

Docket No.: 50-382

Mr. R. S. Leddick
Senior Vice President - Nuclear Operations
Louisiana Power and Light Company
142 Delaronde Street
Post Office Box 6008
New Orleans, Louisiana 70174

Dear Mr. Leddick:

Subject: Request for Additional Information - Procedures Generation Package

DISTRIBUTION

Docket File 50-382

NRC PDR
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JLee
JWilson
NGrace
EJordan
Attorney, OELD

The staff has reviewed your Function Recovery Guideline, which was the last portion of the Waterford Procedures Generation Package (PGP), and which was submitted by letter dated May 2, 1984.

In order for the staff to close out this issue, you should revise the Waterford PGP to address the issues identified in 640.24, 640.25 and 640.26 of the enclosure by fuel load, and the remaining issues by June 30, 1984. It should be noted that the examples provided herein are for illustration only, and are not intended to reflect Waterford 3 staffing or philosophy, nor to provide complete descriptions in the specific areas.

If you have any questions about this request, contact the project manager, J. Wilson, at (301) 492-7702.

Sincerely,

151
George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

Enclosure:
As stated

cc: See next page

DL:LB#3
JWilson/yt
5/29/84

DL:GWK
GWKnighton
5/30/84

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PDR ADDCK 05000382
F PDR

Waterford 3

Mr. R. S. Leddick
Vice President - Nuclear Operations
Louisiana Power & Light Company
142 Delaronde Street
New Orleans, Louisiana 70174

W. Malcolm Stevenson, Esq.
Monroe & Leman
1432 Whitney Building
New Orleans, Louisiana 70130

Mr. E. Blake
Shaw, Pittman, Potts and Trowbridge
1800 M Street, NW
Washington, DC 20036

Mr. Gary L. Groesch
2257 Bayou Road
New Orleans, Louisiana 70119

Mr. F. J. Drummond
Project Manager - Nuclear
Louisiana Power and Light Company
142 Delaronde Street
New Orleans, Louisiana 70174

Mr. K. W. Cook
Nuclear Support and Licensing Manager
Louisiana Power & Light Company
142 Delaronde Street
New Orleans, Louisiana 70174

Luke Fontana, Esq.
824 Esplanade Avenue
New Orleans, Louisiana 70116

Stephen M. Irving, Esq.
535 North 6th Street
Baton Rouge, Louisiana 70802

Resident Inspector/Waterford NPS
P. O. Box 822
Killona, Louisiana 70066

Mr. Jack Fager
Middle South Services, Inc.
P. O. Box 61000
New Orleans, Louisiana 70161

Regional Administrator - Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76012

Carole H. Burstein, Esq.
445 Walnut Street
New Orleans, Louisiana 70118

ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION
WATERFORD 3 STEAM ELECTRIC STATION
FUNCTION RECOVERY GUIDELINES
PROCEDURES GENERATION PACKAGE

The NRC staff has completed its review of the Function Recovery Guideline (FRG) portion of Louisiana Power and Light's (LP&L's) Emergency Procedures Generation Package (PGP) for the Waterford 3 Steam Electric Station, which was submitted in a letter dated May 3, 1984, from K. W. Cook to G. W. Knighton. To allow us to find the PG acceptable, the following issues must be acceptably addressed in a revision to the Waterford 3 PGP. (NOTE: The examples are provided for illustration only, and are not intended to reflect Waterford 3 staffing or philosophy, nor to provide complete descriptions in the specific areas.)

640.23

We have a general concern that there appears to be a lack of understanding regarding the function orientation provided in CEN-152, which are the generic EOP guidelines developed by the Combustion Engineering Owners' Group. As currently written, the Waterford FRGs added a number of event-specific steps to the CEN-152 FRG mitigative strategy, which may degrade the operators' ability to objectively address the functions without "assuming" an event. Describe how you will assure that the functional characteristics of the emergency operating procedures (EOPs) are understood by the plant operations personnel and the plant EOP training staff. This description must be provided prior to exceeding 5% of rated core power.

The following items should be addressed in a revision to the Waterford Technical Guidelines and associated EOPs and they must be resolved before fuel load:

640.24

FRG E-1 "Vital Auxiliaries": This FRG contains a large number of steps that are unnecessary for addressing this function. As the FRG is currently written, it provides mitigative action for a station blackout event, and as such it addresses a number of other safety functions. This has the effect of making the FRG an event-oriented, instead of a function-oriented, procedure. A separate event procedure already exists for this event. Strict adherence to the delineation between the event- and function-oriented portions of CEN-152 must be maintained, so that the operators' objectivity is not challenged when they are trying to mitigate the consequences of multiple failure, or confusing, accidents or transients. In addition, the FRG addresses secondary systems not related directly to restoring the function. All three success paths need to be rewritten to include only those actions that relate to restoring power (not systems) to those portions of the distribution system that will be needed by successive functions. This issue needs to be addressed prior to fuel load because, as currently written and with its placement before the reactivity control FRG, there could be an excessive delay before the operators address the issue of ensuring the reactor is shut down.

640.25

FRG E-2, "Reactivity Control," Success Path II-1: This success path has been modified from CEN-152 to include manual rod insertion before emergency boration. The justification provided is not sufficient to warrant the deviation from CEN-152. Manual rod drivedown needs to be placed after emergency boration, as it is in CEN-152, or else additional analysis of the issue of ATWS and associated reactivity insertion rates should be performed and justification should be provided that addresses the relative reactivity insertion rates between emergency boration and manual rod drivedown.

640.26

Success Path II-3, Steps 7 and 8: These two steps discuss the use of HPSI and LPSI in terms of a LOCA, which is an event, not in terms of the function being addressed in this particular success path; namely, reactivity control. The basis provided for Step 8 quotes the LOCA guideline, not the reactivity control guideline. To address the immediate technical question, these steps and associated bases need to be revised to address the particular function being addressed, which in this case is reactivity control. The steps need to include criteria for boron addition rate for each system. This change is required to ensure that operators retain the proper orientation towards the safety functions, and not allow their objectivity to be challenged by "assuming" an event.

The following items should also be addressed in a revision to the Waterford Technical Guidelines and associated EOPs, and they must be resolved prior to exceeding 5% of rated core power:

640.27

The justification for including the "Maintenance of Vital Auxiliaries" Safety Function, as a higher priority than "Reactivity Control," needs to be included in the Waterford Technical Guidelines.

640.28

The success criteria for Success Paths V-1, V-2 and V-3 (Pages 460-462) include "Level is being restored by either MFW OR EFW flow." The corresponding criteria specified in CEN-152, Page 10-104, is "At least one S/G level is ... being restored by a feedwater flow >[150] gpm." The Waterford success criteria need to be either modified to include a minimum acceptable flow rate, or an acceptable basis for this deviation needs to be provided which includes how the success path can be satisfied with no indicated level.

640.29

Success criteria for Success Path VII-2: The Waterford guidelines added an additional success criteria for this path that allows success if containment pressure is both 17.7 psia and constant or dropping. This additional criteria was added (as stated by Mark Jones (LP&L) in a conference call with Jim Clifford (NRC) on May 10, 1984) to provide success criteria when containment spray had been terminated. The additional success criteria need to be expanded to include containment temperature criteria to be acceptable.

640.30

Success criteria for Success Path VII-2: The Waterford success criteria b.1), "Containment Spray flow exists" does not include the minimum required flow [1500 gpm] specified in CEN-152. Modify this success criteria to include the minimum required spray flow or provide technical justification for this deviation from CEN-152.

640.31

Success Path II-3, Step 4: This guideline step, as written, does not include the requirement from CEN-152 (Page 10-21, Step 3) that the reactivity control success path criteria be met before SI can be terminated. In addition, the "Basis" was incorrectly quoted from CEN-152, in that the quote deleted "the reactivity control and ..." between the words "until" and "SIS" in the first sentence. Mark Jones (LP&L) indicated in the May 10, 1984 conference call that the SI termination criteria for this step in the EOP did include the reactivity control success path criteria. The Waterford guideline needs to be modified to reflect the requirement to meet the reactivity control success criteria before SI termination.

640.32

Success Path III-2, Steps 10 and 13: These steps contain the success path criteria. As indicated in the "Operational Considerations" portion of Step 4 of E-0, "Recovery Actions: General Instructions," "Safety functions, as specified on Safety Function Status Checklist, shall be continuously monitored throughout the use of this procedure." In addition, these criteria are checked in Step 24 of Success Path III-2. Steps 10 and 13 are, therefore, unnecessarily redundant, and should be deleted.

640.33

Success Path III-2, Step 17: This step was added in the Waterford guidelines to the steps specified by CEN-152. The basis for the step discusses changing component status as the cooldown progresses. Since Step 6 of this success path already covers operation of SI, containment isolation is not addressed in this success path, and since no cooldown instructions are provided in the Functional Recovery Guideline (See E-0, Step 6), the step needs to be deleted.

640.34

Success Path III-2, Step 18: This step restores normal charging and letdown to allow the operator to exit this procedure into the Plant Operating Procedure. The success criteria for this success path, however, only deal with SI flow. In addition, the operators are required to exit from the FRG to the diagnostic section of the ENTRY PROCEDURE, not directly to the Plant Operating Procedure. Thus, this step is inappropriate in the FRG, and should be deleted.

640.35

Success Path III-2, Step 23: This step requires realignment of Safety Injection pump discharge to both Hot and Cold legs 2-4 hours post-LOCA. This action is clearly an event-oriented action, which is inappropriate to the FRG. If the operators do not know the event 2-4 hours after the event, this action should not be taken. For multiple failures, no analysis is referenced or discussed that shows that the action specified in this step is, or would be, appropriate. This step should be deleted from the FRG.

640.36

Success Path IV-2, Step 1: The stated objective of this step is to direct the operator to Success Path IV-3 if an SIAS has occurred. As written, the step has the following problems:

- a. SIAS occurs at 1684 psia. This step has the operator wait until pressure is below the HPI shutoff head (1385 psia) before checking whether SIAS has occurred. While it is understandable to wait until HPI will be effective, waiting for actual HPI injection is inconsistent with the stated objective of the step.
- b. Success Path IV-3, Step 1 verifies SIAS at 1684 psia. Thus, Step 1 of Success Path IV-2 and Step 1 of Success Path IV-3 are inconsistent.
- c. Success Path III-1, Step 1 has an identical purpose to Success Path IV-2, Step 1, but one of these steps is tied to pressure and one is tied to the SIAS itself. These two steps are inconsistent.

This step should be restated to refer to the SIAS itself, not to pressure, or the objective and justification should be modified to address the actual purpose of the step in the context of the success path.

640.37

Success Path IV-2, Step 3: This step puts letdown in service if SIAS or CIAS has occurred. Step 3 will never be used, given the current purpose of Step 1.

640.38

Success Path IV-2, Steps 2 and 4: These two steps state that use of charging for pressurizer level control is not addressed in this success path because pressurizer level control should have been established in the Inventory Control Subprocedure. This will not be true if Inventory Control Success Path III-2 is used. It will be possible to meet the success criteria in Path III-2 of having adequate SI flow vs. pressure without determining pressurizer level. In addition, the success criteria for minimum pressurizer level in Path III-1 is too low to allow operation of pressurizer heaters. Also, even if minimum pressurizer level had been established in Path III-1, no attempt is made in that success path to raise level to compress the steam bubble to raise pressure. Success Path IV-2 needs to be modified to address (1) restoration of pressurizer level, (2) use of changes in pressurizer level to change pressure prior to the last resort of taking the pressurizer solid, and (3) use of pressurizer heaters and level changes after restoring pressurizer level above the heater cutoff setpoint.

640.39

Success Path IV-3, Step 4: As currently written, this step does not address the requirement of Step 3 on Page 10-45 of CEN-152, that the pressure control criteria, in addition to the ECCS criteria, be met before ECCS is throttled or stopped. The "Basis" section of this Waterford guideline step incorrectly references CEN-152 in that it has left out meeting the pressure control criteria. This step needs to be modified to clearly state that pressure control criteria must be met before throttling or stopping SI.

640.40

Success Path IV-3, Steps 7 and 8: These two steps address proper SI flow vs. pressurizer pressure, which are the success criteria for this success path. The criteria should be addressed in Step 4 of this success path, as stated in the preceding comment. In addition, as indicated in the "Operational Considerations" portion of Step 4 of E-0, "Recovery Actions: General Instructions," "Safety functions, as specified on Safety Function Status Checklist, shall be continuously monitored throughout the use of this procedure." Therefore, these steps should be deleted.

640.41

Success Path IV-3, Step 12: This step was added, in the Waterford guidelines, to the steps specified by CEN-152. The basis for this step discusses changing component status as the cooldown progresses. Since Step 6 of this success path already covers operation of SI, containment isolation is not addressed in this success path, and since no cooldown instructions are provided in the Functional Recovery Guideline (See E-0, Step 6), this step should be deleted.

640.42

Success Path IV-3, Step 13: This step restores normal charging and letdown to allow the operator to exit this procedure into the Plant Operating Procedure. The success criteria for this success path, however, only deal with SI flow. In addition, the operators are required to exit from the FRG to the diagnostic section of the ENTRY PROCEDURE, not directly to the Plant Operating Procedure. Thus, this step is inappropriate in the FRG, and should be deleted.

640.43

Success Path IV-3, Step 18: This step requires realignment of Safety Injection pump discharge to both Hot and Cold legs 2-4 hours post-LOCA. This action is clearly an event-oriented action, which is inappropriate to the FRG. If the operators do not know the event 2-4 hours after the event, this action should not be taken. For multiple failures, no analysis is referenced or discussed that shows that the action specified in this step is, or would be, appropriate. This step should be deleted from the FRG.

640.44

Success Paths IV-4 and IV-5, Step 1: These steps cause the deenergization of pressurizer heaters. What follow-on instructions will ensure pressurizer heaters are reenergized?

640.45

Success Path IV-4 covers total loss of feedwater. The justification for not addressing total loss of feedwater in the optimal recovery guideline was that the actions are covered in the functional recovery guideline. The FRGs should retain the actions for total loss of feedwater, to cover this condition under multiple or undiagnosed failures. For the case where the operator can diagnose a total loss of feedwater, he would (and should) expect to go to an optimal recovery guideline. To ensure the proper delineation between optimal and functional guidelines, OP-902-006 needs to be modified to include the appropriate actions for a total loss of feedwater.

640.46

Success Path IV-1, Steps 7 through 14 and Success Path II-2, Steps 2 through 9: These steps all pertain to establishing plant conditions for entry into the Plant Operating Procedure, and do not apply to control of the safety function. Their location in this success path (i.e., before the steps that actually control the safety function, Steps 15 through 20) establishes incorrect priorities for the operators who should be mitigating a challenge to a safety function, not trying to establish "normal" plant conditions. These steps should be deleted.

640.47

Success Path V-3, Step 20 and Success Path V-4, Step 12: These steps requires realignment of Safety Injection pump discharge to both Hot and Cold legs 2-4 hours post-LOCA. This action is clearly an event-oriented action, which is inappropriate to the FRG. If the operators do not know the event 2-4 hours after the event, this action should not be taken. For multiple failures, no analysis is referenced or discussed that shows that the action specified in this step is, or would be, appropriate. This step should be deleted from the FRG.

640.48

Section 3.0, "Generic Steps not included in the Waterford-3 EOP," Success Path HR-1, Step 5.f: The justification for not including this step is, "HR-4, RCS and Core Heat Removal using PORVs, was not used because Waterford-3 does not have PORVs." Waterford Success Path V-4 is, in fact, HR-4, using (implicitly) a break in the RCS boundary as the means for removing coolant from the RCS to effect once-through cooling. Step 5.f of Success Path HR-1 needs to be included in the Waterford guideline and procedures.

640.49

Success Path V-4: The action of verifying all available charging pumps running (See CEN-152, HR-4, Step 2.b) should be included in the Waterford guideline.

640.50

Success Path V-4, Step 12: This step requires realignment of Safety Injection pump discharge to both Hot and Cold legs 2-4 hours post-LOCA. This action is clearly an event-oriented action, which is inappropriate to the FRG. If the operators do not know the event 2-4 hours after the event, this action should not be taken. For the other use of the FRG; namely, for multiple failures, no analysis is referenced or discussed that shows that the action specified in this step is, or would be, appropriate. This step should be deleted from the FRG.