



# Florida Power

CORPORATION  
Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DPR-72

February 22, 2000  
3F0200-12

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555-0001

Subject: Significance Determination Process (SDP) Worksheets

- References:
- (1) FPC to NRC letter 3F0393-03, "Individual Plant Examination for Internal Events," dated March 9, 1993.
  - (2) FPC to NRC letter 3F0797-05, "Individual Plant Examination - Internal Events," dated July 11, 1997.
  - (3) NRC to FPC letter 3N0698-20, "Crystal River Unit 3 - Supplemental Staff Evaluation Report Regarding Individual Plant Examination Report-Internal Events (TAC No. M74401)," dated June 30, 1998.

Dear Sir:

The purpose of this letter is to submit draft site-specific Significance Determination Process (SDP) worksheets to the NRC. The attached site-specific SDP worksheets were developed by Florida Power Corporation (FPC) using experience gained through participation in the NRC workshop. The attached site-specific SDP worksheets are in draft format and are considered to be a "work-in-progress."

Brookhaven National Laboratories (BNL) is also developing Crystal River Unit 3 (CR-3) site-specific SDP worksheets for the NRC based on previously docketed Individual Plant Examination (IPE) for Internal Events information. FPC anticipates inconsistencies between the FPC and BNL developed site-specific SDP worksheets due to plant modifications made since the IPE submittals, including modifications to the High Pressure Injection and Low Pressure Injection Systems, and installation of a third Emergency Feedwater Pump. The net effect of these modifications on Probabilistic Risk Analyses (PRAs) for CR-3 must be considered by BNL during development of the site-specific SDP worksheets in order to provide an accurate assessment of risk significance. To assist BNL, FPC developed the attached draft site-specific SDP worksheets, which take into consideration those modifications. FPC requests that the attached draft site-specific SDP worksheets be forwarded to BNL for consideration.

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This matter has been discussed with the CR-3 NRR Project Manager. The draft site-specific SDP worksheets developed by FPC were transmitted to the CR-3 NRR Project Manager and to an NRC Region II Senior Reactor Analyst by facsimile on February 8, 2000, and February 15, 2000, respectively.

This submittal contains no new commitments. If you have any questions regarding this submittal, please contact Mr. Sid Powell, Manager, Nuclear Licensing, at (352) 563-4883.

Sincerely,



T. H. Taylor  
Director, Nuclear Operations Engineering

THT/dwh  
Attachment

xc: Regional Administrator, Region II  
Senior Resident Inspector  
NRR Project Manager

**ATTACHMENT (DRAFT)  
 INITIATING EVENT MATRIX FOR CR-3**

Affected System	Support Systems (1)	Initiating Event Scenarios
HPI/HPR (MU) - High Pressure RCS makeup	SW, DC, RW, DP, BWST, SUMP, Operator action	All except LLOCA
LPI/LPR (DH) - Low Pressure RCS makeup	DC, RW, DP, BWST, SUMP, Operator action	All
DHR - Long Term Primary Cooling	DC, RW, DP, Operator action	SGTR
CF - Core Flood		LLOCA
SC - Secondary Cooling	EFW, AFW, MFW	All except MLOCA and LLOCA
EFW - Emergency Secondary Cooling (auto)	DP	All except MLOCA and LLOCA
AFW - Emergency Secondary Cooling (manual)	SW, DP, Operator action	All except MLOCA and LLOCA
PR - Primary Relief (PORV,PSV)	DP	All except MLOCA and LLOCA
RCI - RCS Integrity (PORV, ISO)	DP	Transients, SGTR
ISO - OTSG Isolation	DP	SGTR
REFILL - BWST Refill	Operator action	SGTR
DP - DC Power		All
EG - Emergency Generation	DP	LOOP transient

(1) Most of the systems also require AC power. However, the AC power systems have not been explicitly listed due to the inherent dependencies and diversity of sources.

**ATTACHMENT (DRAFT)**  
**SDP TABLE 1 FOR CR-3**

**ESTIMATED LIKELIHOOD FOR INITIATING EVENT OCCURRENCE DURING DEGRADED PERIOD**

Row	Approx. Freq.	Event Type	Estimated Likelihood Rating		
			A	B	C
I	> 1 per 1 -10 yr	T1 - Reactor Trip T14,T15 - Loss of OPT or BEST	A	B	C
II	1 per 10 - 10 <sup>2</sup> yr	T2 - Loss of Main Feedwater T3 - Loss of Off-site Power T4 - Excessive Feedwater T5 - Steam/Feedline Break T7 - Spurious ES Actuation	B	C	D
III	1 per 10 <sup>2</sup> - 10 <sup>3</sup> yr	R - SGTR T6 - Spurious Pressurizer Low Pressure Signal T8,T9 - Loss of A,B ES Bus T12,T13 - Loss of A,B DC BusT13	C	D	E
IV	1 per 10 <sup>3</sup> - 10 <sup>4</sup> yr	S - Small LOCA	D	E	F
V	1 per 10 <sup>4</sup> - 10 <sup>5</sup> yr	M - Medium LOCA	E	F	G
VI	< 1 per 10 <sup>5</sup> yr	A - Large LOCA	F	G	H
			> 30 days	30 - 3 days	< 3 days
<b>Exposure Time for Degraded Condition</b>					

**ATTACHMENT (DRAFT)  
 PHASE 2 RISK ESTIMATION WORKSHEET FOR CR-3 (LLOCA)**

Estimated Frequency (Table 1 Row) _____ Exposure time _____ Table 1 result (circle): A B C D E F G H			
<u>Safety Functions Needed</u>  Low Pressure Injection (HPI) Low Pressure Recirculation (LPR) Core Flood (CF)		<u>Full Creditable Mitigation Capability for each Safety Function:</u>  1/2 DH Trains from BWST 1/2 DH Trains from Sump 1/2 CFT Trains	
Circle affected functions	Recovery of failed train	Remaining Mitigation Capability Rating for each affected sequence	Sequence Color
LLOCA - CF - LPI			
LLOCA - CF - LPR			
Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:			
Note 1: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.			

**ATTACHMENT (DRAFT)**  
**PHASE 2 RISK ESTIMATION WORKSHEET FOR CR-3 (MLOCA)**

Estimated Frequency (Table 1 Row) _____ Exposure time _____ Table 1 result (circle): A B C D E F G H			
<u>Safety Functions Needed:</u>  <b>Makeup Injection (HPI)</b>  <b>Makeup Recirculation (HPR)</b>		<u>Full Creditable Mitigation Capability for each Safety Function:</u>  <b>1/2 MU Trains from BWST          (1/3 MU pumps and 3/4 Injection Paths)</b> <b>1/2 Trains from SUMP          (1/2 DH pumps and 1/3 MU pumps and 3/4 Injection Paths and operator action)</b>	
Circle affected functions	Recovery of failed train	Remaining Mitigation Capability Rating for each affected sequence	Sequence Color
MLOCA – HPI			
MLOCA – HPR			
<b>Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:</b>  Note 1: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.			

**ATTACHMENT (DRAFT)**  
**PHASE 2 RISK ESTIMATION WORKSHEET FOR CR-3 (SLOCA)**

Estimated Frequency (Table 1 Row) _____ Exposure time _____ Table 1 result (circle): A B C D E F G H			
<u>Safety Function Needed</u>		<u>Full Creditable Mitigation Capability for each Safety Function</u>	
Makeup Injection (HPI)		1/2 MU Trains from BWST (1/3 MU pumps and 3/4 Injection Paths)	
Makeup Recirculation (HPR)		1/2 Trains from SUMP (1/2 DH pumps and 1/3 MU pumps and 3/4 Injection Paths and operator action)	
Secondary Cooling (SC)		1/3 EFW trains (diverse) EFW-A/B = 1 steam EFW pump / 1 Diesel EFW pump	
Primary Relief (PR)		AFW = 1 AFW pump or 1 motor EFW pump (operator action required) 1/1 PORV or 1/2 PSVs	
Circle affected functions	Recovery of failed train	Remaining Mitigation Capability Rating for each affected sequence	Sequence Color
SLOCA - HPR			
SLOCA - HPI			
SLOCA - SC - HPR			
SLOCA - SC - HPI			
SLOCA - SC - PR			
Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:			
Note 1: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.			

**ATTACHMENT (DRAFT)**  
**PHASE 2 RISK ESTIMATION WORKSHEET FOR CR-3 (SGTR)**

Estimated Frequency (Table 1 Row) _____ Exposure time _____ Table 1 result (circle): A B C D E F G H			
<b><u>Safety Functions Needed:</u></b>  Makeup Injection (HPI) Makeup Recirculation (HPR)  Feedwater (FWA/FWI) (A=affected) (I=Intact) Secondary Cooling (SC) OTSG Isolation (ISO) Long Term Cooling (DHR) BWST Makeup (REFILL)		<b><u>Full Creditable Mitigation Capability for each Safety Function:</u></b>  1/2 MU trains 1/2 DH Pumps and 1/2 suction paths from SUMP and 1/3 MU pumps and 3/4 Injection paths (operator action) 1/3 EFW trains (diverse) EFW-A/B = 1 steam EFW pump / 1 Diesel EFW pump AFW = 1 AFW pump or 1 motor EFW pump (operator action required) 1 TBV or 1 ADV path from Intact OTSG 2/2 MSIVs 1/2 DH pumps and 1 drop line 1/1 flow path from DW and 1/1 flow path from CA	
Circle affected functions	Recovery of failed train	Remaining Mitigation Capability Rating for each affected sequence	Sequence Color
SGTR - ISO - DHR - REFILL			
SGTR - SC - DHR			
SGTR - SC - ISO - REFILL			
SGTR - HPI - ISO			
SGTR - HPI - SC			
SGTR - FWI DHR			
SGTR - FWI - ISO - REFILL			
SGTR - FWI - HPI			
SGTR - FWI - FWA - REFILL			
SGTR - FWI - FWA - HPI			



**Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:**

**Note 1: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.**

**ATTACHMENT (DRAFT)**  
**PHASE 2 RISK ESTIMATION WORKSHEET FOR CR-3 (Transients)**

Estimated Frequency (Table 1 Row) _____ Exposure time _____ Table 1 result (circle): A B C D E F G H			
<u>Safety Functions Needed:</u>		<u>Full Creditable Mitigation Capability for each Safety Function:</u>	
Secondary Cooling via EFW (SCE)		1/2 EFW Trains w/auto actuation (diverse) (1 steam EFW pump / 1 Diesel EFW pump)	
Secondary Cooling via AFW (SCA)		1/2 AFW Trains (diverse) 1 AFW pump or 1 motor EFW pump (operator action required)	
Secondary Cooling via MFW (SCM)		1/2 MFW Trains (operator action)	
Primary Relief (PR)		1/1 PORV or 1/2 PSVs	
RCS Integrity (RCI)		1/1 PORV or 2/2 PRZ Safety Valves (maintain close capability)	
Makeup Injection (HPI)		1/2 MU Trains from BWST (1/3 MU pumps and 3/4 Injection Paths)	
Makeup Recirculation (HPR)		1/2 Trains from SUMP (1/2 DH pumps and 1/3 MU pumps and 3/4 Injection Paths and operator action)	
Circle affected functions	Recovery of failed train	Remaining Mitigation Capability Rating for each affected sequence	Sequence Color
T - RCI - HPR			
T - RCI - HPI			
T - SCE - RCI - HPR			
T - SCE - RCI - HPI			
T - SCE - SCA - RCI - HPR			
T - SCE - SCA - SCM - HPR			
T - SCE - PR			
<b>Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:</b>			
<small>Note 1: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.</small>			