Draft Submittal

ST. LUCIE AUGUST 2004
EXAM NOS. 05000335/2004301
AND 05000389/2004301

AUGUST 9 - 20, 2004

PART 1 OF 2 (#s

1. Administrative [redacted] JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)
4. Administrative Topics Outline ES-301-1
5. Control Room Systems and Facility Walk-Through Test Outline ES-301-2

NRC

HLC-16

Administrative Topics

Facility: Saint Lucie Date of Examination: NRC 2004
Examination Level (circle one): RO / SRO Operating Test Number: _____

Administrative Topic (see Note)	Describe activity to be performed.
Conduct of Operations	Primary Manual Calorimetric at 30% (Simulator) (New) (RO only)
Conduct of Operations	Overtime Limitations for Plant Personnel (RO only) (New) Shift Staffing Requirements (SRO only) (New)
Equipment Control	Post Maintenance Test requirement for replacement of the Coupling Lube for the 2B CCW Pump. (SRO only) (New) Perform Data Calculations for Surveillance Code run of the 2B CCW Pump (New) (RO only)
Radiation Control	Evaluate RWP for work to be performed (RO only) (New) Duties and Responsibilities of Emergency Coordinator (Exposure Limits for Emergency Response Personnel) (SRO only) (New)
Emergency Plan	Determine PARs during core melt scenario (SRO Only) (New)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

PERFORM A MANUAL CALORIMETRIC UNIT 2

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

PERFORM A MANUAL CALORIMETRIC UNIT 2

KA Statement: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

KA #: 2.1.7 (3.7 / 4.4)

References: 2-3200020, Primary System Manual Calorimetric

Candidate: _____ Time Start
Name

Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 20 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

PERFORM A MANUAL CALORIMETRIC UNIT 2

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

It is Wednesday, 8-11-04. Unit 2 is at approximately 30% power, returning from a Short Notice Outage. A Chemistry hold is in effect until further notice.

Initiating Cue

The Unit Supervisor has instructed you to perform a primary system manual calorimetric IAW 2-3200020

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

It is Wednesday, 8-11-04. Unit 2 is at approximately 30% power, returning from a Short Notice Outage. A Chemistry hold is in effect until further notice.

Initiating Cue

The Unit Supervisor has instructed you to perform a primary system manual calorimetric IAW 2-3200020

Data Sheet if performed in classroom

- All Steam Generator pressures are 870 psia
- Feedwater temperatures are 330 degrees F
- Total blowdown = 80 gpm
- Feed flow 9011 = 1.56 x10E6 lbm/hr
- Feed flow 9021 = 1.56 x10E6 lbm/hr
- DCS pt KFA = 29101
- DCS pt KFB = 29345
- Charging and Letdown are in operation

Answer Key

See Attached Printout

ANSWER KEY

DATA SHEET 1

Date/Time: 6/11/04 7:40 AM

1. Main Steam Pressure:

PI- 8013A =	870	psia
PI- 8023A =	870	psia
PI- 8013B =	870	psia
PI- 8023B =	870	psia
PI- 8013C =	870	psia
PI- 8023C =	870	psia
PI- 8013D =	870	psia
PI- 8023D =	870	psia

Avg MS Hdr press = 870 psia

h Steam = 1197.3600 BTU/lbm

Q Steam = 3702.3880 x 10E6 BTU/hr

Q Feedwater = 942.0228 x 10E6 BTU/hr

Q Core

Chrg. & L/D Operating = 2732.7800 x 10E6 BTU/hr

Chrg. & L/D Not Operating = 2730.7330 x 10E6 BTU/hr

Core Power

Chrg. & L/D Operating = **29.6629** % Pwr ◉

Chrg. & L/D Not Operating = **29.6406** % Pwr ◯

Feedwater Flow:

FR/FT(ERDADS) 9011	1.56	x 10E6 lbm/hr
FR/FT(ERDADS) 9021	1.56	x 10E6 lbm/hr

DCS PT KFA	29101
DCS PT KFB	29345

Loop A FW Flow 1.5559 x 10E6 lbm/hr

Loop B FW Flow 1.5758 x 10E6 lbm/hr

Total FW Flow (Mfw) = 3.1317 x 10E6 lbm/hr

Feedwater Temp from Speedomax:

Pt. 1	330	degrees F.
Pt. 2	330	degrees F.

Avg FW Temp. = 330 degrees F.

h FW = 300.8 BTU/lbm

Total SGBD Flow: 80 GPM

SGBD Mass Flow = 0.039599 x 10E6 lbm/hr

SGBD Heat output = 19.320 x 10E6 BTU/hr

Record DCS Calorimetric Power (QRP % 10 minute ave), (QRPP (instataneous) should be used below if the reactor has not been in a stable power configuration for at least 10 minutes):

DCS Calorimetric Pwr: 29.22 % Pwr

Chrg & L/D Operating 0.4429 % Pwr Difference

Chrg & L/D not Operating 0.4206 % Pwr Difference

NOTE:
Calculated power in percent must be within 2% of DCS calorimetric power. If not, notify the US / SM.

2. Every Monday complete Data Sheet 2.

N/A
NOT MONDAY
Initial

I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any (I.e., datasheet(s), PMT sheet(s), etc.). Any deviation(s) found during the performance of this procedure has (have) been listed and appropriate actions and notifications made.

RCO: _____ US / SM: _____

G:\ops\opsforms\man_cal_u2.xls

S 2 OPS	
DATE	061104
DOCT	PROCEDURE
DOCN	2-3200020
SYS	OPS
COM	COMPLETED
ITM	27

FOR INFORMATION ONLY
This document is not controlled. Before use, verify revision and change documentation (if applicable) with a controlled index.
Ref: QI-6-PSL-1
Date Verified: 06/11/04 Initial: _____

ANSWER KEY

DATA SHEET 1
(Page 1 of 3)

Date:____/____/____ Time:_____ _____

1. ENTER MAIN STEAM PRESSURE

PI-8013A 870

PI-8023A 870

PI-8013B 870

PI-8023B 870

PI-8013C 870

PI-8023C 870

PI-8013D 870

PI-8023D 870

¶1 COMPUTE TOTAL FEEWATER FLOW

A. A Loop 1.56 (FT 9011-2 (ERDADS), or FR 9011) x 29101 (DCS PT KFA) ÷ 29178 = 1.5559 x 10^6 lb/hr

B. B Loop 1.56 (FT 9021-2 (ERDADS), or FR 9021) x 29345 (DCS PT KFB) ÷ 29050 = 1.5758 x 10^6 lb/hr

M_{FW} = 3.1317 (Total A+B Loop) x 10^6 lb/hr

Average Steam Pressure = 6960 (TOTAL) divided by 8 = 870 (AVERAGE)

ENTER FEEDWATER TEMPERATURE

Speedomax Pt. 1 330 °F

Pt. 2 330 °F

Average Feedwater Temperature 660 (TOTAL) divided by 2 = 330 (AVERAGE)

From the steam tables, enter the enthalpy of the average steam pressure:

h_{STEAM}= 1197.3600 BTU/lbm

3702.3581

Calculate the heat output due to steam flow (Q_{STEAM}):

1197.36 (h_{STEAM}) x [3.1317 (M_{FW}) 10^6 - 0.039599 (M_{BD}) 10^6] = 3702.3860 10^6 BTU/hr (Q_{STEAM})

From the steam tables, enter the enthalpy of the average feedwater temperature:

h_{FW} = 300.8 BTU/lbm

Calculate the heat feedwater heat input (Q_{FW}):

(3.1317 (M_{FW}) x 10^6) x (300.8 (h_{FW})) = 942.0229 (Q_{FW}) x 10^6 BTU/hr

942.0159

ANSWER KEY

DATA SHEET 1
(Page 2 of 3)

Circle the total blowdown flow from the S/Gs and the corresponding heat output:
(Interpolation is not required, circle the closest blowdown flow below)

Total blowdown flow (both steam generators)	Mass flow of blowdown M_{BD}	Heat output from blowdown Q_{BD}
40 GPM	$.019799 \times 10^6$ lbm/hr	9.660×10^6 BTU/hr
80 GPM	$.039599 \times 10^6$ lbm/hr	19.320×10^6 BTU/hr
120 GPM	$.059398 \times 10^6$ lbm/hr	28.981×10^6 BTU/hr
160 GPM	$.079198 \times 10^6$ lbm/hr	38.641×10^6 BTU/hr
200 GPM	$.098997 \times 10^6$ lbm/hr	48.301×10^6 BTU/hr
240 GPM	$.118797 \times 10^6$ lbm/hr	59.961×10^6 BTU/hr

Calculate the heat output from the core:

If charging and letdown flow is secured for any reason, use a value of 48.952 for Q_{OTHER}.

If charging and letdown flow is operating normally, use a value of 46.905 for Q_{OTHER}.

$$[\underset{Q_{STEAM}}{3202.386} - \underset{Q_{FW}}{942.0128} + \underset{Q_{BD}}{19.320} - \underset{Q_{OTHER}}{46.905}] \times 10^6 \ \frac{BTU}{hr} = \underset{Q_{CORE}}{2732.78 \times 10^6} \ \frac{BTU}{hr}$$

NOTE
Calculated Power in percent must be within 2% of DCS Calorimetric power. If not, notify the ANPS/NPS.

Calculate percent core power:

Core Power = $\underset{Q_{CORE}}{2732.78 \times 10^6}$ divided by (92.128×10^6) = 29.66 % Manual Calorimetric Power

Record DCS Calorimetric Power (QRP % 10 minute ave), (QRPP (instantaneous) should be used below if the reactor has not been in a stable power configuration for at least 10 minutes):

DCS Calorimetric Power = _____%

FPL	ST. LUCIE UNIT 2 OPERATING PROCEDURE SAFETY RELATED	Procedure No. 2-3200020 Current Revision No. 27 Effective Date 05/23/03

Title:

PRIMARY SYSTEM MANUAL CALORIMETRIC

Responsible Department: **REACTOR ENGINEERING**

REVISION SUMMARY:

Revision 27 - Incorporated PCR 03-1436 for MA 03-05-027 and PSL-ENG-SENS-02-069 to change note at Step 6.4.4 to amend the impact of moisture carryover to less than 0.2% power (due to tube plugging resulting from the U2 C14 S/G tube plugging campaign. (Walt Mead, 05/20/03)

Revision 26 - Incorporated PCR 03-1267 for PCM 02042, PMAI PM03-03-087 & PSL-ENG-SEIJ-03-014 to revise terminology and point descriptions to reflect new DCS and to revise core power conversion factor. (P. Connell, 05/07/03)

Revision 25 - Added step for use of similar forms. (Bruce Smith, 08/27/01)

Revision 24B – Corrected the unit number in the S__OPS stamp. (Joe Hessling, 07/12/01)

Revision 24A – Revise T-cold precaution to be consistent with reactor operating guidelines. (Mike Gilmore, 06/18/01)

Revision 24 – Added correction factors to the venturi feedwater flow valves used in the manual calculation to be consistent with DDPS. (L. Porro, 02/27/01)

Revision 23A – Added information for performance of surveillance reviews. (J. S. Napier, 10/30/00)

Revision 23 – Provided a method of correcting the heat balance calculation for situations where charging and letdown flows are secured. (Walter Mead, 07/20/00)

Revision	FRG Review Date	Approved By	Approval Date
0	03/08/83	C. M. Wethy Plant General Manager	03/08/83
Revision	FRG Review Date	Approved By	Approval Date
27		N/A Plant General Manager	
		J. R. Martin	05/20/03
		Designated Approver N/A	
		Designated Approver (Minor Correction)	

S_2_OPS	
DATE	
DOCT	PROCEDURE
DOCN	2-3200020
SYS	
COM	COMPLETED
ITM	27

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1.0 PURPOSE

1.1 To provide a method to accurately calculate the reactor thermal power manually under steady state conditions.

2.0 REFERENCES

NOTE

One or more of the following symbols may be used in this procedure:

§ Indicates a Regulatory commitment made by Technical Specifications, Condition of License, Audit, LER, Bulletin, Operating Experience, License Renewal, etc. and shall NOT be revised without Facility Review Group review and Plant General Manager approval.

¶ Indicates a management directive, vendor recommendation, plant practice or other non-regulatory commitment that should NOT be revised without consultation with the plant staff.

Ψ Indicates a step that requires a sign off on an attachment.

2.1 Miscellaneous Documents

- Unit 2 Drawing 2998-G-056-Sh. 2, Heat Balance at Rated Power
- Steam Tables
- PCM 028-295 Installation of an Acoustic Flow Meter for Measuring Feedwater Flow
- ¶1 CR 01-0344

3.0 PREREQUISITES

3.1 The reactor and related equipment should be in a steady state condition with plant power greater than or equal to 20% of Rated Thermal Power.

4.0 PRECAUTIONS / LIMITATIONS

4.1 Reactor power, RCS temperature, steam generator level, blowdown, charging and letdown rates should be maintained as constant as possible during data taking.

4.2 If core power is determined to be above licensed or administrative limits, steps should be taken to reduce it to an acceptable level.

4.3 Any parameters that are determined by redundant inputs should be compared with each other to establish each as a believable or non-believable value.

4.4 T_c should be between 548°F and 548.8°F for operation at rated thermal power.

5.0 RECORDS REQUIRED

5.1 The data sheets from this procedure shall be maintained in the plant files in accordance with QI-17-PSL-1, Quality Assurance Records.

5.2 Forms similar to those contained in this procedure may be used provided they contain all of the essential information as the forms attached.

6.0 INSTRUCTIONS

6.1 Establish plant conditions per section 3.0

> **NOTE**
> Use Data Sheet 1, Manual Calorimetric Calculation, in conjunction with the steps below.

> **NOTE**
> Reactor core thermal power shall be determined using the following equation:
> $Q_{CORE} + Q_{FW} + Q_{RCP} + Q_{CH} + Q_{PZR} - Q_{CCW} - Q_{STEAM} - Q_{BD} - Q_{LD} - L = 0$
> M is mass flow rate in lbm/hr, h is enthalpy in BTU/lbm

> **NOTE**
> The DCS feedwater data points are on the SG 2A (2B) FW BLOWDOWN CALCS screens accessible through the POWER MENU.

6.2 Collect all data as required by Data Sheet 1, Manual Calorimetric Calculation. Record the time the data was taken.

6.3 Compute total feedwater flow, average feedwater temperature and average main steam pressure.

6.4 Compute the net heat output due to steam flow (Q_{STEAM}).

> **NOTE**
> $Q_{STEAM} = (M_{FW} - M_{BD}) \times h_{STEAM}$

1. Determine the enthalpy for the average main steam pressure (h_{STEAM}).
2. Determine the mass flow of blowdown by using Table 1, Data Sheet 1, to convert GPM to lbm/hr.
3. Subtract blowdown mass flow (M_{BD}) from feedwater mass flow (M_{FW}) to obtain steam flow.
4. Multiply the quantity from step 6.4.3 times the enthalpy from step 6.4.1. This resultant is Q_{STEAM}.

/R27

NOTE
The effect of moisture carryover has been neglected because it is difficult to measure and accounts for less than 0.2% power.

6.5 Compute the feedwater heat input (Q_{FW}).

NOTE
$Q_{FW} = M_{FW} \times h_{FW}$

1. Determine the enthalpy for the average feedwater temperature (h_{FW}).

2. Multiply the total feedwater flow (M_{FW}) times h_{FW} (from above). This result is Q_{FW}.

6.6 Determine the Blowdown Heat Output (Q_{BD}).

NOTE
$Q_{BD} = M_{BD} \times h_{BD}$
h_{BD} (blowdown enthalpy) is assumed to be constant.

1. Determine total (both S/Gs) blowdown flow rate (M_{BD}), from Table 1 of Data Sheet 1.

2. Enter Table 1 of Data Sheet 1and determine blowdown heat output (Q_{BD}). (Interpolation is not required.)

6.7 The following is the determination for the constant used to represent other net heat losses and gains (Q_{OTHER}).

Q_{OTHER} = 46.905 x 10^6 BTU/hr (48.952 x 10^6 BTU/hr if charging and letdown flow is secured for maintenance)

NOTE
$Q_{OTHER} = Q_{RCP} + Q_{CH} + Q_{PZR} - Q_{CCW} - Q_{LD} - L$

1. The following constant is supplied for the Reactor Coolant Pump heat flow (Q_{RCP}).

$$Q_{RCP} = 55.951 \times 10^6 \text{ BTU/hr}$$

6.7 (continued)

2. Charging heat input (Q_{CH}) is defined by the equation $Q_{CH} = M_{CH} \times h_{CH}$, where M_{CH} is the mass flow rate and h_{CH} is the enthalpy. The following constant is based on one charging pump operating at a VCT temperature of 105°F.

$$Q_{CH} = 1.174 \times 10^6 \text{ BTU/hr}$$

3. The constant for the net Pressurizer heat input (Q_{PZR}) was determined as a result of Hot Ops II.

$$Q_{PZR} = 0.592 \times 10^6 \text{ BTU/hr}$$

4. The constant for the Component Cooling Water heat output (Q_{CCW}) was determined as a result of Hot Ops II.

$$Q_{CCW} = 0.458 \times 10^6 \text{ BTU/hr}$$

5. Letdown heat flow (Q_{LD}) is defined by the equation $Q_{LD} = M_{LD} \times h_{LD}$, where M_{LD} is the letdown mass flow rate and h_{LD} is the letdown enthalpy. The following constant is based on one charging pump operating with a letdown temperature of 250°F out of the Regenerative Heat Exchanger and 100°F out of the Letdown Heat Exchanger.

$$Q_{LD} = 3.221 \times 10^6 \text{ BTU/hr}$$

6. The following constant is supplied to account for all piping, radiation and other losses (L).

$$L = 7.133 \times 10^6 \text{ BTU/hr}$$

6.8 Calculate the heat output from the core (Q_{CORE}).

NOTE

$Q_{CORE} = Q_{STEAM} - Q_{FW} + Q_{BD} - Q_{OTHER}$

6.9 Calculate percent core power

NOTE

Core Power (%) = $Q_{CORE} / 92.128 \times 10^6$ (a conversion factor)

6.10 Complete the attached data sheets, as required.

7.0 INFREQUENT OPERATIONS

7.1 None

DATA SHEET 1
(Page 1 of 3)

Date:____/____/____ Time:_____ _____

1. ENTER MAIN STEAM PRESSURE

PI-8013A_____

PI-8023A_____

PI-8013B_____

PI-8023B_____

PI-8013C_____

PI-8023C_____

PI-8013D_____

PI-8023D_____

¶1 COMPUTE TOTAL FEEWATER FLOW

A. A Loop _____ x _____ ÷ 29178 = _____ x 10^6 lb/hr
(FT 9011-2 (ERDADS), or FR 9011) (DCS PT KFA)

B. B Loop _____ x _____ ÷ 29050 = _____ x 10^6 lb/hr
(FT 9021-2 (ERDADS), or FR 9021) (DCS PT KFB)

M_{FW} = _____ x 10^6 lb/hr
(Total A+B Loop)

Average Steam Pressure = _____ divided by 8 = _____
TOTAL AVERAGE

ENTER FEEDWATER TEMPERATURE

Speedomax Pt. 1_____°F

Pt. 2_____°F

Average Feedwater Temperature _____ divided by 2 = _____
TOTAL AVERAGE

From the steam tables, enter the enthalpy of the average steam pressure:
h_{STEAM}= _____BTU/lbm

Calculate the heat output due to steam flow (Q_{STEAM}):
_____ _____10^6 _____10^6 _____10^6 BTU/hr
h_{STEAM} x [M_{FW} - M_{BD}] = Q_{STEAM}

From the steam tables, enter the enthalpy of the average feedwater temperature:
h_{FW} = _____ BTU/lbm

Calculate the heat feedwater heat input (Q_{FW}):
(_____ x 10^6) x (_____) = _____ x 10^6 BTU/hr
M_{FW} h_{FW} Q_{FW}

DATA SHEET 1
(Page 2 of 3)

Circle the total blowdown flow from the S/Gs and the corresponding heat output:
(Interpolation is not required, circle the closest blowdown flow below)

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40 GPM	$.019799 \times 10^6$ lbm/hr	9.660×10^6 BTU/hr
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240 GPM	$.118797 \times 10^6$ lbm/hr	59.961×10^6 BTU/hr

Calculate the heat output from the core:

If charging and letdown flow is secured for any reason, use a value of 48.952 for Q_{OTHER}.

If charging and letdown flow is operating normally, use a value of 46.905 for Q_{OTHER}.

$$[\underset{Q_{STEAM}}{____} - \underset{Q_{FW}}{____} + \underset{Q_{BD}}{____} - \underset{Q_{OTHER}}{____}] \times 10^6 \ \frac{BTU}{hr} = \underset{Q_{CORE}}{____} \times 10^6 \ \frac{BTU}{hr}$$

NOTE
Calculated Power in percent must be within 2% of DCS Calorimetric power. If not, notify the ANPS/NPS.

Calculate percent core power:

Core Power = $\underset{Q_{CORE}}{____} \times 10^6$ divided by (92.128×10^6) = [_____%] Manual Calorimetric Power

Record DCS Calorimetric Power (QRP % 10 minute ave), (QRPP (instantaneous) should be used below if the reactor has not been in a stable power configuration for at least 10 minutes):

DCS Calorimetric Power = _____%

DATA SHEET 1
(Page 3 of 3)

2. Every Monday complete Data Sheet 2. _____ Initial

I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any (i.e., datasheet(s), PMT sheet(s), etc.). Any deviation(s) found during the performance of this procedure has (have) been listed an appropriate actions and notifications made.

_____ RCO

_____ ANPS/NPS

DATA SHEET 2
(Page 1 of 1)

NOTE
This data sheet will compare feedwater temperature inputs into DCS calorimetric with feedwater temperature indications used in manual calorimetric.

1. Record feedwater temperature inputs from DCS.

   PT T0910A1 _____

   PT T0910A2 _____

   PT T0910A3 _____

   Compare PTs T0910A1 through T0910A3 to be within 2°F, if greater than 2°F notify I&C.

   PT T0910B1 _____

   PT T0910B2 _____

   PT T0910B3 _____

   Compare PTs T0910B1 through T0910B3 to be within 2°F, if greater than 2°F notify I&C.

2. Record feedwater temperatures from DCS and from Speedomax.

   DCS PT TFA _____ Speedomax PT 1 _____

   Ensure feedwater temperatures to be within 5°F or notify I&C and ANPS.

   DCS PT TFB _____ Speedomax PT 2 _____

   Ensure feedwater temperatures to be within 5°F or notify I&C and ANPS.

I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any (i.e., datasheet(s), PMT sheet(s), etc.). Any deviation(s) found during the performance of this procedure has (have) been listed an appropriate actions and notifications made.

_____ RCO

_____ ANPS/NPS

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE OVERTIME GUIDLINES

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE OVERTIME GUIDELINES

KA Statement: Knowledge of Conduct of Operations Requirements

KA #: 2.1.1 (3.7 / 3.8)

References: ADM-09.07, Overtime Limitations for Plant Personnel

Candidate: _____ Time Start
Name

Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 15 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE OVERTIME GUIDELINES

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

You are a Reactor Operator on Crew 6. The Watch Engineer has asked you to come in tomorrow, 8/15, to assist in filling an ion exchanger. He would like you to work 8 hours (0630-1430).

Initiating Cue

You have been instructed to evaluate your schedule from the previous week and determine the number of hours you could work (if any) without violating overtime guidelines.

Date	Hours	Status	Notes
8-8-04	0630-1045	Normal day off	Call out to cover shift (15 minute turnover, 1 hour travel time on each end)
8-9-04	0800-1600	Normal day off	Pre-scheduled training class
8-10-04	0630-1845	Normal work day	15 minute turnover
8-11-04	0630-1845	Normal work day	15 minute turnover
8-12-04	0630-1845	Normal work day	15 minute turnover
8-13-04	0630-1845	Normal work day	15 minute turnover
8-14-04	1030-1830	Normal day off	Pre-scheduled shift communicator

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

You are a Reactor Operator on Crew 6. The Watch Engineer has asked you to come in tomorrow, 8/15, to assist in filling an ion exchanger. He would like you to work 8 hours (0630-1430).

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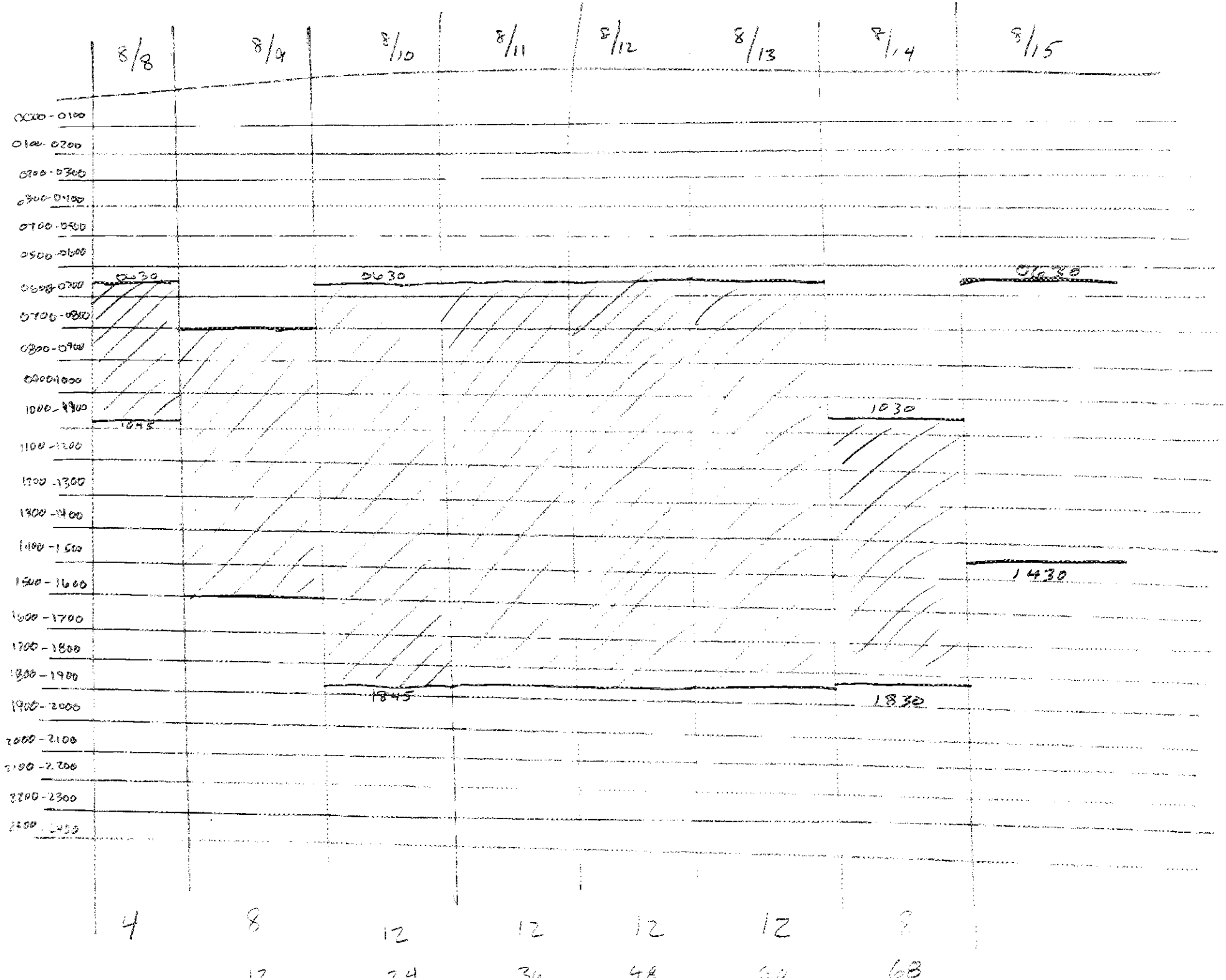
8-9-04	0800-1600	Normal day off	Pre-scheduled training class
8-10-04	0630-1845	Normal work day	15 minute turnover
8-11-04	0630-1845	Normal work day	15 minute turnover
8-12-04	0630-1845	Normal work day	15 minute turnover
8-13-04	0630-1845	Normal work day	15 minute turnover
8-14-04	1030-1830	Normal day off	Pre-scheduled shift communicator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8
12
24
36
48
60
68

Answer Key

Turnover time and travel time do not count for hours worked. 68 hours worked since 8-8-04, he can work 4 additional hours on 8-15-04.

Incorrect
The individual could work all 4 hours.
As each hour is accumulated on 8/15, one hour drops off the 72 hour check on 8/8.

FPL	ST. LUCIE PLANT ADMINISTRATIVE PROCEDURE SAFETY RELATED	Procedure No. ADM-09.07 Current Revision No. 5 Effective Date 03/28/04

Title:

OVERTIME LIMITATIONS FOR PLANT PERSONNEL

Responsible Department: **OPERATIONS**

REVISION SUMMARY:

Revision 5 - Incorporated PCR 03-1781 for CR 03-1063 to delete Section, blanket OT approval for outages, add Section to add maintenance supervisors to enhance key maintenance personnel, and make other minor changes. (G. Madden, 02/14/04)

Revision 4A - Incorporated PCR 03-1821 to delete references to protection services. (Margaret DiMarco, 06/06/03)

Revision 4 – Implemented TS Amendments 185 and 128. (K.W. Frehafer, 09/20/02)

Revision 3 – Enhanced definition of key maintenance personnel, added detail to the overtime guidelines and added union. (Roger Weller, 04/29/02)
AND
Removed reference to NP-306. (E. Cone, 04/25/02)

Revision 2 – Revised requirements for the initiation of condition reports and authorization forms. (Jim Voorhees, 11/19/01)

Revision 1B - Changed President, Nuclear Division to Chief Nuclear Officer. (M. DiMarco, 10/22/01)

Revision	FRG Review Date	Approved By	Approval Date
0	05/27/99	R. G. West Plant General Manager	05/27/99
5	02/13/04	G. L. Johnston Plant General Manager	02/14/04
		N/A Designated Approver	
		N/A Designated Approver (Minor Correction)	

S___OPS	
DATE	
DOCT	PROCEDURE
DOCN	ADM-09.07
SYS	
COM	COMPLETED
ITM	5

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APPENDIX

APPENDIX A REQUEST TO DEVIATE FROM OVERTIME GUIDELINES 12

1.0 PURPOSE

1.1 §5 This procedure applies to the following plant staff who performs safety-related functions in the following capacities:

- Reactor Operators
- Senior Reactor Operators
- Auxiliary Operators
- Health Physicists
- Key Maintenance Personnel
- Chemistry Technicians

1.2 ¶3 This procedure provides administrative and documentation requirements as defined in St. Lucie Unit 1 and Unit 2 Technical Specifications, applicable to personnel defined in 1.1 above.

2.0 REFERENCES

NOTE

One or more of the following symbols may be used in this procedure:

§ Indicates a Regulatory commitment made by Technical Specifications, Condition of License, Audit, LER, Bulletin, Operating Experience, License Renewal, etc. and shall NOT be revised without Facility Review Group review and Plant General Manager approval.

¶ Indicates a management directive, vendor recommendation, plant practice or other non-regulatory commitment that should NOT be revised without consultation with the plant staff.

Ψ Indicates a step that requires a sign off on a data sheet.

2.1 Technical Specifications

- §1 St. Lucie Unit 1 and Unit 2 Technical Specifications, Section 6.2.2.f; Notice of Violation Response Nov 96-09; L-96-217
- §5 L-2002-003, Overtime Limit PLA, and TS Amendments 185 and 128

2.2 Procedures

- ¶1 ADM-15.04, Fitness for Duty - Call Out and For Cause Testing

2.3 Miscellaneous Documents

- ¶4 L-96-217, 10 CFR 2.201
- §3 L-97-165, Reply to a Notice of Violation
- NUREG 0737 Section I.A.1.3
- NRC GL 82-12
- §4 L-97-291, Reply to Notice of Violation
- §6 NRC Generic Letter 83-14, Definitions of Key Maintenance Personnel (Clarification of GL 82-12) /R5

2.4 PMAIs / CRs

- ¶3 CR 96-2417, QA Audit QSL-PM-96-18 response
- §4 PM-99-03-322, Overtime Tracking
- CR 03-1063, QA Review of ANO Violation /R5

3.0 RESPONSIBILITIES

3.1 The Plant General Manager is responsible for ensuring the use of overtime is minimized.

3.2 Each department head is responsible to provide necessary work schedules without routine heavy use of overtime.

3.3 Each department head is responsible for following these instructions and ensuring documentation of the bases for use of overtime exceeding the guidelines when necessary.

3.4 Each department head is responsible for maintaining cognizance or performing a review, on a monthly basis, to ENSURE routine or excessive overtime hours have NOT been assigned. /R5

/R5

3.5 It is the responsibility of each lead Supervisor and General Maintenance Leader (GML):

1. ¶1 To EVALUATE the capability of each individual working overtime / extended hours under their guidance to ensure that the person is fit for duty and able to safely and competently perform the work.

2. To MONITOR the hours worked by their employees to ENSURE they do NOT EXCEED the guidelines on safety related work unless authorized with a completed Appendix A.

3.6 All plant personnel are responsible for tracking their hours worked, their compliance with the overtime guidelines, and the prior identification to supervision of scheduled work hours which would cause an exceedence of the guidelines.

3.7 §4 A work hours tracking system is required to be used by Operations, Health Physics and Chemistry Personnel to alert the user to the potential for exceeding overtime limit guidelines when hours worked and hours planned to be worked are entered in a tracking system.

1. For key Maintenance Personnel the work hours are required to be tracked by using a tracking system during the following situations:

A. Shift change

B. Working greater than 12 hours in a day

C. Working more than 6 consecutive days

4.0 DEFINITIONS

4.1 §1 Examples of personnel who perform safety related functions are:

1. Senior Reactor Operations (SRO)

2. Reactor Operators (RCO)

3. Health Physicists (HP)

4. Auxiliary Operators (NLO)

5. Key Maintenance personnel

6. Chemistry Technicians

4.2 §6 Key Maintenance personnel are defined as those personnel who are responsible for the correct performance of maintenance, repair, modification, or calibration of safety related structures, systems or components, and who are personnel performing or immediately supervising the performance of such activities. /R5

1. For maintenance bargaining unit personnel this includes all journeyman or above classifications and all employees relieving into these classifications.

2. For maintenance supervision and GML personnel this includes GMLs and maintenance supervisors that directly supervise and are responsible for the correct performance of safety related work. /R5

4.3 Exceedence – a calendar day on which overtime guidelines are exceeded.

5.0 RECORDS REQUIRED

5.1 Completed Overtime Deviation Requests shall be maintained in the plant files in accordance with QI-17-PSL-1, Quality Assurance Records.

6.0 INSTRUCTIONS

6.1 Overtime Limit Guidelines

1. Personnel occupying or relieving into the classifications listed in Section 4.1 in every department at the St. Lucie Plant, shall COMPLY with the policies set forth in Step 2 below.

> **NOTE**
>
> PSL Overtime Guidelines allow for the following when determining the total amount of hours an individual may be on-site:
>
> - Shift turnover time (not to exceed 2 hours per day)
> - Turnover: That period of time up to one hour, typically at the beginning and / or at the end of a work shift, to account for activities that are not direct work implementation.
> - Mealtime (not to exceed 1/2 hour per day)

2. §1 ENSURE adequate shift coverage is maintained without routine heavy use of overtime.

> **NOTE**
>
> - §4 A work hours tracking system is required to be used by Operations, Health Physics and Chemistry Personnel to alert the user to the potential for exceeding overtime limit guidelines when hours worked and hours planned to be worked are entered in a tracking system.
> - For Key Maintenance Personnel the work hours are required to be tracked by using a tracking system during the following situations:
> - Shift change
> - Working greater than 12 hours in a day
> - Working more than 6 consecutive days

A. In the event that unforeseen problems require substantial amounts of overtime, for the classifications listed in Section 4.1 above, to be used, or during extended periods of shutdown for refueling, major maintenance or major plant modification, on a temporary basis the following guidelines shall be followed:

1. ¶3 An individual should NOT be permitted to work more than 16 hours straight, excluding shift turnover, meal, and travel time.

6.1 Overtime Limit Guidelines (continued)

2. **A.** (continued)

2. ¶3 An individual should NOT be permitted to work

- More than 16 hours in any 24-hour period, excluding shift turnover, meal, and travel time.

OR

- More than 24 hours in any 48-hour period, excluding shift turnover, meal, and travel time.

3. ¶3 An individual should NOT be permitted to work more than 72 hours in any 7-day period, excluding shift turnover, meal, and travel time.

4. ¶3 A break of at least 8 hours shall be allowed between work periods, including shift turnover time.

5. Any bargaining unit employee in the classifications listed in Section 4.1, or relieving into one of these classifications, that would exceed the guidelines as described above will be considered not eligible for that assignment, except as provided below:

- If an employee, who is being offered pre-arranged or call out overtime, has worked ≤ 68 hours in the previous 6-day period, he / she will be eligible for the assignment provided he / she does not exceed 84 hours in a 7-day period and provided he / she will not exceed the limits set forth in Steps 6.1.2.A.1, 6.1.2.A.2 and 6.1.2.A.4 above.

- Deviations from the guidance set forth in Step 6.1.2.A.3 above will require prior management authorization as set forth in Section 6.2.

- If management does not authorize the deviation, the employee bypassed for the overtime assignment will be paid for the hours not offered as though he / she had actually worked.

6.1 Overtime Limit Guidelines (continued)

2. A. 5. (continued)

- In the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modifications, on a temporary basis, deviations of the overtime guidelines can be approved by management.

6. §1 Except during extended shutdown periods, the use of overtime should be considered on an individual basis and NOT for the entire staff on a shift.

> **NOTE**
> It is the responsibility of supervisory personnel that have approving authority for Time Reports to ensure that employees comply with overtime policy and do NOT EXCEED overtime limit guidelines.

7. ¶3 All overtime is recorded on the employees Time Report.

END OF SECTION 6.1

6.2 Deviations from Overtime Limit Guidelines

1. §5 Deviation from the overtime guidelines as contained in Section 6.1 shall be approved by the Plant General Manager – St. Lucie Plant.

2. When necessary, the senior person on site from their respective department shall COMPLETE an Overtime Deviation Request (Appendix A) <u>and</u> OBTAIN the necessary approval for personnel specifically outlined in Section 6.1 of this procedure. /R5

3. In emergency cases, any department head may approve the deviation request provided the Plant General Manager – St. Lucie Plant is notified the next working day.

4. A "Request To Deviate From Overtime Guidelines" form, Appendix A of this procedure, shall be completed. The name of each individual expected to deviate from overtime guidelines shall be included on the form. Multiple personnel may be listed on a single form.

5. A Condition Report shall be generated and attached to each "Request To Deviate From Overtime Guidelines" form generated. The CR will address all personnel listed on the Appendix A. /R5

6. Each exceedence requires a separate deviation form, unless the initial form specifically states that multiple exceedences are expected, and the duration of the authorization is clear.

7. Deviations of 1 hour or less that occur when clock adjustments are made due to daylight savings time do not require documentation on Appendix A or a Condition Report.

8. ¶3 A completed Appendix A, Request to Deviate from Overtime Guidelines, shall be submitted to be maintained in plant files outlined in Section 5.1 of this procedure.

9. §3,4 ¶3,4 A Plant Condition Report shall be generated to assess any deviations from overtime limit requirements.

END OF SECTION 6.2

6.3 Periodic Review of Personnel Overtime Hours

CAUTION

- §3 Technical Specification 6.2.2.f requires that administrative procedures be developed and implemented to limit the working hours of unit staff who perform safety-related functions.
- The Technical Specification also requires that adequate shift coverage is maintained without routine heavy use of overtime for individuals.
- While the Overtime Limit Guidelines of procedural Steps 6.1.2.A.1 and 6.1.2.A.2 are permissible with respect to safety related work or support functions, excessive use of this relief during non-outage periods may still result in a violation of Technical Specification 6.2.2.f.

1. ¶3 Each department head, with employees in the classifications listed in Section 4.1, shall perform a review that will ensure (on a monthly basis) that routine or excessive overtime hours have NOT been assigned.

2. Those individuals identified of potentially exceeding overtime guidelines will be screened by:

A. Evaluation of their time sheets.

B. INTERVIEW with responsible supervision for determination of the reason for excessive hours on site.

/R5

END OF SECTION 6.3

APPENDIX A
REQUEST TO DEVIATE FROM OVERTIME GUIDELINES
(Page 1 of 1)

TO: Plant General Manager – St. Lucie Plant

FROM: _____ DATE_____

SUBJECT: DEVIATION FROM OVERTIME GUIDELINES FOR (NAMES):

_____

ORIGINATOR

§1 REQUEST the above listed individual to exceed the following overtime guidelines:

_____ Greater than 16 hours straight

_____ Greater than 16 hours in a 24 hour period

_____ Greater than 24 hours in a 48 hour period

_____ Greater than 72 hours in a 7 day period

_____ A break of at least 8 hours (including shift turnover time)

SCOPE OF WORK

_____

_____

BASIS FOR DEVIATION

☐ Person has unique qualification / training

☐ Sufficient rest will be provided

☐ Turnover of personnel would jeopardize quality of work

☐ Excessive lost time would occur and sufficient testing will ensure quality of activity

☐ Other_____

DETAILED EXPLANATION OF BASIS FOR DEVIATION

_____

_____

_____

Note: This deviation requires a plant Condition Report per Para 6.2.9 _____
CR Number

APPROVAL

Approved by_____
Plant General Manager – St. Lucie Plant

ROUTING
Original to Nuclear Records Vault

END OF APPENDIX A

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SHIFT STAFFING REQUIREMENTS

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SHIFT STAFFING REQUIREMENTS

KA Statement: Knowledge of Shift Staffing Requirements

KA #: 2.1.4 (2.3 / 3.4)

References: Operation Department Policy 201 / 207

Candidate: _____ Time Start
Name
Time Finish

Validation Time 20 minutes

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SHIFT STAFFING REQUIREMENTS

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

You are the Shift Manager (non-degree) of crew 6. The following is a crew roster / qualification matrix. All crewmembers are available. All licensed personnel are active.

Initiating Cue

You are tasked with evaluating personnel qualifications and determining if minimum complement is met for both units per St. Lucie administrative requirements. If not met, determine the minimum staff and the position(s) needed to meet the minimum administrative requirements.

Crew 6 Qualification Roster

Personnel	STA	Shift Commun-icator	Fire Team	Fire Team Leader	SCBA
R. West (US)	X	X			X
N. Cummings (US)	X	X			X
B. Smith (NWE/US)		X	X	X	X
R. Johnson (RO)		X			X
E. Winters (RO)		X			X
J. Jacobs (RO)		X			X
W. Gary (RO)		X			X
L. Harrison (RO)			X	X	X
J. Hart (SNPO)			X		X
T. Green (SNPO)			X		X
J. Meyers (SNPO)					
R. South (SNPO)					X
G. Henry (SNPO)			X		X

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

You are the Shift Manager (non-degree) of crew 6. The following is a crew roster / qualification matrix. All crewmembers are available for duty today. All licensed personnel are active.

Initiating Cue

You are tasked with evaluating personnel qualifications and determining if minimum complement is met for both units per St. Lucie administrative requirements. If not met, determine the minimum staff and the position(s) needed to meet the minimum administrative requirements.

Crew 6 Qualification Roster

Personnel	STA	Shift Commun-icator	Fire Team	Fire Team Leader	SCBA
R. West (US)	X	X			X
N. Cummings (US)	X	X			X
B. Smith (NWE/US)		X	X	X	X
R. Johnson (RO)		X			X
E. Winters (RO)		X			X
J. Jacobs (RO)		X			X
W. Gary (RO)		X			X
L. Harrison (RO)			X	X	X
J. Hart (SNPO)			X		X
T. Green (SNPO)			X		X
J. Meyers (SNPO)					
R. South (SNPO)					X
G. Henry (SNPO)			X		X

Answer Key

	(2)	(4)	(1)	(5)	(1)	(1)	(4)
Name	US	RO	STA	NLO	SC	FTL	FT
R. West	x		x				
N. Cummings	x		x				
B. Smith						x	
R. Johnson		x					
E. Winters					x		
J. Jacobs		x					
W. Gary		x					
L. Harrison		x					
J. Hart				x			x
T. Green				x			x
J. Meyers				x			
R. South				x			
G. Henry				x			x

One NLO who is fire team qualified will have to be called out.

Two individuals both holding SRO licenses (active) and satisfying the qualification requirements of T.S. 6.3.1 fulfilling the Unit SRO (US) and STA roles concurrently. SCBA qualification is required to hold a license position on shift, but does not prevent the individual from being the Shift Communicator. SCBA qualification is required for fire team duties, but does not prevent the individual from holding a non-licensed position on shift.

Personnel expecting to be late or unable to report to work as scheduled shall notify the plant as soon as possible. Shift vacancies shall be filled within the guidance of OSP-204, Filling of Management Shift Vacancies, and OPS-205, Filling of Bargaining Unit Shift Vacancies. If the workload for a classification becomes more than the scheduled shift complement can adequately handle overtime can be utilized for additional personnel. Using overtime to staff above the minimum shift complement shall have prior Operations Supervisor approval.

The minimum operating shift crew complement shall consist of: *

1 Shift Manager

1 Fire Brigade Leader (Qualified Brigade Leader of any classification)

2 Unit Supervisors (1 per unit)

4 Reactor Operators (2 per unit)

2 Senior Nuclear Plant Operators (1 per unit)

2 Nuclear Plant Operators (1 per unit)

2 Associate Nuclear Plant Operators 1 per unit) **

1 Shift Technical Advisor (STA)

1 Shift Communicator (RCO who is meeting Shift Communicator requirements / SRCO / NWE / US / SM)

* Personnel in a Training status may be used to fill a Fire Brigade position if qualified. In this case the crew may run with 1 ANPO.

** Typically a crew will run with one operator covering both ANPO positions. The extra operator will be used to support other departmental activities (e.g., evolutions on other watch stations, clearances, procedure reviews, etc.). Additionally, a crew may run with only one ANPO if a vacancy is created due to vacation, sickness or other employee requested absence, so long as the scheduled work activities and fire team can be performed with 5 operators.

1. Except for the Shift Manager, If a member of the minimum shift crew complement becomes sick or disabled, Then immediate action shall be taken to fill the vacancy. The vacancy shall be filled within two hours.

2. § Shift Technical Advisor – Technical Specifications allow the use of a dual role SRO / STA function in lieu of a stand alone dedicated non-licensed STA. The following are the four possible ways of filling the STA position:

   A. A dedicated non-licensed individual meeting the qualification requirements of T.S. 6.3.1 and AP 0005722, Shift Technical Advisor Initial and Continuing Training.

   B. One individual holding a SRO license (active or inactive) and satisfying the qualification requirements of T.S. 6.3.1 fulfilling the STA role with no individual unit command and control responsibilities.

   C. One individual holding a SRO license (active) and satisfying the qualification requirements of T.S. 6.3.1 fulfilling the SM and STA role concurrently.

   D. Two individuals both holding SRO licenses (active) and satisfying the qualification requirements of T.S. 6.3.1 fulfilling the Unit SRO (US) and STA roles concurrently. If one unit is in Mode 5 or 6, Then that unit's US is NOT required to concurrently satisfy the STA role.

3. An Operator Status Log shall be maintained to document individual operator qualification status:

   A. Operators not qualified in some aspect of their normal duties (failure to satisfy requal, fire team, etc.) will have a form similar to OPS-520, Data Sheet 1, filed in the Operator Status Log.

   B. Upon notification of completion of qualification requirements, the NWE / SRO shall remove the individual's form from the Operator Status Log, sign, and forward to the QA Vault.

References

1. FPL L-2000-188 and L-2001-003, Proposed License Amendments Dual Role SRO / STA, TS Amendments 173 and 113

Approved: (Signature on File)
Operations Supervisor - St. Lucie Plant

	ST. LUCIE PLANT	OPS-207
	OPERATIONS DEPARTMENT POLICY	Rev. 5
	FIRE BRIGADE	Date 08/05/97
		Page 1 of 1

The Nuclear Plant Fire Brigade is the first line of defense in the event of a fire in the protected area. The Fire Brigade consists of a brigade leader and four additional brigade members.

To ensure maximum flexibility in meeting brigade requirements, it is a departmental goal for all non-licensed operators and all bargaining unit SROs to maintain Fire Brigade qualifications.

It shall be the individual Fire Brigade member's responsibility to maintain Fire Brigade qualification. This shall include:

1. Medical treatment to correct physical problems as required.

2. Drill attendance.

3. Requal training.

AP 1800022, Fire Protection Plan, requires that all personnel assigned to the Fire Brigade remain ONSITE at all times. The Operations Policy is more restrictive and requires the following conditions to be adhered to:

1. The Fire Brigade Leader SHALL NOT go inside Containment (unless responding to a fire inside Containment).

2. Fire Brigade Members, excluding the Brigade Leader, ARE PERMITTED to go inside Containment or the Switchyard, but ONLY IF no other Non-Fire Brigade Operators are available.

3. Operations Fire Brigade Member response: If there is a fire Onsite, outside of the Protected Area (i.e. Nuclear Training Center), Operations Fire Brigade Members SHALL RESPOND.

References:

- INPO 84-021 Good Practice, "Conduct of Operations"
- AP 1800022, "Fire Protection Plan"
- EPIP 3100025E, "Fire Emergencies"

Approved: (Signature on File)
Operations Supervisor - St. Lucie Plant

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE SURVEILLANCE REQUIREMENTS

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE SURVEILLANCE REQUIREMENTS

KA Statement: Knowledge of Surveillance Procedures

KA #: 2.2.12 (3.0 / 3.4)

References: ADM-78.01, Post Maintenance Testing

Candidate: _____ Time Start
Name
Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 10 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE SURVEILLANCE REQUIREMENTS

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

You are the Unit Supervisor on Unit 2. The 2B Component Cooling Water Pump has been on a clearance and out of service for 6 hours for Mechanical Maintenance to perform a coupling lube. Maintenance is now complete and the clearance has been released.

Initiating Cue

Determine post-maintenance requirements for the 2B Component Cooling Water Pump.

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

You are the Unit Supervisor on Unit 2. The 2B Component Cooling Water Pump has been on a clearance and out of service for 6 hours for Mechanical Maintenance to perform a coupling lube. Maintenance is now complete and the clearance has been released.

Initiating Cue

Determine post-maintenance requirements for the 2B Component Cooling Water Pump.

Answer Key

Since the 2B Component Cooling Water Pump is a designated IST pump, an IST code run would have to be performed. An Op check would be applicable for non-IST pumps.

APPENDIX C
POST MAINTENANCE TESTING GUIDE
(continued)

PUMPS (Including Fire Pumps):

> **NOTE**
> For Emergency Diesel Generator pumps reference Appendix C, Emergency Diesel Generator (EDG) and Subcomponents.

Pump test activities and descriptions include:

1. Pump Operational Check - Start pump and run sufficient time to verify adequate discharge pressure or flow, no overheating, abnormal noise / vibration, and no seal or external leakage in excess of pump design. Contact System and Component Engineering for assistance, as required.

2. IST Code Run - Per applicable operating procedures in accordance with ASME Section XI In-Service Testing Program. Code run requirements determined by System Performance review.

APPENDIX C
POST MAINTENANCE TESTING GUIDE
(continued)

PUMPS (Including Fire Pumps): (continued)

Post Maintenance Tests / Checks:

Maintenance Activity	Post Maintenance Test
• Replacement or Repair of Pump Internals (Shaft, Bearings, Impeller, Wear Rings, Shaft Seals, Casing, etc.) • Uncoupling of Pump • Coupling Lubrication	1. Pump Op Check (If the pump is a FIRE PUMP, Then following pump replacement or impeller, shaft, or casing modification or replacement, perform the Functional Test per 0-OSP-15.15A/B for the applicable pump only. This procedure should be noted on the PMT form.) If designated as an IST pump, then perform: 2. IST code run (if applicable per SP review)
Oil Change	1. Pump OP Check
Packing Gland, Seal Water, Lubrication System, Cooling Water Systems or Preventive Maintenance, Adjustment of Accumulator Pressure	1. Pump Op Check (If designated as an IST pump, then System Performance will evaluate the need for an IST code run instead.)

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEILLANCE DATA

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEILLANCE DATA

KA Statement: Knowledge of Surveillance Procedures

KA #: 2.2.12 (3.0 / 3.4)

References: OP-2-0010125A, Data Sheet 21

Candidate: _____ Time Start
Name

Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 15 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEILLANCE DATA

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

You are the Reactor Operator on shift on Unit 2. A Post Maintenance (coupling lube) code run is being performed on the 2B Component Cooling Water Pump. The SNPO has called in the applicable data from the field.

Initiating Cue

Evaluate the following data and determine operability status of the 2B Component Cooling Water Pump. All steps of OP-2-0010125A, Data Sheet 21 have been completed up to step 8.

Instrument number	PSL-335
Suction Pressure	5.52
Discharge Pressure	112
IPN	0.322
IPS	0.317
OPN	0.255
OPS	0.296
OPA	0.258

Answer Key

The Pump is in the Alert Range due to high vibration on IPS and OPA. Surveillance requirements would be to double the frequency of testing. Pump would not be out of service. See attached data sheet.

— ANSWER KEY —

DATA SHEET 21
QUARTERLY PUMP CODE RUN
(Page 3 of 3)

2B CCW Pump

Date: / /

Suction Press PX-14-27B (psig)	Disch. Press PI-14-1B (psig)	Calculated Pump Head (ft.) (1)	Vibration Inst. No. PSL-335 (2) Peak Velocity (in./sec) IPN	IPS	OPN	OPS	OPA
5.5	112	245.65	.0322	0.317	0.255	0.296	0.258
§8 Acceptance Criteria	Allowable Range	201.5 to 246.1	<0.325	<0.300	<0.300	<0.300	<0.250
	Alert Range	N/A	0.325 to 0.700	0.300 to 0.700	0.300 to 0.700	0.300 to 0.700	0.250 to 0.600
	Required Action	<201.5 >246.1	>0.700	>0.700	>0.700	>0.700	>0.600

(1) Pump head in ft = (Discharge Pressure - Suction Pressure) x (2.307)
(2) For pump vibration location drawing see ADM-29.02, ASME Code Testing of Pumps and Valves.

The above data has been compared to the acceptance criteria and determined to be:

☐ Acceptable ☒ Alert Range ☐ Required Action Range

Purpose of test: ☐ Quarterly Code Run ☒ Post. Maint. (explain)_____ ☐ Other_____

I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any (i.e., datasheet(s), PMT sheet(s), etc.). Any deviation(s) found during the performance of this procedure has (have) been listed and appropriate actions and notifications made.

RCO_____ SM / US_____

DATA SHEET 21
QUARTERLY PUMP CODE RUN
(Page 3 of 3)

2B CCW Pump

Date: ___/___/___

Suction Press PX-14-27B (psig)	Disch. Press PI-14-1B (psig)	Calculated Pump Head (ft.) (1)	Vibration Inst. No. _____ (2) Peak Velocity (in./sec)				
			IPN	IPS	OPN	OPS	OPA
§8 Acceptance Criteria	Allowable Range	201.5 to 246.1	<0.325	<0.300	<0.300	<0.300	<0.250
	Alert Range	N/A	0.325 to 0.700	0.300 to 0.700	0.300 to 0.700	0.300 to 0.700	0.250 to 0.600
	Required Action	<201.5 >246.1	>0.700	>0.700	>0.700	>0.700	>0.600

(1) Pump head in ft = (Discharge Pressure - Suction Pressure) x (2.307)
(2) For pump vibration location drawing see ADM-29.02, ASME Code Testing of Pumps and Valves.

The above data has been compared to the acceptance criteria and determined to be:

☐ Acceptable ☐ Alert Range ☐ Required Action Range

Purpose of test: ☐ Quarterly Code Run ☐ Post. Maint. (explain)_____ ☐ Other_____

I have reviewed the requirements of this procedure including other surveillances performed during this procedure, if any (i.e., datasheet(s), PMT sheet(s), etc.). Any deviation(s) found during the performance of this procedure has (have) been listed and appropriate actions and notifications made.

RCO_____ SM / US_____

DATA SHEET 21
QUARTERLY PUMP CODE RUN
(Page 1 of 3)

2B Component Cooling Water Pump Date____/____/____ Surv. Start Time:_____ Surv. Stop Time:_____

1. Ensure a temporary test pressure gauge is installed at PX-14-27B (0 to 60 psig, plus or minus 0.5%).
   Instrument ID No._____

2. Open V14135, PX-14-27B on 2B CCW Pump Suct Root. _____ SNPO

3. Ensure the 2B CCW Pump is running.

4. If the 2C CCW pump is operating on the B header, then stop the 2C pump and place control switch in PULL TO LOCK.

5. Check the pump, associated valves and piping for evidence of external leakage. Ensure the overall system conditions are satisfactory. Generate NPWOs as required. SNPO_____.

S__2__OPS
DATE_____
DOCT__Data Sheet__
DOCN__OP-2-0010125A__
SYS__OPS__
COMP__-------__
ITM__DS-21__

DATA SHEET 21
QUARTERLY PUMP CODE RUN
(Page 2 of 3)

NOTE

¶5 Butterfly valves do not have linear flow characteristics when throttled closed. Typically, flow through a butterfly valve does not change appreciably until the valve is approximately half closed. From half closed to full closed, flow is generally reduced at a greater rate per hand wheel revolution as the valve moves towards the full closed position. For example, if from 50% closed, one hand wheel revolution results in a 300 gpm reduction in flow, then from 75% closed, one hand wheel revolution might result in a 600 to 700 gpm reduction in flow. These same flow characteristics also apply when opening a butterfly valve.

6. Throttle the pump discharge valve (SB14148) to obtain 5000 gpm header flow. (FIS-14-1B)

7. Run pump for a minimum of 2 minutes.

8. Record all data on the following table.

9. Lock open the pump discharge valve (SB14148) _____/_____
I.V.

10. Stop pump if not required.

11. Close V14135, PX-14-27B on 2B CCW Pump Suct Root. _____ SNPO

12. Remove temporary test pressure gauge from PX-14-27B. _____ I&C

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

You are the Reactor Operator on shift on Unit 2. A Post Maintenance (coupling lube) code run is being performed on the 2B Component Cooling Water Pump. The SNPO has called in the applicable data from the field.

Initiating Cue

Evaluate the following data and determine operability status of the 2B Component Cooling Water Pump. All steps of OP-2-0010125A, Data Sheet 21 have been completed up to step 8.

Instrument number	PSL-335
Suction Pressure	5.52
Discharge Pressure	112
IPN	0.322
IPS	0.317
OPN	0.255
OPS	0.296
OPA	0.258

6.6 Pump Corrective Action

1. When any pump test parameter falls outside the Allowable Ranges a Condition Report shall be initiated.

2. If any of the pump test parameters exceeds a Required Action level, the pump shall be declared out of service (OOS) and not returned to service until the cause of the deviation is determined and the condition corrected.

3. If any of the pump test parameters exceeds an Alert level, the frequency of testing shall be doubled and a Data Sheet 30, Unscheduled Surveillance Tracking, of OP 1/2-0010125A shall be initiated to schedule the test within forty six (46) days.

4. Further corrective action may include:

   A. Recalibration of the appropriate instruments followed by retest of the pump. If the subsequent test is satisfactory the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.

   B. Repair or replacement of the defective component(s) followed by retest of the pump. If the Post Maintenance test is satisfactory, the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.

   C. If it is suspected that an Alert range measurement may have been anomalous in that the Alert range measurement cannot be readily duplicated, and no other symptoms indicating the pump is not performing acceptably are evident, then the pump may be removed from Alert range test frequency following three (3) successive tests in which allowable range measurements were obtained.

5. Alert or Required Action pump tests shall be documented on their normal test form (data sheet or procedure).

6. Pump operability based upon analysis shall be documented under a Condition Report evaluation.

END OF SECTION 6.6

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEY MAP DATA

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEY MAP DATA

KA Statement: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

KA #: 2.3.4 (2.5 / 3.1)

References: HPP-20, Area Radiation and Contamination Surveys

Candidate: _____ Time Start
Name
Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 15 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE SURVEY MAP DATA

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

You are a Unit 1 Reactor Operator. All three Charging Pumps have been identified as having suspect parts. You have been assigned to escort the System Engineer as the Operations representative during an inspection tour of all three Charging Pumps. The tour will take you into all three Charging Pump rooms.

Initiating Cue

Evaluate the attached survey map for the areas you will be touring, determine what postings you will expect to see when arriving at each room, and, using that information, state whether your general entry RWP will be sufficient for this tour.

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

You are a Unit 1 Reactor Operator. All three Charging Pumps have been identified as having suspect parts. You have been assigned to escort the System Engineer as the Operations representative during an inspection tour of all three Charging Pumps. The tour will take you into all three Charging Pump rooms.

Initiating Cue

Evaluate the attached survey map for the areas you will be touring, determine what postings you will expect to see when arriving at each room, and, using that information, state whether your general entry RWP will be sufficient for this tour.

FLORIDA POWER & LIGHT - PSL

HPS - 7

LOCATION:	CHARGING PUMPS - EL. -5 FT.		
DATE: 8-15-04	(G) GRAVE DANGER - VERY HIGH RAD AREA	(C) CONTAMINATEDAREA	
TIME: 0700	(L) LOCKED HIGH RAD AREA	(P) HOT PARTICLE AREA	
RPT (PRINT): J. Swift	(H) HIGH RAD AREA	(S) SPECIFIC RWP REQUIRED	
RPT SIGNATURE: J. Swift	(R) RADIATION AREA	(B) H.P. COVERAGE REQUIRED	
RWP #:	(M) RADIOACTIVE MATERIAL	β MDA = < 1000 dpm	
	(A) AIRBORNE RADIOACTIVITY AREA	α MDA = dpm	
	(D) HIGHLY CONTAMINATED AREA		
INSTRUMENT TYPE / # R020/3603	INSTRUMENT TYPE / #		
INSTRUMENT TYPE / # L-177/21829	INSTRUMENT TYPE / #		

No	Masslinn dpm / probe area	Hot Part Y / N
A	N/A	N/A
B	N/A	N/A
C	N/A	N/A
D	N/A	N/A
E	N/A	N/A
F	N/A	N/A
G	N/A	N/A

SMEARS IN DPM / 100 CM² (β / α)

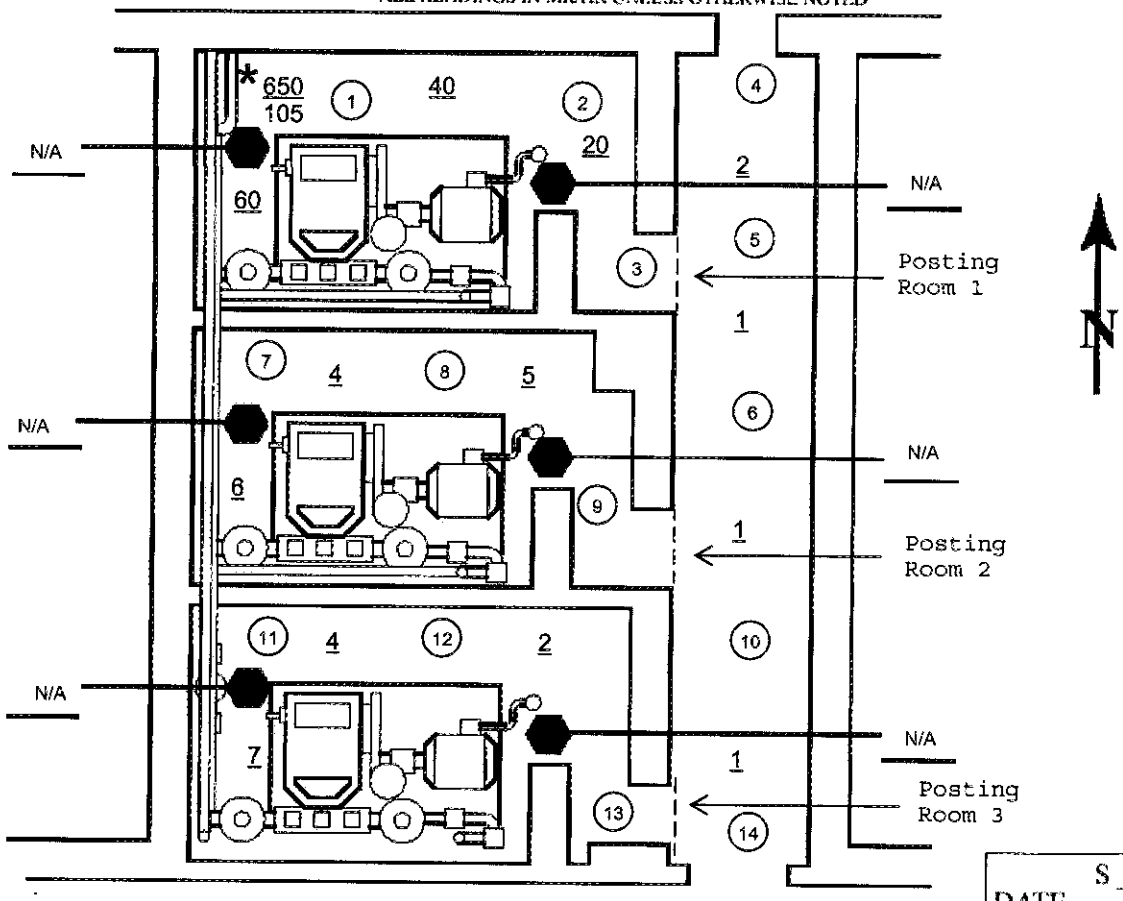
1	<1K /	6	<1K /	11	<1K /	16	N/A /	21	N/A /	26	N/A /
2	<1K /	7	2K /	12	<1K /	17	N/A /	22	N/A /	27	N/A /
3	<1K /	8	2K /	13	<1K /	18	N/A /	23	N/A /	28	N/A /
4	<1K /	9	2K /	14	<1K /	19	N/A /	24	N/A /	29	N/A /
5	<1K /	10	<1K /	15	N/A /	20	N/A /	25	N/A /	30	N/A /

LEGEND:
- General Area Dose Rates
- * Contact Dose Rate
- ○ Smear Location
- △ Neutron Dose Rate (mrem/Hr DDE)
- □ Beta Radiation in mRad/Hr
- Radiation / Contaminated Boundry

Reviewed By:

B. Gold	Bill Gold	8-15-04
Print Name	Signature	Date

ALL READINGS IN MR/HR UNLESS OTHERWISE NOTED



Exposure Received Completing Survey: 5 mrem.

REMARKS:

	S 1 OPS
DATE	
DOCT	SURVEY
DOCN	HPS-7
SYS	HP
COMP	
ITM	

Answer Key

Room 1 postings: Caution-High Radiation Area, Specific RWP Required for Entry

Room 2 postings: Caution-Radiation Area, Contaminated Area

Room 3 postings: Caution-Radiation Area

Hallway posting: None

General Entry RWP could not be used for the tour due to the High Radiation Area.

FPL	ST. LUCIE PLANT HEALTH PHYSICS PROCEDURE NON-SAFETY RELATED	Procedure No. **HPP-20** Current Revision No. **18A** Effective Date **01/08/04**

Title:

AREA RADIATION AND CONTAMINATION SURVEYS

Responsible Department: **HEALTH PHYSICS**

REVISION SUMMARY:

Revision 18A - Incorporated PCR 03-3492 for CR 03-3467 to change Safety Related to Non-Safety Related. (Bonnie Wooldridge, 12/04/03)

Revision 18 - Incorporated PCR 03-2622 to enhance contamination survey requirements. (Vince Munne, 09/18/03)

Revision 17A – Incorporated PCR 03-1996 to add Information Only stamp and S_OPS stamp to form HPP-20.1. (A.B. Sexton, 07/24/03)

Revision 17 – Incorporated PCR 03-1161 to delete requirement to perform independent verification survey when changing postings in HRA, LHRA and VHRA. (Hayden Mercer, 04/24/03)

Revision 16 – Incorporated PCR 03-0751 for posting clarification and change to HPP-20.1 along with survey I.V. clarification. (Elton Forrester, 03/21/03)
AND
Incorporated PCR 02-3070 for CR 02-2715 and PM 02-12-058 to add Form HPP-20.1 to document high radiation area postings changes. (Elton Forrester, 03/03/03)

Revision 15 – Clarified posting requirements to be in accordance with PTN requirements. Raised tool contamination to 20K dpm. (Donald DeBock, 05/20/02)

Revision	FRG Review Date	Approved By	Approval Date
0	12/16/93	C. L. Burton Plant General Manager	12/16/93
Revision 18A	FRG Review Date	Approved By	Approval Date
		N/A Plant General Manager	
		Brent Robinson Designated Approver	09/18/03
		Brent Robinson Designated Approver (Minor Correction)	12/04/03

S_OPS	
DATE	
DOCT	PROCEDURE
DOCN	HPP-20
SYS	
COM	COMPLETED
ITM	18A

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1.0 PURPOSE

1.1 This procedure provides guidelines for the performance of Radiation and Contamination Surveys.

1.2 Discussion

1. Contamination Surveys

A. Contamination surveys are taken by qualified Health Physics personnel to determine the location and magnitude of known or potential contaminated areas, to ascertain trends in radiological conditions, to determine the need for respiratory protection and to determine radiological controls including dress requirements for working in an area.

Routine surveys of areas and locations within the protected area are performed to ensure that contamination does not exist in normally uncontrolled locations. Surveys are performed within the radiation controlled area so that the status of each location is known with reasonable accuracy.

2. Radiation Surveys

A. Radiation Surveys are taken by qualified Health Physics personnel to determine the location and intensity of known or potential radiation areas, to ascertain the dose rate trends in radiological conditions, to allow for maintaining ALARA personnel dose and to determine radiological controls required for an area.

B. Many of the plants portable survey instruments display the radiation levels in units of mr/hr or R/hr. For the purposes of this procedure a reading of 1 mr/hr = 1 mrem/hr and a reading of 1 R/hr = 1 Rem/hr.

3. §3,4 Routine Periodic Radiation and Contamination Surveys are performed on a schedule as specified in Procedure HPP-4, Scheduling of Health Physics Activities.

1.2 Discussion (continued)

4. Special Radiation and/or Contamination Surveys are taken:

A. In areas and/or on equipment when Health Physics requires the information (e.g. potentially contaminated equipment).

B. Upon the request of a Supervisor who may be contemplating work in an area.

C. When an RWP is issued and the potential exists for levels which exceed values posted for the area.

D. In any area where a spill involving radioactive material has occurred.

E. When ARMs (Area Radiation Monitors) indicate a change in radiological conditions.

F. When conditions in an area may change due to; the movement of radioactive liquids or gases through a system.

G. ¶2 When scaffold is built or a ladder installed to an area previously not accessible to personnel.

2.0 REFERENCES

NOTE

One or more of the following symbols may be used in this procedure:

§ Indicates a Regulatory commitment made by Technical Specifications, Condition of License, Audit, LER, Bulletin, Operating Experience, License Renewal, etc. and shall NOT be revised without Facility Review Group review and Plant General Manager approval.

¶ Indicates a management directive, vendor recommendation, plant practice or other non-regulatory commitment that should NOT be revised without consultation with the plant staff.

Ψ Indicates a step that requires a sign off on an attachment.

2.1 $§_1$ 10 CFR 20

2.2 $§_2$ St. Lucie Technical Specifications Manual

2.3 $§_3$ HP-2, FPL Health Physics Manual

2.4 §4 HPP-4, Scheduling of Health Physics Activities

2.5 §5 HPP-22, Air Sampling

2.6 HP-13A, Operation of Portable Survey Instruments

2.7 NUREG 5569, Health Physics Position Data Base, HPPOS-036 and HPPOS - 66 - Pages 52-54.

2.8 St. Lucie Unit 2 UFSAR Sections 12.1.3, 12.3.2, 12.3.4, 12.5.3

2.9 §6 Condition Report Number 97-1793

2.10 ¶1 America Nuclear Insurer's Audit Report Item LR 98-01

2.11 ¶2 PMAI # PM 99-03-101

2.12 ¶3 PMAI # PM 99-03-102

2.13 ¶4 PMAI #PM 99-08-083

2.14 HP-71, Decontamination of Tools, Equipment and Areas

2.15 ¶5 PMAI #PM 99-04-157

2.16 ¶6 PMAI #PM 99-11-120

2.17 ¶7 Condition Report number 00-1376

2.18 ¶8 Condition Report number 01-1365

2.19 Condition Report number 02-0244

2.20 §7 Condition Report number 02-2715

3.0 PREREQUISITES

None

4.0 PRECAUTIONS / LIMITATIONS

4.1 Smears should be separated to prevent cross contamination.

4.2 Protective clothing shall be worn during performance of surveys as specified on an applicable Radiation Work Permit or based on contamination levels expected in areas to be surveyed.

4.3 Under certain circumstances, to assist the Health Physics technician, it is acceptable for personnel other than a Health Physics technician to take smears for the evaluation of contamination levels. This process will take place only under the direction and observation of a qualified Health Physics technician, and approved by the H.P.S.S. /R18

4.4 §6 Prior to use, survey instruments shall:

1. Bear a valid calibration sticker
2. Pass a battery check
3. Pass a daily response source check as described in Ref 3.6

4.5 §3 Copies of Radiation and Contamination Surveys are available for all plant personnel and should be located at the Unit 1 and Unit 2 access control points.

4.6 Locked high radiation areas where general area radiation levels exist at levels in excess of 1 Rem/hr at 12 inches (30 cm) from the radiation source should only be surveyed when approved by the Health Physics Supervisor or designee.

4.7 If unexpected high radiation levels are encountered, notify Health Physics Supervision and restrict access to the area.

4.8 For the purpose of undress, a step-off pad should be considered clean. Any step-off pad found to be contaminated should be replaced with a clean one or deconned.

4.9 ¶6 When setting up an undress area step-off pad, check the immediate area for hazards that could possibly injure an individual and to ensure adequate space for the proper removal of protective clothing. It may be necessary to move a few feet to a safer area with more space for the undress step-off pad.

4.10 All smears should be screened with a dose rate meter prior to counting on counting room instrumentation.

4.11 Any smear greater than 10 mrem/hr should not be counted on counting room instrumentation.

4.12 Used step-off pads are potentially contaminated and could become a source of transferable contamination.

4.13 Restricted areas established within controlled areas shall be surveyed and posted in accordance with this procedure.

4.14 §6 All radiation and contamination levels shall be documented.

4.15 ¶1 Radiation surveys performed outside the Radiation Controlled Area (RCA) should be performed using a Micro R Meter.

1. ¶1 The Health Physics Supervisor should be informed of dose rates in areas outside the RCA that are equal to or greater than 50 microR/hr.

4.16 ¶5,8 Hot Spot postings (stickers) affixed to stainless components in the overhead areas and/or high radiation areas should be removed only when work is performed in that area in order to avoid unnecessary exposure.

4.17 ¶5,8 Additional Hot Spot postings (stickers) shall not be affixed directly on stainless components. The adhesive in some of these stickers contains halogens (i.e., chlorides) that may result in degradation on the component.

4.18 ¶7 Radiation surveys performed on the waste monitoring tanks should be performed using a micro R meter.

1. ¶7 The Health Physics Shift Supervisor should be informed of dose rate increases from the previous survey if the increase exceeds 500 microR/hr.

5.0 RECORDS REQUIRED

5.1 Completed survey forms are QA records and shall be maintained in the plant files in accordance with QI-17-PSL-1, Quality Assurance Records.

5.2 ¶7 HPP-20.1, High Radiation Area Postings Checklist shall be used and completed when areas are re-posted due to changing dose rates.

6.0 INSTRUCTIONS

6.1 General

1. Health Physics personnel should plan the survey by reviewing previous surveys, obtaining required materials, maps, instruments, etc. and dress out in the required protective clothing.

> **NOTE**
> During the first seven (7) days of each month a comprehensive survey will be performed for each location designated as a "weekly" survey. Depending on dose rates in these areas the Health Physics Department head may declare an area an "ALARA Trending Area". For the remainder of the month the weekly survey will be abbreviated. Waist level dose rates will be taken at predetermined locations and compared to the comprehensive survey taken during the first week. Sticker on the floor identify locations.

2. When performing surveys Health Physics personnel should consider the following:

   A. General area radiation level surveys (except for Hot Spots) should be taken between knee and head level.

   B. When posting or verifying a dose rate boundary, the vertical plane of the boundary must be surveyed from floor to approximately six and a half feet overhead.

   C. The highest radiation levels in a room or area should be located for posting purposes and, when applicable, for HOT SPOT identification.

   D. ¶3 Ensure all areas in a room accessible to personnel are surveyed; scaffolds, platforms or ladders.

   E. When performing contamination surveys, vertical and horizontal surfaces and equipment should be included.

   F. The purpose of a DAILY survey is to determine general trends and detect any significant changes in frequently occupied area. Enough survey points should be included to satisfy this purpose.

   G. In general, WEEKLY surveys are normally required in areas that are not occupied as frequently as those that are surveyed daily. Enough survey points should be included to verify the way the room is posted.

/R18

6.1 General (continued)

2. (continued)

H. When performing surveys for RWPs the radiological conditions of the specific area that will be worked (e.g. pump, valve, motor, etc.) must be determined. Enough survey points should be included to determine if additional dosimetry and/or relocation of dosimetry is needed.

3. Record information on survey maps and forms as soon as practical. Survey nomenclature on maps and forms should be as follows:

A. Numbers representing mrem/hr general area dose rate are underlined for gamma, boxed for beta, within a triangle for neutron.

B. Numbers representing mrem/hr contact dose rate are indicated by an asterisk or star next to numbers underlined, boxed or within a triangle, as appropriate.

C. Levels of removable contamination in dpm/100cm^2 should be indicated by circled numbers for smear locations.

D. Units of Rem/hr or additional pertinent nomenclature shall be clearly indicated on maps or forms.

4. Areas shall be posted and previously posted areas shall be updated by personnel performing surveys. Such postings and updating should be noted on the survey maps and forms before the maps are approved. Outdoor postings should be checked for proper colors. Colors may fade due to sun.

5. Personnel performing surveys are responsible for:

A. Initiating radiological controls as indicated by the survey results.

B. Completing and signing the survey forms prior to the end of the shift, if time permits.

C. Routing the original survey to the Health Physics Shift Supervisor via the RWP writer during outages.

D. Placing the completed survey in the completed surveys box during non-outage operation.

E. Notifying the Health Physics Shift Supervisor when changes to postings were made.

6.1 General (continued)

6. A Health Physics Shift Supervisor is responsible for reviewing and signing the completed survey forms.

A. Copies of approved surveys shall be available for plant personnel to review prior to entering the RCA.

END OF SECTION 6.1

6.2 Beta / Gamma Loose Surface Contamination Surveys

1. Perform a smear survey. Each smear survey should cover approximately 100cm^2 (4 inches x 4 inches) or an 18" swipe(s).

2. Mark each smear for identification so that the survey location can be documented on the survey map.

3. Suitable precautions (i.e. lay down masslinn, tape, etc.) should be taken when counting smears from a contaminated area with counting room instrumentation.

4. §6 When counting smears on portable survey equipment from areas or equipment that is potentially contaminated or suspected of having low levels of contamination (1K-2K dpm/100 cm^2), **COUNT** the smears for approximately 15 seconds.

5. §6 When counting gross masslinn smears from areas or equipment that is potentially contaminated or suspected of having low levels of contamination (1K-2K dpm/100 cm^2), **COUNT** the gross masslinn smears in the following manner:

   A. Survey the masslinn with the probe at a distance of one-half inch or less from the surface of the masslinn.

   AND

   B. Move the probe across the surface of the masslinn at a rate of less than 2 inches per second.

   AND

   C. If an increase in the count rate is noted, Then allow the meter reading to stabilize for approximately 15 seconds.

   D. If masslinn is ≥ 50K dpm / probe area resurvey with smears and count for alpha contamination.

6. Gross Masslinn smears are to be used on the Daily Surveillance routine.

   A. Each smear shall cover the entire clean area as defined on map of the Daily Surveillance form.

   B. If masslinn is less than or equal to 1000 dpm/probe area it shall be considered clean.

   C. If masslinn is greater than 1000 dpm/probe area, the area shall be re-surveyed with masslinn or using conventional smears.

/R18 /R18

6.2 Beta / Gamma Loose Surface Contamination Surveys (continued)

7. Gross masslinn smears may be used to perform post-decontamination surveys, or routine surveys in clean areas. In order to be considered clean, the masslinn must be less than 100 corrected counts per minute per probe area.

8. Special consideration should be given to overhead components and systems, which are accessible to personnel without climbing.

9. Approximately 20% of smears or masslinns should be taken other than on the floor (for example - hand rails, pipes, supports, phones, etc.).

10. When performing contamination surveys, special consideration should be given to the clean side of contamination area boundaries. Including step off pads.

END OF SECTION 6.2

/R18

6.3 Alpha Loose Surface Contamination Surveys

1. If a smear survey indicated beta / gamma activity greater than or equal to 50,000 dpm/100 cm^2, analyze one of the highest activity smears, 50 k dpm, in that survey for alpha activity.

2. Record the results of the alpha activity analysis on the survey form along with the identification of the instrument that counted the smear.

3. Analyze smears using a zinc sulfide detector system if available. A counting time of 1 minute is an acceptable counting time.

> **NOTE**
> A gas flow proportional counter may be used if care is exercised to prevent contamination of the counting chamber.

4. §5 If alpha activity in excess of 100 dpm/100 cm^2 is found in an area where work is in progress, notify the HPSS and take an alpha air sample in accordance with Health Physics Procedure, HPP-22, Air Sampling.

END OF SECTION 6.3

6.4 Beta Radiation Surveys

1. Beta Radiation surveys should be performed when:

A. Initially breaching a primary system,

OR

B. Areas of work where beta / gamma contamination levels could be present in excess of 500,000 dpm/100 cm^2

2. Obtain a suitable beta survey instrument. The RO-2 or RO-2A are normally used for beta surveys.

3. Take an open WINDOW and closed WINDOW reading as close to the SOURCE as practical. Do not contaminate the instrument by touching it to the SOURCE.

4. Calculate beta dose rate using the following equation:

beta dose rate = mrem/hr or Rem/hr =

(open window reading - closed window reading) x (CF)

where,

CF = the beta correction factor of the survey instrument

END OF SECTION 6.4

6.5 Recording of Survey Information

1. Counter background cpm shall be recorded on the survey form.

2. Removable surface contamination levels should be recorded in dpm/100 cm^2.

3. If beta / gamma contamination levels are determined to be less than 1000 dpm/100 cm^2, the levels can be recorded as < 1000 dpm/100 cm^2.

4. If alpha contamination levels are determined to be less than MDA, the levels can be recorded as <MDA.

END OF SECTION 6.5

NOTE
Alpha meter shall have an MDA of < 20 dpm/100 cm^2 to be suitable for use.

6.6 Requirements Based on Survey Results

1. Radiation Areas

A. §1,3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, RADIATION AREA**.

B. §1,2,3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 100 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, HIGH RADIATION AREA, SPECIFIC RWP REQUIRED**. Additionally, the area shall have access control requirements established in accordance with the applicable Technical Specifications.

C. §2,3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 1,000 mrem in 1 hour at 12 inches (30 cm) from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **CAUTION, LOCKED HIGH RADIATION AREA, SPECIFIC RWP REQUIRED, HP COVERAGE REQUIRED**. Additionally, the area shall have access control requirements established in accordance with the applicable Technical Specifications.

D. §1,2,3 Any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess for 500 rads in 1 hour at 1 meter from the radiation source or from any surface that the radiation penetrates shall be posted with a conspicuous sign bearing the radiation symbol and the words, **GRAVE DANGER, VERY HIGH RADIATION AREA, SPECIFIC RWP REQUIRED, HP COVERAGE REQUIRED**. Additionally, the area shall have access control requirements established in accordance with 10 CFR 20.

6.6 Requirements Based on Survey Results (continued)

2. To assure proper boundary controls are in place, the vertical plane of the boundary must be surveyed form floor to approximately six and a half feet into the overhead.

3. §3 A component or item having a contact reading greater than 300 mrem/hr and more than 5 times the general radiation levels (i.e. 12 inches from contact) should be posted as a HOT SPOT. The Hot Spot Log should be updated monthly upon completion of the comprehensive surveys.

> **NOTE**
>
> ¶5,8 Hot Spot stickers shall not be "stuck" directly on stainless steel components. Some adhesives contain halogens (i.e., chlorides) that may degrade the component. Alternate means of Hot Spot postings are to be utilized to identify Hot Spots. The recommended method is to affix the Hot Spot sticker to a yellow plastic CAUTION sign attached to the component with Rad rope or ribbon.

4. §1 The boundary of the Radiation Controlled Area shall be maintained at less than 2 mrem/hr. If the radiation levels outside the RCA are found to be greater than 2 mrem/hr, barricade and post the area and take action to reduce the radiation levels to less than 2 mrem/hr.

5. Contamination Areas

A. §3 Any area containing removable surface contamination in excess of 1000 dpm/100cm^2 beta/gamma or 20 dpm/100cm^2 alpha shall be posted as a Contaminated Area.

B. Any area containing removable surface contamination in excess of 100,000 dpm/100cm^2 beta / gamma should be posted as a Highly Contaminated Area.

C. Exits from contaminated areas require as a minimum, a single step-off pad placed on the CLEAN side of the access point for the area.

D. Areas in which contamination exists over a major portion of the area in excess of 100,000 dpm/100cm^2 may require a double step-off pad.

E. Replace step-off pads between areas of higher and lower contamination levels at a frequency determined by contamination surveys.

F. Restricted areas established in the controlled area shall be surveyed and posted in accordance with the requirements of 7.6.1 above.

END OF SECTION 6.6

6.7 Guidelines for Posting of Very High Radiation Areas, High Radiation Areas, Radiation Areas and Contaminated Areas

NOTE

- §7 When changing the level of postings on High Radiation, Locked High Radiation or Very High Radiation Areas, an HPP-20.1 High Radiation Area Postings Change Checklist shall be completed for each posting change.
- When performing independent verification of posting changes, the survey used to perform the posting change is to be used in verifying the change is correct.

§7 The posting of areas in this paragraph are intended as an aid to technicians performing surveys and supervisory personnel in reviewing the posting of areas based on survey results. Independent verification of posting changes is a very important tool to ensure regulatory requirements are met for posting and control of high radiation areas. It is essential that the PSL Health Physics Department confirms any changes to High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas. Verification of proper posting and control of these areas fulfill requirements in PSL Tech Specs and 10CFR20. In addition, establishing regulation and Tech Spec required postings is considered an irreversible act which once completed inaccurately could cause unplanned personnel exposures and violations of regulations.

1. Very High Radiation Areas

ALL areas qualifying as Very High Radiation Areas shall be posted as such at the entrance to the area or on the barrier erected to prevent access to the very high radiation area. Examples are the Reactor Containment Building during power operation and barricades to the fuel transfer tubes during movement of spent fuel.

2. Locked High Radiation Areas

All areas qualifying as locked high radiation areas shall be posted as Locked High Radiation Area, HP Coverage Required and Specific RWP Required for Entry.

Examples of this type of posting are the demineralizer rooms, filter rooms and cubicles, VCT cubicles, Letdown Heat Exchanger Cubicles, Reactor Drain Tank Cubicles and Regenerative Heat Exchanger Cubicles. The focus of this posting is to post at the entry point of the room or area where positive access control can be provided.

6.7 Guidelines for Posting of Very High Radiation Areas, High Radiation Areas, Radiation Areas and Contaminated Areas (continued)

NOTE

§7 When changing the level of postings on High Radiation, Locked High Radiation or Very High Radiation Areas, an HPP-20.1 High Radiation Area Postings Change Checklist shall be completed for each posting change.

3. High Radiation Areas

Where possible, discrete high radiation areas in rooms should be barricaded to define the boundaries of the high radiation area and these boundaries should be posted as a High Radiation Area and specific RWP Required for Entry. Examples of this type of area posting are the reactor head lay down area, bottom of the Safety Injection Tanks on the 43' elevation of Unit 1, reactor drain tank pump strainers and local areas within the pipe penetration rooms and pipe tunnels.

In certain instances the radiation levels within an area may make posting of discrete high radiation areas confusing to workers and impractical to control. In these instances it is acceptable to post an entire area as a High Radiation Area, specific RWP Required for Entry. Examples of this type of area posting is in the loop areas inside the 18' elevation of the Reactor Containment Building, pressurizer cubicles, access point to the reactor cavity.

4. Radiation Areas

Radiation Areas shall be posted in such a manner that anyone entering the area will need to pass within sight of a Radiation Area posting. The posting of discrete areas within the RCA is more effective in alerting workers of the radiological conditions in the area, and should be employed whenever possible.

As in the case of high radiation areas, instances arise in which posting of discrete radiation areas becomes confusing to workers and impractical to control the actual meaning of the posting. In these instances it is appropriate to post the entrance to the area. Examples of this type of radiation area posting are the entrances to each room (LPSI, HPSI, CS) the pipe tunnels, pipe penetration rooms, boric acid concentrators, drumming room, etc.

6.7 Guidelines for Posting of Very High Radiation Areas, High Radiation Areas, Radiation Areas and Contaminated Areas (continued)

5. Contaminated Areas

Contaminated areas should be barricaded and posted as Contaminated Area at the actual contaminated area boundary when possible and not post an entire room as a contaminated area. This type of posting is desirable to reduce the need for protective clothing, reduce the amount of radioactive waste produced and to keep the contaminated area within the plant as small as practical. Examples of this are the sumps in the safeguards rooms, localized areas where work activity is or will cause contamination such as the Unit 1 drumming room, valve stations, etc.

However, in some instances it will be prudent to post an entire room or area as a contaminated area. These areas are those that are known to be contaminated through their everyday use, volume of work in progress in the area or design of the room. Examples of these areas are the Reactor Containment Buildings, Decontamination Room or areas such as safeguards rooms, pipe tunnels and pipe penetration rooms during outages when major work activities are taking place.

6. Reactor Containment Building (during outages)

In general the Reactor Containment Building should be posted as a radiation area at the entrances to the building. Surveys show that the majority of the building qualifies for a radiation area posting.

7. Reactor Auxiliary Building

It is not acceptable to post the entrances to the Reactor Auxiliary Buildings as a Radiation Area and expect this to be an appropriate posting. Rooms which qualify as a radiation area should be posted as such at the entrance to the room. See 6.7.4.

8. Fuel Handling Buildings

It is not acceptable to post the entrances to the fuel Handling Buildings as a Radiation Area and expect this to be an appropriate posting. Rooms which qualify as a radiation area should be posted as such at the entrance to the room. See 6.7.4.

6.7 Guidelines for Posting of Very High Radiation Areas, High Radiation Areas, Radiation Areas and Contaminated Areas (continued)

9. Dry Waste Storage Building

It is not acceptable to post the entrances to the Dry Waste Storage Building as a Radiation Area and expect this to be an appropriate posting. Areas within the Dry Waste Storage Building which qualify as a radiation area should be posted as such at the entrance to the area. See 6.7.4.

10. Steam Generator Blowdown Treatment Facility

It is not acceptable to post the entrances to the Steam Generator Blowdown Treatment Facility as a Radiation Area and expect this to be an appropriate posting. Rooms or areas which qualify as a radiation area should be posted as such at the entrance to the room or area. See 6.7.4.

END OF SECTION 6.7

6.8 Multiple Postings

NOTE

- NRC required postings are **Caution** or **Grave Danger** with the magenta, purple, or black three bladed radiation symbol on a yellow background, together with following applicable designations:

  Radiation Area
  High Radiation Area
  Very High Radiation Area
  Airborne Radioactivity Area
  Radioactive Materials

- Informational postings include HOT SPOT, SPECIFIC RWP REQUIRED, HEALTH PHYSICS COVERAGE REQUIRED FOR ENTRY, and other similar inserts used to alert the worker to specific area requirements.

- Informational Postings will normally be posted at the personnel access point (Doors, Step off Pads, etc.).

1. When multiple postings are needed, Then place the NRC required postings first, followed by any PSL specific informational postings. The general order of multiple postings inserts should be:

A. Radiation Area, High Radiation Area, Locked High Radiation Area, or Very High Radiation Area

B. Airborne Radioactivity Area

C. Radioactive Material(s)

D. Contaminated Area

E. Any additional informational inserts

END OF SECTION 6.8

6.9 Yard Sump Surveys

1. ¶4 Contamination surveys of the U-1 and U-2 ECCS Yard Sumps are required; frequency is defined in HPP-4. This allows Operations to pump these sumps as required to ensure the ECCS piping supports are not standing in water. /R18

   A. In the event contamination is found during this survey, post the area accordingly.

   B. Notify the applicable Control Room not to pump the sump to the storm drains.

   C. Notify HP Supervision as soon as possible.

   D. Decontamination of the area will proceed as soon as possible in accordance with procedure HP-70, Decontamination of Tools, Equipment and Areas.

END OF SECTION 6.9

6.10 Survey of Hot Tool Room /R18

1. The Hot Tool Room is divided into four sectors. A detailed survey will be performed on one sector. The sectors surveyed will rotate to allow the entire tool room to be surveyed monthly. /R18

   A. Open drawers and tool boxes in the selected sector.

   B. Scan tools with frisker.

   C. If there are layers of tools in drawers or box, remove the top ones to ensure tools are checked, replace tools after surveying.

   D. Smear the tools with the highest readings discovered during the frisk.

   E. Frisk the inside of the drawers and toolboxes along with the storage shelves.

   F. Tools or components with smearable contamination shall be contained (i.e., bagged) and tagged and taken to a designated decon facility.

   G. Tools or components with fixed contamination levels exceeding 20K DPM on a direct frisk should be segregated from the tools for re-issue.

   H. When tools or components surveyed in the Hot Tool Room exceed the above limits notify the HPSS.

2. A general area survey of the entire Hot Tool Room will be performed on a weekly basis.

END OF SECTION 6.10

6.11 Maintenance hot shops located within the RCA shall be surveyed in accordance with the requirements of Section 6.10.1.A thru 6.10.1.E. /R18

END OF SECTION 6.11

HPP-20.1
HIGH RADIATION AREA POSTINGS CHANGE CHECKLIST
(Page 1 of 1)

Area Location/Description: _____

	Area Posted From		Area Posted To
☐	Radiation Area	☐	Radiation Area
☐	High Radiation Area	☐	High Radiation Area
☐	Locked High Radiation Area	☐	Locked High Radiation Area
☐	Very High Radiation Area	☐	Very High Radiation Area

RPT	Independent Verification	Action
		All Posting Changes
		Postings can be seen from each avenue of approach.
		Hot spots are tagged.
		Area evaluated for the discovery of high level hot spots (i.e., crud bursts, resin transfers, etc.).
		Warning sign is in place on all temporary shielding.
		Posting High Radiation Area
		The barrier is capable of preventing inadvertent entry.
		No interference near swing gate that would prevent proper operation (i.e., closing).
		The barrier or swing gate is not located too close to the actual work area so as not to become an obstacle to workers.
		The actual area of high radiation is roped off such that workers passing by the area will not have to challenge any barriers.
		Postings Locked High Radiation Area
		The barrier is capable of preventing inadvertent entry.
		Lockable enclosure is locked and secured.
		A red flashing light is in place for all barrier constructions, due to the absence of a lockable enclosure.
		Posting Very High Radiation Area
		The barrier is a complete enclosure capable of preventing undetected circumvention.
		Lockable enclosure is locked and secured.

☐ Survey map(s) attached.

	Print & Sign	Date & Time
Survey and Posting Performed by:	_____	_____
Independent Posting Verification Performed by:	_____	_____
HP Supervision:	_____	Date & Time

FOR INFORMATION ONLY
This document is not controlled. Before use, verify information with a controlled document.
DATE VERIFIED ____/____/____ INITIAL _____

S___OPS
DATE_____
DOCT POSTINGS
DOCN HPP-20.1
SYS HP
COMP_____
ITM_____

END OF HPP-20.1

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE PERSONNEL EXPOSURE LIMITS

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE PERSONNEL EXPOSURE LIMITS

KA Statement: Knowledge of 10 CFR: 20 and related facility radiation control requirements.

KA #: 2.3.1 (2.6 /3.0)

References: EPIP-02, Duties and Responsibilities of the Emergency Coordinator

Candidate: _____ Time Start
Name

Time Finish

Performance Rating: Sat _____ Unsat _____

Validation Time 20 minutes

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

EVALUATE PERSONNEL EXPOSURE LIMITS

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

A Loss of Coolant Accident occurred on Unit 2 six hours ago. An isolable leak had developed on the 2A Charging header and a reentry team that was attempting to close a valve to isolate the leak was unsuccessful due to a broken reach rod. Isolation of the leak is needed to prevent damage to the 2A Charging pump. As the EC (Emergency Coordinator) you have been to authorize a second reentry team tasked with disconnecting the reach rod linkage at the valve hand wheel and closing the valve. Dose rates initially taken six (6) feet from the valve were 2R/hr. HP states that you will be working within two (2) feet of the valve to accomplish this task. The job is estimated to take 20 minutes to perform with ingress and egress dose negligible. Your current dose for the year is 20 mr.

Initiating Cue

Determine your allowable dose for this task, calculate approximate dose that will be received while performing the task and state whether this task will be allowable under current guidelines.

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

A Loss of Coolant Accident occurred on Unit 2 six hours ago. An isolable leak had developed on the 2A Charging header and a reentry team that was attempting to close a valve to isolate the leak was unsuccessful due to a broken reach rod. Isolation of the leak is needed to prevent damage to the 2A Charging pump. As the EC (Emergency Coordinator) you have been asked to authorize a second reentry team tasked with disconnecting the reach rod linkage at the valve hand wheel and closing the valve. Dose rates initially taken six (6) feet from the valve were 2R/hr. HP states that you will be working within two (2) feet of the valve to accomplish this task. The job is estimated to take 20 minutes to perform with ingress and egress dose negligible. Your current dose for the year is 20 mr.

Initiating Cue

Determine your allowable dose for this task, calculate approximate dose that will be received while performing the task and state whether this task will be allowable under current guidelines.

Answer Key

5 REM total dose for performance of actions that would not directly mitigate the event, minimize escalation or minimize effluent releases.

$DR_2 = DR_1 (R_1)^2 / (R_2)^2$

$DR_2 = 2R (36) / (4)$

$DR_2 = 18R/hr$

18R/hr = 0.30R/min (20min)

6R total dose

<u>Task would be NOT be allowed by the EC</u>.

ATTACHMENT 5

§1 **EXPOSURE LIMITS FOR EMERGENCY RESPONSE PERSONNEL**

(Page 1 of 1)

NOTE

1. Both Total Dose (TEDE) and Thyroid Dose (CDE) should be used for purposes of controlling exposure.
2. Protective clothing, including respirators, should be used where appropriate.

For the following missions, the exposure limit is[1]:	Total Dose[2] (TEDE)	THYROID[3] (CDE)
Performance of actions that would not directly mitigate the event, minimize escalation, or minimize effluent releases.	5 REM	50 REM
Performance of actions that mitigate the escalation to the event, rescue persons from a non-life threatening situation, minimize exposures or minimize effluent releases.	10 REM	100 REM
Performance of actions that decrease the severity of the event or terminate the processes causing the event in an attempt to control effluent releases to avoid extensive exposure of large populations. Also, rescue of persons from a life-threatening situation.	25 REM	250 REM
Rescue of person from a life-threatening situation. (Volunteers[4] should be above the age of 45.)	(5)	(5)

(1) Exposure limits to the lens of the eye are 3 times the Total Dose (TEDE) values listed.

(2) Total Dose (TEDE) is the total whole body exposure from both external and internal (weighted) sources - Total Effective Dose Equivalent.

(3) Thyroid Dose (CDE) commitment from internal sources - Committed Dose Equivalent. The same dose limits also apply to other organs (CDE), skin (Shallow Dose Equivalent) and extremities (Extremity Dose Equivalent).

(4) Volunteers with full awareness of risks involved including numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

(5) No upper limit for Total Dose (TEDE) and/or Thyroid Dose (CDE) exposure has been established because it is not possible to prejudge the risks that one person should be allowed to take to save the life of another. Also, no specific limit is given for thyroid exposure since in the extreme case, complete thyroid loss might be an acceptable sacrifice for a life saved. This should not be necessary if respirators and/or thyroid protection for rescue personnel are available as the result of adequate planning.

END OF ATTACHMENT 5

REGION II
ST. LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE PARS DURING A CORE MELT SCENARIO

CANDIDATE _____

EXAMINER _____

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE PARS DURING A CORE MELT SCENARIO

KA Statement: Knowledge of the emergency plan.

KA #: 2.2.29 (2.6 / 4.0)

References:
- EPIP-08 "Off-Site Notifications and Protective Action Recommendations"
- EPIP-01 "Classification of Emergencies"

Candidate: _____ Time Start
Name

Time Finish

Validation Time 20 minutes

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

REGION II
ST LUCIE NUCLEAR PLANT
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE JPM

DETERMINE PARS DURING A CORE MELT SCENARIO

Directions to the candidate for Administrative JPMS:

I will explain the initial conditions and state the task to be performed. You will be allowed to use any reference needed to complete the task. Ensure you indicate to me when you finish your assigned task by returning the material needed for the task that I provided to you.

Initial Conditions

A Loss of Offsite Power / LOCA has occurred on Unit 1. 1B Emergency Diesel Generator tripped on differential current shortly after starting and cannot be restarted. All High Pressure Safety Injection flow was terminated when the 1A High Pressure Safety Injection Pump coupling sheared. Four out of eight available CET temperatures are now indicating in excess of 900^0 F. The event was classified at 9-13-04 at 0900. This is the third message being sent from the Control Room. 10 Meter wind speed is 12 mph and direction is 56^0.

Initiating Cue

Complete the State of Florida Notification Form for this event.

CANDIDATE COPY

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF ANSWER)

Initial Conditions

A Loss of Offsite Power / LOCA has occurred on Unit 1. 1B Emergency Diesel Generator tripped on differential current shortly after starting and cannot be restarted. All High Pressure Safety Injection flow was terminated when the 1A High Pressure Safety Injection Pump coupling sheared. Four out of eight available CET temperatures are now indicating in excess of 900^0 F. The event was classified at 9-13-04 at 0900. This is the third message being sent from the Control Room. 10 Meter wind speed is 12 mph and direction is 56^0.

Initiating Cue

Complete the State of Florida Notification Form for this event.

— ANSWER KEY —

ATTACHMENT 1
FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM
(Page 1 of 1)

On-line Verification: ☐ SWP/DEM ☐ St. Lucie County ☐ Martin County

1. A. ☒ THIS IS A DRILL B. ☐ THIS IS AN EMERGENCY

2. A. Date: 9/13/04 B. Contact Time: _____ C. Reported by: (Name) _____
   D. Message Number: 3 E. Reported from: ☒ Control Room ☐ TSC ☐ EOF

3. Site: A. ☐ Crystal River Unit 3 B. ☒ St. Lucie Unit 1 C. ☐ St. Lucie Unit 2
   D. ☐ Turkey Point Unit 3 E. ☐ Turkey Point Unit 4

4. Emergency Classification: A. ☐ Notification of Unusual Event C. ☐ Site Area Emergency
   B. ☐ Alert D. ☒ General Emergency

5. A. ☒ Emergency Declaration: B. ☐ Emergency Termination: Date: 9/13/04 Time: 0900

6. Reason for Emergency Declaration:* A. ☐ EAL Number OR B. ☒ Description:
   SEVERE CORE DAMAGE *

7. Additional Information or Update: A. ☐ None OR B. ☐
   LOSS OF ALL ECCS *

8. Weather Data: A. Wind direction from 56 degrees B. Downwind Sectors Affected: K, L, M N

9. Release Status: A. ☒ None (Go to Item 11) B. ☐ Is occurring C. ☐ Has occurred, but stopped

10. Release Significance Category (at the Site Boundary):
    A. ☐ Information not available at this time.
    B. ☐ Release within normal operating limits (≤ 3.5 E-1 Ci/sec noble gas, ≤ 4.6 E-5 Ci/sec iodine)
    C. ☐ Non-Significant Fraction of PAG Range (release is > normal limits and < 500 mrem TEDE and 1000 mrem CDE)
    D. ☐ PAG Range (≥ 500 mrem TEDE or ≥ 1000 mrem CDE)

11. Utility Recommended Protective Actions:
    A. ☐ No recommended actions at this time.
    B. ☒ The utility recommends the following protective actions:

☐ Miles	No Action Sectors	Evacuate Sectors	Shelter Sectors
0 – 2	NONE	ALL	NONE
2 – 5	NONE	KLMN	ALL REMAINING
5 – 10	NONE	NONE	ALL

OR

Shelter Zones / Areas: _____
Evacuate Zones / Areas: _____

C. Consider Issuance of KI: ☐ Yes ☒ No

If form is completed in the Control Room, go to Item 15. If completed in the TSC or EOF, continue with item 12.

12. Plant Conditions: A. Reactor Shutdown? ☐ Yes ☐ No B. Core Adequately Cooled? ☐ Yes ☐ No
    C. Containment Intact? ☐ Yes ☐ No D. Core Condition: ☐ Stable ☐ Degrading

13. Weather Data: A. Wind Speed _____ mph B. Stability Class _____

14. Additional Release Information: ☐ N/A OR
    A. ☐ Noble Gases _____ Curies per second B. ☐ Iodines _____ Curies per second
    C. Airborne: Date Started __/__/__ Time Started _____ Date Stopped __/__/__ Time Stopped _____
    D. Liquid: Date Started __/__/__ Time Started _____ Date Stopped __/__/__ Time Stopped _____

Distance	Projected Thyroid Dose (CDE) for 1 Hour	Projected Total Dose (TEDE) for 1 Hour
1 Mile (Site Boundary)	E. _____ mrem	F. _____ mrem
2 Miles	G. _____ mrem	H. _____ mrem
5 Miles	I. _____ mrem	J. _____ mrem
10 Miles	K. _____ mrem	L. _____ mrem

EC or RM Approval Signature: _____ Date: __/__/__ Time: _____

15. Message Received By: Name: _____ Date: __/__/__ Time: _____

* If emergency class escalation is known to be necessary and a new notification form will be transmitted within 15 minutes, then you may go to line 15.

END OF ATTACHMENT 1

/R6

* CANDIDATE MAY USE DIFFERENT TERMINOLOGY

ATTACHMENT 1A
DIRECTIONS FOR COMPLETING THE FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM
(Page 4 of 7)

8. (continued)

G. Enter the downwind sectors in item "B."

Wind From	Sectors Affected	Wind From	Sectors Affected	Wind From	Sectors Affected
348-11	HJK	123-146	PQR	236-258	CDE
11-33	JKL	146-168	QRA	258-281	DEF
33-56	KLM	168-191	RAB	281-303	EFG
56-78	LMN	191-213	ABC	303-326	FGH
78-101	MNP	213-236	BCD	326-348	GHJ
101-123	NPQ	There is no "O" sector		There is no "I" sector	

9. Release Status

A. If there are no indications of a release of radioactive material, check box "A" and go to item 11. /R6

A release of radioactive material (during any declared emergency) is defined as:

- Any effluent monitor increase of (approximately) 10 times or one decade above pre-transient values

OR

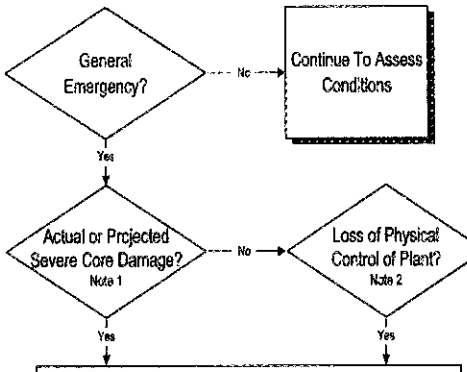
- Health Physics detecting airborne radioactivity levels in excess of 25% derived air concentration (DAC) outside of plant buildings due to failure of equipment associated with the declared emergency.

B. If a release of radioactive material is occurring, even though it may be less than normal operating limits, check box "B."

C. If a release has occurred but stopped, check box "C." /R6

Dose Assessment personnel in the TSC or EOF will have this information. The TSC Chemistry Supervisor, TSC HP Supervisor or EOF HP Manager should be contacted for the data.

ATTACHMENT 2
DETERMINATION OF PROTECTIVE ACTION RECOMMENDATIONS (PARs)
(Page 4 of 5)



MILES	NO ACTION	EVACUATE	SHELTER
0-2	None	All	None
2-5	None	(Sectors Affected)	All Remaining
5-10	None	None	All

MILES	NO ACTION	EVACUATE	SHELTER
0-2	None	None	All
2-5	All Remaining	None	(Sectors Affected)
5-10	All	None	None

Notes
1. Severe core damage is indicated by:
   - Loss of critical functions required for core protection (e.g., loss of injection with LOCA) OR
   - High core temperatures (valid CET greater than 700° F) OR
   - CHRRM reading greater than 4.2 E4 R/hr.
2. Loss of physical control of Control Room or vital reactor operating areas to intruders.

PARs Based on Off-Site Dose
(For use with manual dose calculation only. Not to be completed when Class A Model is used)

TEDE DOSE	CDE (Thyroid) DOSE		0-2 Miles Use 1 mile value	2-5 Miles Use 2 mile value	5-10 Miles Use 5 mile value (Beyond 10 miles Use this Column and the 10 mile Dose Value)
TEDE 500*-999 mrem	CDE 1000*-4999 mrem	→	Shelter All	Shelter (Sectors Affected)	Shelter (Sectors Affected)
TEDE 1000-4999 mrem	CDE 5000-24999 mrem	→	Evacuate All	Evacuate (Sectors Affected) + Shelter All Remaining	Evacuate (Sectors Affected) + Shelter All Remaining
TEDE 5000 mrem or Greater	CDE 25000 mrem or Greater	→	Evacuate All	Evacuate All	Evacuate (Sectors Affected) + Shelter All Remaining

*Dose below this level requires NO ACTION

TEDE DOSE — Use the following terms in this table: **NONE, ALL, ALL REMAINING or fill in the letters of the sectors affected.**

Miles	NO ACTION	EVACUATE	SHELTER
0-2			
2-5			
5-10			
> 10			

CDE (Thyroid) DOSE — Use the following terms in this table: **NONE, ALL, ALL REMAINING or fill in the letters of the sectors affected.**

Miles	NO ACTION	EVACUATE	SHELTER
0-2			
2-5			
5-10			
> 10			

(F/CF/EPIP-08/APP C-R1)

ATTACHMENT 1
EMERGENCY CLASSIFICATION TABLE
(Page 14 of 20)

NOTE
Activation of the Emergency Response Facilities does not require declaration of an emergency or entry into a specific emergency classification.

EVENT/CLASS	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
6.A. INCREASED AWARENESS OR POTENTIAL CORE MELT (Page 1 of 2)	Emergency Coordinator's judgement that plant conditions exist which warrant increased awareness on the part of the operating staff and/or local authorities. 1. The plant is shutdown under abnormal conditions (e.g., exceeding cooldown rates or primary system pipe cracks are found during operation). OR 2. Any plant shutdown required by Technical Specifications in which the required shutdown is not reached within action limits.	§2 Emergency Coordinator's judgement that plant conditions exist which have a potential to degrade the level of safety at the plant.	§2 Emergency Coordinator's judgement that plant conditions exist which are significantly degrading in an uncontrollable manner.	§2 Emergency Coordinator's judgement that plant conditions exist that make release of large amounts of radioactivity in a short period appear possible or likely. (Any core melt situation.) 1. LOCA with failure of ECCS leading to severe core degradation or melt. OR 2. LOCA with initially successful ECCS and subsequent failure of containment heat removal systems for greater than 2 hours. OR 3. Total loss of feedwater followed by failure of once-through-cooling (ECCS) to adequately cool the core. OR 4. Failure of off-site and on-site power along with total loss of feedwater makeup capability for greater than 2 hours. OR 5. ATWS occurs which results in core damage or causes failure of core cooling and make-up systems. OR 6. Any major internal or external event (e.g., fire, earthquake or tornado substantially beyond design basis) which in the ECs opinion has or could cause massive damage to plant systems resulting in any of the above. (continued on next page)
6.A. INCREASED AWARENESS OR POTENTIAL CORE MELT				

AFTER CLASSIFYING, GO TO EPIP-02, DUTIES AND RESPONSIBILITIES OF THE EMERGENCY COORDINATOR