other feeder breaker.
   e. IF the ground is still present, THEN reopen the breaker for another ten minutes.
   f. Repeat until the ground disappears or until communications are re-established.

ENCLOSURE 4
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LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

2.0 AUXILIARY BUILDING OPERATOR

NOTE

These instructions are provided in case all communications are lost between the Control Room and your station. Before resorting to these default instructions, attempt to contact the control Room on all communications circuits. Use of these instructions must be tempered by your understanding of the current situation and good judgement.

2.1 Monitor the Auxiliary Building for flooding. Attempt to contain or divert minor flooding away from the MCCs and the charging pumps.

CAUTION

MCC local feeder breakers are actually disconnect switches; do not interrupt load with them.

2.2 IF flooding of an MCC is imminent, THEN shed all loads on the MCC and then open the local feeder breaker for that MCC.

2.3 IF water level throughout the Auxiliary Building is rising and all MCCs and charging pumps are threatened, THEN perform the following:

2.3.1 Shed all loads on the MCCs.

2.3.2 Open the MCCs' local feeder breakers.

2.3.3 Open *-358 and close LCV-*-115C on both units.

2.3.4 Evacuate to the Cable Spreading Room via the New Electrical Equipment Room.

ENCLOSURE 4
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LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

NOTES

- *If a load center room operator observes that an MCC is grounded, he will open the load center breaker for that MCC. After ten minutes, the operator will reclose the breaker. He will repeat this until the ground is isolated by the Auxiliary Building Operator or until communications are re-established.*
- *Coordinate any ground isolation efforts on the 3D MCC with the Cable Spreading Room Operator.*

CAUTIONS

- ***Ensure the MCC local feeder breaker (disconnect) is open when ground isolation is being performed.***
- ***All applicable safety precautions for working with energized equipment must be followed. Electricians troubleshooting grounds and measuring voltages need to be very careful to prevent injury. Emergency medical response may be delayed and will be limited by the hurricane.***

2.4 IF an MCC voltage suddenly goes to zero, THEN perform the following:

2.4.1 Open the local feeder breaker for that MCC.

2.4.2 Have an electrician check whether the MCC is grounded.

2.4.3 IF the MCC is grounded, THEN have an electrician determine which load is grounded.

2.4.4 Open the grounded load breaker.

ENCLOSURE 4
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LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

2.4.5 IF the voltage to the MCC is still zero, THEN close the MCC local feeder breaker, OR perform the following:

1. Recording all changes made, shed all loads on the MCC.
2. Close the MCC's local feeder breaker.
3. Except for the grounded load, restore MCC loads.

2.4.6 IF the ground is not isolable, THEN leave the local feeder breaker open.

2.5 IF no ground is found on a de-energized MCC, THEN close the local feeder breaker.

2.6 IF the MCC remains de-energized for ten minutes, THEN repeat Subsection 2.4 every thirty minutes until the MCC is re-energized OR until communications are re-established.

3.0 CABLE SPREADING ROOM OPERATOR

NOTE

These instructions are provided in case all communications are lost between the Control Room and your station. Before resorting to these default instructions, attempt to contact the Control Room on all communications circuits. Use of these instructions must be tempered by your understanding of the current situation and good judgement.

3.1 Monitor the Cable Spreading Room for water intrusion and periodically open all DC bus and MCC enclosures in the Cable Spreading and Electrical Equipment Rooms to check for water.

ENCLOSURE 4

LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

NOTE

Timely ground isolation is required to protect against double grounds which are much harder to locate.

3.2 Continuously monitor DC bus voltage and ground indication in accordance with 0-ONOP-003.10, 125 VDC System - Location of Grounds, and 0-ONOP-003.11, Auxiliary 125 VDC System - Location of Grounds.

3.3 IF a DC ground is detected, THEN perform ground isolation in accordance with applicable off-normal procedure.

3.4 Continuously monitor voltage in the Electrical Equipment Room:

NOTE

If a Load Center Room Operator observes that a load center or MCC is grounded, he will open the breaker for that load center or MCC. After ten minutes, the operator will reclose the breaker. He will repeat this until the ground is isolated by the Cable Spreading Room Operator or until communications are reestablished.

3.4.1 IF voltage is lost to an H load center, THEN open both local feeder breakers and have an electrician determine grounded load(s):

1. IF the 480V ground is isolated to a non-MCC load, THEN leave that load's breaker open.

NOTE

If the ground is isolated to 3D vital MCC, coordinate ground isolation efforts with the Auxiliary Building operator.

2. IF the ground is isolated to a D vital MCC, THEN perform the following:

   a. Open the MCC's feeder breaker.

ENCLOSURE 4

LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

3.4.1 (Cont'd)

3. **WHEN** ground is isolated, **THEN** reclose the H Load Center feeder breakers

   a. Verify that the grounded load breaker is open.

   b. **IF** the ground is isolated, **THEN** reclose the MCC feeder breaker and restore loads as necessary.

   c. **IF** the ground is not isolable, **THEN** leave the MCC feeder breaker open.

3.4.2 Frequently check 120V AC panels to be energized.

3.4.3 **IF** the 120V AC panel is de-energized or grounded, **THEN** perform the following:

1. Open the local feeder breaker.
2. Have an electrician determine grounded load(s).
3. Open grounded load breaker(s)
4. **WHEN** grounded loads are clear, **THEN** close the feeder breaker.

ENCLOSURE 4
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LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

4.0 UNIT 3 EDG OPERATOR

NOTE

These instructions are provided in case all communications are lost between the Control Room and your station. Before resorting to these default instructions, attempt to contact the Control Room on all communications circuits. Use of these instructions must be tempered by your understanding of the current situation and good judgement.

CAUTION

Stand clear of the EDGs since they may start at any time.

4.1 Monitor the rooms for water intrusion and attempt to contain or divert minor flooding that threatens the safe operation of an EDG.

4.2 IF flooding in a room threatens energized electrical equipment, THEN open appropriate local breakers.

4.3 IF the electrical equipment cannot be isolated locally due to flooding, THEN attempt to isolate the equipment from a remote power source (i.e., Load Breaker at MCC, LC for MCC, 4KV Bus for LC, EDG for 4KV Bus) stopping the EDG and remaining on elevated platforms above the flooding.

4.4 IF the room becomes untenable, THEN evacuate to the Cable Spreading Room or Load Center Room.

4.5 Continuously monitor running EDGs, AND IF trouble is noted, THEN consult 3-ONOP-023.2, Emergency Diesel Generator Failure for guidance and attempt to rectify the problem.

4.6 IF the EDG load suddenly drops to zero, THEN check the EDG output breaker, AND IF open, the bus is probably grounded.

4.7 IF an EDG runs unloaded for four hours AND no communications from the Control Room or Load Center Room are received, THEN stop the EDG and place it in standby.

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LOSS OF COMMUNICATIONS - REMOTE STATION GUIDELINES

5.0 UNIT 4 EDG OPERATOR

NOTE

These instructions are provided in case all communications are lost between the Control Room and your station. Before resorting to these default instructions, attempt to contact the Control Room on all communications circuits. Use of these instructions must be tempered by your understanding of the current situation and good judgement.

CAUTION

Stand clear of the EDGs since they may start at any time.

5.1 Monitor the rooms for water intrusion and attempt to contain or divert minor flooding that threatens the safe operation of an EDG.

5.2 IF flooding in a room threatens energized electrical equipment, THEN open appropriate local breakers.

5.3 IF the electrical equipment cannot be isolated locally due to flooding, THEN attempt to isolate the equipment from a remote power source (i.e. Load Breaker at MCC, LC for MCC, 4KV Bus for LC, EDG for 4KV Bus) stopping the EDG and remaining out of the room.

5.4 Continuously monitor running EDGs. IF trouble is noted, THEN consult 4-ONOP-023.2, Emergency Diesel Generator Failure, for guidance and attempt to rectify the problem.

5.5 IF EDG load suddenly drops to zero, THEN check the EDG output breaker. If open, the bus is probably grounded. IF an EDG runs unloaded for four hours, and no communications from the Control Room or load center room are received, THEN stop the EDG and place it in standby.

5.6 Continually check the D 4KV buses for signs of grounds. IF any grounded equipment is discovered, THEN secure that load immediately.

ATTACHMENT 1
(Page 1 of 2)
RECOMMENDED MINIMUM HURRICANE STAFFING LEVELS

TSC	CR
*EC	(1) NPS
Primary	Primary
Alternate	Alternate
*TSC Tech Asst. to EC	(2) ANPS
Primary	Primary
Alternate	Alternate
*TSC HP Supervisor	Primary
Primary	Alternate
Alternate	(3) RO's
*TSC Maint Mgr or TSC Mech Supv	Primary
Primary	Alternate
Alternate	Primary
*TSC Chem Supv	Alternate
Primary	Primary
Alternate	Alternate
*TSC ENS Comm	(6) NLO's
Primary	Primary
Alternate	Alternate
*TSC Dose Assess Tech	Primary
Primary	Alternate
Alternate	Primary
*TSC Reactor Engineer	Alternate
Primary	Primary
Alternate	Alternate
*TSC Elec Supv	Primary
Primary	Alternate
Alternate	Primary
(4) Damage Assessment Engineers	Alternate
Primary	EOF
Alternate	*RM
Primary	Primary
Alternate	Alternate
Primary	*RM Ops Advisor
Alternate	Primary
Primary	Alternate
Alternate	*ERDAD's Operator or TSC
Other	Communicator
Protection & Control	Primary
Communications Rep.	Alternate
	*(2) Dose Assessment Coord
	Primary
	Alternate
	Primary
	Alternate
	*HRD Communiator
	Primary
	Alternate

*Minimum Staffing Required for Facility Activation

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ATTACHMENT 1
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RECOMMENDED MINIMUM HURRICANE STAFFING LEVELS

*** OSC**

*OSC Supervisor
Primary____________________
Alternate

(5) Mechanics
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate
Primary____________________
Alternate____________________
Primary____________________
Alternate____________________
Primary____________________
Alternate

(1) Foreman
Primary____________________
Alternate

(2) Utility Workers
Primary____________________
Alternate____________________
Primary____________________
Alternate

(1) Chief
Primary____________________
Alternate

(3) Electricians
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate

Materials Management
Primary____________________
Alternate____________________
Primary____________________
Alternate

*Minimum Staffing Required
for Facility Activation

(12) HP Techs
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate____________________
Primary____________________
Alternate____________________
Primary____________________
Alternate

(2) I&C Supervisors
Primary____________________
Alternate____________________
Primary____________________
Alternate

(4) I&C Specialist
*Primary____________________
*Alternate____________________
Primary____________________
Alternate____________________
Primary____________________
Alternate____________________
Primary____________________
Alternate

(2) Chem Techs
*Primary____________________
*Alternate____________________
*Primary____________________
*Alternate

Completed By:____________________ Date:____________

FINAL PAGE

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