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NUCLEAR REGULATORY COMMISSION

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SERVED MAR 18 1985

In the Matter of  
 LOUISIANA POWER & LIGHT COMPANY  
 (Waterford Steam Electric Station,  
 Unit 3)

DOCKET NO. 50-382 OL

MEMORANDUM AND ORDER

CLI-85-3

INTRODUCTION

For the reasons discussed below, the Nuclear Regulatory Commission ("NRC" or "Commission") has determined that the current record in this proceeding provides the necessary basis for authorizing the issuance to Louisiana Power and Light Company ("LP&L") of a full-power operating license for the Waterford Steam Electric Station, Unit 3 ("Waterford"). This decision is without prejudice to the motions to reopen which have been filed by the Joint Intervenors and which are currently pending before the Atomic Safety and Licensing Appeal Board ("Appeal Board"). Should the Appeal Board ultimately decide to reopen the record in this proceeding, it would, undoubtedly, also address the effects of such a decision on the continuing viability of the

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full-power generating license, and we would have an opportunity to review that determination. In the interim as explained below, we have determined that the pending motions do not support a stay of our authorization of a full-power operating license.

#### STATUS OF ADJUDICATION

The first partial initial decision (PID)--on synergistic (radiation and atmospheric pollutants) health effects and on all but one aspect of emergency preparedness--was issued by the Licensing Board on November 3, 1982. LBP-82-100, 16 NRC 1550 (1982), as amended, LBP-82-112, 16 NRC 1901 (1982). In ALAB-732, on June 29, 1983, the Appeal Board completed its merits review on this PID and affirmed the Licensing Board's findings. 17 NRC 1076 (1983). The Commission let the Appeal Board decision stand.

A second and final PID on the offsite emergency planning brochure was issued on May 24, 1983. LBP-83-27, 17 NRC 949 (1983). No petitions for review were filed; the Appeal Board conducted its usual sua sponte review. During that time, Joint Intervenors filed with Appeal Board two motions to reopen the hearing on synergism and basemat cracking. In particular, Joint Intervenors moved to reopen the hearings on renewed allegations regarding basemat cracks and the water found seeping through them

-- issues which had been resolved previously in the applicants' favor by the Licensing Board. LBP-81-48, 14 NRC 877 (1981). On December 9, 1983 the Appeal Board denied the motions to reopen, and completed its review of the Licensing Board's final decision. ALAB-753, 18 NRC 1321 (1983). However,

Joint Intervenors' motion to amend and supplement their motion to reopen on the basemat issue was received the same day ALAB-753 was issued.<sup>1</sup> In response, the Appeal Board requested the NRC Staff to provide additional information on the issue. ALAB-786, 20 NRC 1087 (1984). That information, which is described below, has been provided. The basemat motion is still pending before the Appeal Board.

In the meantime, on February 22, 1984, the Joint Intervenors moved, largely based on allegations, to reopen the hearing on quality assurance (QA) issues. On April 11, 1984, by Memorandum and Order, the Appeal Board denied the motion but stated that the intervenors were free to file another motion if the hearing was reopened on other grounds prior to plant operation. Subsequently on November 8, 1984, the intervenors moved to reopen on three QA contentions: (1) failure to maintain an adequate QA program during construction; (2) lack of basic character and competence by Louisiana Power and Light (LP&L) to operate Waterford safely; and (3) failure of the NRC to provide the necessary degree of confidence that the plant has been constructed properly and can be operated safely. That QA motion is also still pending before the Appeal Board.

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<sup>1</sup>The Commission has determined not to review ALAB-753. This determination is without prejudice to the Appeal Board's current consideration of the motions to reopen.

BASEMAT CRACKING

In July, 1977 a number of cracks were identified by the applicant at the top of the basemat within the ringwall for the containment structure. The groundwater seepage rate was low, just enough to show the cracks and to moisten surrounding concrete. The cracks were sealed with epoxy grout as approved by NRC. In May, 1983, an NRC inspector found small amounts of water seepage on the Reactor Auxiliary Building part of the basemat, but no cracks were visible. However, a special NRC inquiry team was set up to investigate concerns about cracking and, in a report on July 14, 1983, recommended that LP&L obtain "an independent engineering evaluation of the common basemat cracking and seepage matters." Harstead Engineering Associates, Inc., hired by the applicant to evaluate the cracking and associated moisture, submitted a report in September, 1983, concluding that "hairline" cracking was expected in reinforced concrete structures and is generally caused by tensile forces, drying shrinkage, thermal gradients and settlement. The report concluded that the cracks were of little concern to the structural adequacy of the basemat and that there was no evidence of and little potential for corrosion of the steel reinforcing bars (rebar). The staff agreed with the Harstead report. However, recognizing the possibility that the loads on the basemat could change over the course of time, the staff required the applicant to establish a surveillance program to assure the continuing integrity of the mat.

In April, 1984, the NRC initiated another review of the basemat issue further to assure itself that no significant safety issues had been overlooked with regard to the design implications of basemat cracking at Waterford. The

staff hired Robert E. Philleo, an independent consulting engineer with outstanding credentials in concrete construction, to respond to QA concerns about basemat construction. The staff required the applicant to conduct additional studies which involved non-destructive testing (NDT), i.e., sonar analyses, to better characterize the cracks and additional analytical analyses of the basemat structural capability. Staff's Brookhaven National Laboratory (BNL) and City University of New York (CUNY) consultants conducted laboratory studies (breaking of concrete beams) to provide additional confirmation of the adequacy of the basemat. The applicant's prime contractor, Ebasco, provided analyses of shear slippage associated with cracked concrete under dynamic loading. Ebasco also referenced Cornell University tests on slippage along cracks in concrete under dynamic loading conditions as providing further support of the conclusion that the basemat was adequate to resist earthquakes.

Although Mr. Philleo did not unqualifiedly endorse all of the technical details of the NDT analysis, he found that LP&L's NDT studies supported the staff conclusions. Both the staff and BNL also found that the NDT results substantiated their conclusions. However, two staff members, Drs. Ma and Chen differed from the NRC staff majority opinion on technical details of the causes and possible consequences of basemat cracks.

After reviewing the final submittals by the applicant in November, the staff and its consultants, taking into account the differing views of Drs. Ma and Chen, concluded that there remains no question as to the adequacy of the soil backfill and basemat to resist all imposed loads, including seismic effects. However, at the recommendation of BNL, the staff has identified

areas in which further analysis might be useful. The staff has determined that, even in the absence of further analysis, Waterford is a safe facility even under design basis earthquake loads. The staff now considers this issue closed, and has concluded that the basemat cracks do not raise a significant safety issue.

In Supplemental Safety Evaluation Report (SSER) 7 and SSER 9, staff provided evidence that the foundation soils, concrete and rebar meet their design capacities. Moreover, documentation establishes that, even though there was a breakdown in the QA program, adequate inspection and quality controls were applied subsequently. Also, the NDT testing and the Cornell tests provide some additional assurance of basemat adequacy. The staff, consistent with the recommendation of their consultants and with commitments by the licensee (SSER 9, pp. A-121 and A-122), has recommended that Waterford-3 be licensed with two confirmatory conditions--a basemat cracking surveillance program and additional confirmatory analyses of basemat structural strength.

#### ASSESSMENT

Under these circumstances, the Commission believes that there is no need to defer full-power operation pending the Appeal Board's disposition of the pending motion to reopen on basemat issues.

The standard for a licensing decision is whether there is reasonable assurance of public health and safety to allow plant operation, either for the full licensing term or until additional analysis is completed that would

provide additional assurance for the full term license. The current record has provided a reasonable basis to conclude that the plant can be operated safely at full power, pending resolution of the issues currently before the Appeal Board and we so find. Confirmatory analyses to which the licensee has committed will address the response of the plant to a low probability, design-basis seismic event and the possibility of longer term deterioration of basemat structural capability.

#### QUALITY ASSURANCE

The Joint Intervenors alleged on November 9, 1984, that the breakdown of QA throughout Waterford's construction prevents reasonable assurance that the plant has been constructed in accordance with NRC requirements and that the public health and safety can be protected. In support of this contention, the Joint Intervenors have submitted specific allegations and documentation derived largely from docket files, allegations by three anonymous persons, and magazine stories. Intervenors further alleged that LP&L's lack of character and competence to operate a nuclear plant are shown by the mere fact that the Office of Investigation investigated falsification of records and harassment of Quality Assurance/Quality Control personnel, and by alleged misstatements of LP&L to the financial community and the Securities and Exchange Commission regarding plant status. Joint Intervenors also amended the basemat cracking motion based on a magazine article alleging extensive quality assurance problems and falsification of information regarding basemat analyses.

In March, 1984, the staff initiated a broad inquiry by a NRC special review task force to address over 350 such allegations, and other open items from the Construction Assessment Team ("CAT") inspection on Quality Assurance and basemat cracking. The task force assessed the validity of the allegations, their safety significance and any generic implications, as well as applicant's responses to CAT inspection findings. In SSER-7 and 9, the staff concluded that nothing in the allegations warranted delaying full-power operation.

Solely for the purposes of determining whether the pending motions warrant the Commission's staying issuance of a full-power operating license for Waterford, Joint Intervenors' motions and supporting arguments, staff and licensee responses, and the staff safety evaluations associated with the hundreds of allegations, particularly those related to QA and the basemat, have been reviewed. Under the circumstances described above, we find no reason to stay authorization of a full-power operating license. Of course, this determination is without prejudice to the Appeal Board's substantive decision on the merits of the pending to reopen the record on these issues.

#### REQUEST TO STAY EFFECTIVENESS OF WATERFORD'S FULL POWER LICENSE

By letters dated March 8 and 11, 1985, Intervenors have requested a two week stay of the effectiveness of this order. The utility by letters of March 12 and 14, 1985 has opposed this request.

In our view, the utility has offered persuasive reasons why the Commission should not delay the effectiveness of this order. Ascension to

full power is a gradual process. During the first 12 days of this process, Waterford will not exceed 20% of its full power level of operation. The public health and safety risks of these low levels of power are far less than the theoretical risks of full power operation. Nor is the level of contamination which results from such levels of operation significantly different than those associated with, and already reached as a result of, Waterford's low-power operation. Moreover, in the event that a stay is sought and ordered by a court the utility can reverse this process and reduce power levels to below the 5% level. Finally, it appears that every day of delay in commercial operation of Waterford will cost the applicant and the public it serves one million dollars.

Intervenors have offered little to balance against these facts. Nor have they presented the Commission with a formal request to stay Waterford full power operation. Thus, they have not offered to the Commission any legal arguments which would support a stay and they have not made us aware of any significant legal issues that a reviewing court might have to resolve with regard to any judicially requested stay.

Accordingly this order is being made immediately effective by the Commission.

#### CONCLUSION

For the reasons set out above, the Commission finds that the Director, Nuclear Reactor Regulation, may issue the full-power operating license for Waterford, Unit 3.

Commissioner Asselstine dissents from this Order.

It is so ORDERED.



For the Commission

A handwritten signature in cursive script, appearing to read "John C. Hoyle".

JOHN C. HOYLE  
Assistant Secretary of the Commission

Dated at Washington, DC

this 15th day of March, 1985