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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



ATOMIC SAFETY AND LICENSING APPEAL BOARD



Administrative Judges:

Christine N. Kohl, Chairman
Dr. W. Reed Johnson
Howard A. Wilber

April 4, 1985
(ALAB-803)





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| In the Matter of | ) | |
| LOUISIANA POWER & LIGHT COMPANY | ) | Docket No. 50-382 OL |
| (Waterford Steam Electric Station, Unit 3) | ) | |

Carole H. Burstein, New Orleans, Louisiana, for joint intervenors Oystershell Alliance and Save Our Wetlands, Inc.

Bruce W. Churchill, Washington, D.C., for applicant Louisiana Power & Light Company.

Sherwin E. Turk for the Nuclear Regulatory Commission staff.

## DECISION

Among the matters still pending before us in this operating license proceeding is Joint Intervenors' motion to reopen the record for a hearing on the concrete basemat underlying the Waterford facility.[1] As recounted in

[1] We previously disposed of all matters raised by Joint Intervenors on appeal from the Licensing Board's partial initial decisions in this proceeding, completed sua sponte review of those decisions, and ruled on two of their earlier motions to reopen (one of which concerned the basemat). See ALAB-732, 17 NRC 1076 (1983); ALAB-753, 18 NRC 1321 (1983). Another motion to reopen, which raises primarily quality

(Footnote Continued)

ALAB-786, 20 NRC 1087, 1089 (1984), it is actually Joint Intervenors' second motion to reopen on the basemat that is still before us. They first moved to reopen in July 1983, arguing that hairline cracks in the concrete basemat -- discovered two months earlier -- raised questions about the integrity of the plant's design and safe operation of the facility. Relying on several studies submitted by applicant Louisiana Power & Light Company (LP&L) and the NRC staff, we found no significant safety concerns associated with the cracking and denied the motion. ALAB-753, supra note 1, 18 NRC at 1324-29. Joint Intervenors' second, or supplemental, request to reopen (filed in December 1983) alleged, on the basis of a Gambit newspaper article, that those LP&L and staff studies on basemat cracking relied on falsified documents. Thus, the focus of our consideration of the second basemat motion is principally on the credibility and reliability of the information previously supplied by LP&L and the staff, and relied on by us in finding no safety significance to the concrete cracking.

We explained in ALAB-786 how Joint Intervenors' second basemat motion itself failed to meet the standards for reopening a closed record. The essentially bare allegation

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assurance and management competence issues, is under active consideration. See ALAB-801, 21 NRC __ (Mar. 22, 1985).

of falsified documents is not enough. 20 NRC at 1089-91.[2] But we also noted that this case presented "the unusual (if not unique) situation where the material filed in opposition to a motion to reopen raises more questions than it answers." Id. at 1091. In this connection, we identified some seven areas where clarifying or supplementary information from the staff was necessary before we could rule finally on Joint Intervenors' basemat motion. Id. at 1092-95. The staff has now supplied extensive affidavits and reports in response to our questions. Accepting our invitation to comment on the staff's filings, LP&L likewise has submitted more detailed information on the basemat. Although afforded a like opportunity to comment, Joint Intervenors have filed nothing on this matter since their brief December 1983 motion.

We are fully satisfied with the staff's most recent submissions on the concrete basemat. The asserted deficiencies in documentation for the basemat have

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[2] Specifically, the motion must be timely, address a significant safety or environmental issue, and show that a different result might have been reached had the newly proffered material been considered initially. Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 876, 879 (1980). See also id., ALAB-775, 19 NRC 1361, 1365-67 & n.18, aff'd, San Luis Obispo Mothers for Peace v. NRC, 751 F.2d 1287 (D.C Cir. 1984).

been cured. But more important, the myriad and voluminous analyses of all aspects of the basemat, undertaken by both the staff and LP&L, convince us that the hairline cracking presents no serious safety challenge to the structural soundness of the basemat. We have been given no cause to recant our earlier findings in ALAB-753 concerning the adequacy of the basemat. Joint Intervenors' second motion to reopen on the basemat is therefore denied.

A.

We need not rehearse at length the substantial basemat-related material submitted by the staff and LP&L. These thorough affidavits and technical reports speak for themselves and stand as evidence of the massive effort devoted by the staff and applicant alike to assuring the integrity of the basemat. Moreover, though given the opportunity, Joint Intervenors have voiced no objection to any part of this information. We therefore discuss only briefly the answers provided to the several inquiries we posed to the staff in ALAB-786.

1. ALAB-786 noted an inconsistency between two staff documents on the safety significance of certain irregularities in concrete inspector certification records. A June 13, 1984, letter from the staff to LP&L (the "Eisenhut Letter") stated that these irregularities made the quality of the inspected construction activity indeterminate. The staff's August 7, 1984, filing with us,

however, reflected no such concern about the quality of the basemat construction. 20 NRC at 1092-93.

The staff first explains that, by August 7, it actually had more information than was apparent from its filing on that date, and that the information tended to establish the lack of safety significance to the involved inspector certification problems. Subsequent to August 7, the staff obtained and verified information from LP&L that shows all inspections performed by "unqualified" concrete inspectors had, in fact, been duplicated by qualified inspectors from Ebasco Services Incorporated, LP&L's architect-engineer. Thus, the staff considers this matter to be fully resolved. Supplemental Affidavit of Robert E. Shewmaker (Dec. 17, 1984) at 2-6.

2. Another inconsistency existed as to the safety significance, especially in terms of the plant's seismic response capability, of certain missing soil backfill test documents. See ALAB-786, supra, 20 NRC at 1093. The staff again disclaims any inconsistency in its stated views on the ground that its August 7 position was based on additional (albeit unidentified at the time) information. Further, the soil test records once thought to be missing have been

located and the staff considers them authentic.[3] These records show a close adherence to quality procedures for the pertinent soils work done at Waterford. The staff has also reviewed numerous additional soil test and inspection records and studies; on this basis, it concludes that soils issues are fully resolved. Shewmaker Affidavit, supra, at 6-12.

3. In ALAB-786, supra, 20 NRC at 1093-94, we noted the conclusion of the Brookhaven National Laboratory (BNL) -- which serves as a staff consultant -- that the cracks in the concrete basemat were caused primarily by the imposition of dead loads, after construction of the superstructure but before placement of the backfill. Assuming (correctly, it now appears) that the backfill was in place for several years, we suggested that under BNL's analysis the cracks should have been wider and thus more evident before the backfill was placed. We therefore asked why the cracks were not discovered before May 1983.

The staff first tells us that BNL has revised its conclusion so as to eliminate the confusing reference to the placement of the backfill. BNL's more accurate view now is

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[3] This moots our concern in ALAB-786, supra, 20 NRC at 1093 n.10, as to whether certain refined analyses recommended by Brookhaven National Laboratory could be performed without these missing records and the data in them.

that the cracks developed on the mat surface during construction and were probably caused by "differential settlement induced by the dead loads acting alone or by dead loads acting on the mat already cracked by normal thermal and/or shrinkage effects." Supplemental Affidavit of James P. Knight (Dec. 17, 1984) at 5-6; Affidavit of Morris Reich, et al. (Dec. 17, 1984), Attachment 1 (hereafter "BNL Addendum 2") at 3. Second, the staff indicates that it is unable to answer our query (about the timing of discovery of the cracks) directly, except to state that NRC inspectors did not see the involved cracking outside the reactor containment building (RCB) ring wall before 1983. Knight Affidavit, supra, at 6-7. LP&L sheds more light on the matter, however, explaining that the area in question was covered with water, dirt, and debris from construction, obscuring the hairline cracks until cleanup got under way in late 1982 and early 1983. Affidavit of Kenneth W. Cook (Jan. 3, 1985) at 3.

4. We expressed concern in ALAB-786, supra, 20 NRC at 1094, that the staff may not have interviewed the two individuals identified as primary sources of information for the Gambit newspaper article on which Joint Intervenors base their motion. The staff has replied that, beginning in January 1984, it held one or more meetings with these and other persons who have made allegations about the Waterford

facility.[4] The staff adds further that in many instances these meetings and staff follow-up work have led to agreement with the allegers that matters have been satisfactorily resolved. Affidavit of Dennis M. Crutchfield (Dec. 17, 1984) at 2-6.

5. We also inquired in ALAB-786, supra, 20 NRC at 1094-95, about the current views of Drs. John S. Ma and Raman Pichumani. The staff had previously submitted the affidavits of these NRC employees in connection with Joint Intervenors' first motion to reopen on basemat cracking. But the staff provided the views of neither one after the second basemat motion was filed.

In response to ALAB-786, the staff has now supplied the affidavits of Drs. Ma and Pichumani, as well as a statement from Dr. John T. Chen. Dr. Chen apparently assumed Dr. Pichumani's duties with respect to the Waterford basemat after the latter was reassigned to a different section of the NRC in March 1984. Consequently, Dr. Pichumani has no further comments on this matter. Affidavit of Raman

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[4] The staff states that it did not previously disclose that it had interviewed these two individuals so as to protect its investigative techniques and to keep the allegers' names confidential. But the Gambit article attached to Joint Intervenors' December 1983 motion referred freely to both individuals (Messrs. Hill and Davis) by name -- hence, our inquiry about whether the staff specifically talked to either one.

Pichumani (Dec. 17, 1984). It is evident from the Ma and Chen statements that they have views that differ somewhat from the official staff position.[5] But it is equally apparent that their differing views have been given ample consideration, even well before our inquiry in ALAB-786. Knight Affidavit, supra, at 28-31, 34-35. See also note 8, infra.[6]

There is no need to address these differing views in detail, especially in view of Joint Intervenors' failure to mount any challenge to the staff's official position.[7] Suffice it to say that the staff has identified three principal areas of disagreement with Dr. Ma: (1) the initial causes of the basemat cracking; (2) the acceptability of the cracking vis-a-vis the dynamic response

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[5] Neither has filed a formal "Differing Professional Opinion," however. See NRC Manual, Chapter 4125 (Sept. 19, 1980).

[6] Had the staff informed us of this in its August 7, 1984, filing, our inquiry on this point might have been obviated. The staff should not be so reluctant in the future to acknowledge and discuss similar disagreements among its personnel. We do not expect complete consensus on all issues: we recognize the inevitability -- and desirability -- of healthy dissent within any organization. Airing legitimate differences of opinion and the steps taken to resolve them often contributes to a more effective treatment of the issues -- regardless of which view ultimately prevails.

[7] Moreover, this is not an initial decision following a hearing on contested issues, where more detailed "findings of fact" are required.

of the mat during an earthquake; and (3) the effect of the cracking on corrosion and durability. Knight Affidavit, supra, at 31. Dr. Ma finds inadequate BNL's conclusion that differential settlement induced by dead loads during construction of the mat is the primary cause of the cracking. Affidavit of John S. Ma (Dec. 12, 1984), Attachment (hereafter "Ma Report") at 1. He offers no alternative theory, but suggests that analysis of the temperature generated by cement hydration would be useful. Id. at 25. See note 13, infra. Dr. Ma also recommends repair of the cracks with grout or epoxy injection to prevent corrosion of the reinforced steel bars within the concrete. Ma Report, supra, at 31.

Dr. Chen's concerns center on the uniformity of the soil beneath the basemat. He believes a more refined analysis based on the actual soil conditions during construction should be performed to verify more precisely the cause of the cracking. Knight Affidavit, supra, Attachment 1 (hereafter "Chen Statement").

The staff, through its consultant, BNL, has put forth a convincing point-by-point rebuttal to both Drs. Ma and Chen. See BNL Addendum 2, Appendices F and G. P&L as well has supplied similarly persuasive affidavits from an Ebasco civil engineer and a consulting structural engineer. Affidavit of Joseph L. Ehasz (Jan. 7, 1985); Affidavit of

Myle J. Holley, Jr. (Jan. 4, 1985).[8] We are fully satisfied with BNL's explanation of the cause of the basemat cracking and, perhaps more important, with its analyses of the effect that cracking might have on the ability of the mat to serve its intended function. BNL has likewise sufficiently addressed Dr. Chen's concerns about the soil beneath the mat. See pp. 16-20, infra. Finally, not only has the staff afforded both Dr. Ma and Dr. Chen the opportunity to express their views and to participate in the staff review process, it has also given full consideration to the substance of those views. See San Luis Obispo Mothers for Peace, supra note 2, 751 F.2d at 1322. Our inquiry in ALAB-786, supra, 20 NRC at 1094-95, has been more than answered.[9]

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[8] Subsequent to the filing of LP&L's response to the staff's comments on the basemat, staff counsel solicited the further views of Drs. Ma and Chen. Their comments were supplied to us and the parties in Board Notification No. 85-019 (Feb. 25, 1985). The staff response to these latest views of Drs. Ma and Chen was provided as Enclosure 2 to Board Notification No. 85-025 (Mar. 8, 1985). The arguments voiced in each document reflect essentially the same positions advocated in the earlier round of comments. But see note 19, infra.

[9] Some of the differences in opinion between Dr. Ma and BNL are attributable to a misunderstanding or an inconsistent use of certain engineering terminology. See, e.g., BNL Addendum 2, supra, Appendix F at F-18, F-19, F-22 to F-23. Further, as BNL and Messrs. Ehasz and Holley have pointed out, some of Dr. Ma's cited references are incorrect or incomplete, and his reliance on studies of such different structures as bridges and monolithic concrete dams is misplaced in considering the 12 feet thick reinforced

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6. As requested in ALAB-786, the staff has obtained the additional views of Robert E. Philleo, a consulting engineer with expertise in concrete construction. See id. at 1095. We were interested, in particular, as to whether Mr. Philleo's earlier evaluation of the adequacy of the basemat would be altered in any way in light of the results of subsequent nondestructive testing by Muenow and Associates, Inc. Mr. Philleo has reviewed the Muenow report and, although he is critical of some aspects of it, "there is nothing to cause concern about the structural performance of the basemat." Knight Affidavit, supra, Attachment 2 (hereafter "Philleo Comments") at 2.[10] His earlier conclusion that the basemat is structurally sound thus remains unchanged.

7. The last inquiry to the staff in ALAB-786 concerned a discrepancy in a report by applicant's consultant,

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concrete slab involved here. Id. at F-10; Ehasz Affidavit, supra, at 4-7; Holley Affidavit, supra, at 11-13.

[10] Mr. Philleo's criticism of the Muenow report is due largely to the fact that the report does not fully explain the ultrasonic techniques used. Such information is proprietary. See Knight Affidavit, supra, at 13-14. Mr. Philleo acknowledges, however, that Mr. Muenow's results have been verified by other means in the past, giving his techniques credibility. Philleo Comments, supra, at 1. Further, Mr. Muenow did elaborate somewhat on his testing procedures at meetings with the staff and BNL, satisfying both as to the overall reliability of his results for the purposes here. Knight Affidavit, supra, at 12-16.

Harstead Engineering Associates, Inc. We asked the staff to determine if this was simply an inadvertent error or an indication of "broader problems with the reliability of the data supplied to Harstead by LP&L's contractors." 20 NRC at 1095. The staff has reviewed the particular error we identified and examined, with LP&L, other reports and data for similar discrepancies. While a few more such errors were found, they are clerical in nature, do not detract from the reliability of the data supplied to Harstead, and do not affect any earlier conclusions. Shewmaker Affidavit, supra, at 12-14. See also Affidavit of Raymond F. Burski, Jr., (Jan. 3, 1985).

B.

A matter peripheral to Joint Intervenors' motion to reopen on the basemat concerns Gunnar Harstead. Mr. Harstead and his engineering firm (Harstead Engineering Associates, Inc.) served as a consultant to LP&L on the basemat soon after the discovery of the cracks in 1983. He prepared several reports in this connection, concluding that the cracks and associated moisture do not impair the structural adequacy of the mat. In our earlier decision denying Joint Intervenors' first basemat motion, we relied on this information and the staff's analysis of it. ALAB-753, supra, 18 NRC at 1326-28. In a letter dated August 2, 1984, however, staff counsel informed us that he had just learned that Mr. Harstead had served in 1981 as a

consultant to the staff on several matters involving Waterford, including the concrete basemat. Although the staff stated its belief that this fact does not affect either the staff's or our review of the Waterford basemat, we felt obliged to refer the matter to the NRC's General Counsel, who has responsibility for interpreting the Commission's conflict of interest rules. See 10 C.F.R. § 0.735-27.

This matter has been handled in accordance with the agency's internal procedures. See NRC Manual, Chapter 4124 (Apr. 6, 1982). The General Counsel's conclusion is that, by serving as a consultant on Waterford, first for the NRC (as a "special government employee"), and then several years later for LP&L (while continuing as an NRC special employee on other projects), Mr. Harstead committed a technical violation of 18 U.S.C. § 205(2) and 10 C.F.R. § 0.735-23(a)(2). Memorandum to Appeal Board from J. A. Fitzgerald (Nov. 23, 1984). The Department of Justice (to which the General Counsel referred this matter) has decided not to prosecute, however, and the NRC has determined that administrative action in this matter is not warranted. Memorandum to Appeal Board from J. A. Fitzgerald (Oct. 19, 1984); Memorandum to Appeal Board from W. J. Dircks (Jan. 16, 1985), Enclosure (hereafter "Dircks Memorandum"). The NRC staff stresses that Mr. Harstead had served as a staff consultant on Waterford more than two years before his

association with LP&L and that he was probably unaware that his action was a violation of the law. The staff also states that it will take steps to assure no such violations will occur in the future. Dircks Memorandum, supra.

It is not our function to review independently either the General Counsel's determination that there has been a violation, or the judgment that no punitive measures are necessary. We accept those conclusions and only note our view that the matter has been fully and carefully investigated. Rather, our concern here is whether those determinations detract in any way from the weight we previously gave to the Harstead Reports. In other words, is the reliability of the technical analysis in Mr. Harstead's work somehow undercut by his minor (and likely inadvertent) violation of the agency's regulations?[11] We think not. Although we cannot conclude generally that an ethics violation by a party or witness could never diminish the reliability of that person's work, we see no such taint here.[12] Moreover, Mr. Harstead's engineering expertise has

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[11] "Only relevant, material, and reliable evidence which is not unduly repetitious will be admitted." 10 C.F.R. § 2.743(c) (emphasis added).

[12] We invited the parties' views on this matter. Appeal Board Order of October 3, 1984 (unpublished). Joint Intervenors argue that, because of Mr. Harstead's "conflict of interest," his work cannot be considered "truly

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been convincingly demonstrated, and there is no reasonable basis for not according his work the full credit it is due on the merits.

C.

As is plainly evident from the wealth of information ultimately provided by the staff, there is no ground for reopening the record for hearing on the basemat issue. Indeed, the analyses supplied by the staff stand in stark contrast to the flimsy support for Joint Intervenors' motion. See ALAB-786, supra, 20 NRC at 1090-91. We have also been given no reason to reconsider our earlier conclusion, with respect to Joint Intervenors' first basemat motion, that there is no safety significance to the cracks and associated moisture in the mat. See ALAB-753, supra, 18 NRC at 1328. The charge in Joint Intervenors' second basemat motion that that conclusion was based upon falsified

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independent." In their view, his basemat evaluation for LP&L could have been influenced by his earlier work for the staff. See Joint Intervenors' Comments on Harstead Conflict of Interest (Nov. 14, 1984). Although we could readily understand the gist of this argument if Mr. Harstead had worked first for LP&L and then for the NRC staff, we do not understand Joint Intervenors' point here in this opposite context, and they fail to elaborate. Joint Intervenors also note that earlier BNL analyses relied to some extent on the Harstead reports. But as is evident from the staff's recent basemat filings, substantial testing and evaluation of the mat has been done without regard to the Harstead work, with the same ultimate conclusion -- the mat is structurally sound. See pp. 16-20, infra.

information has been shown to be without merit. Further, the additional material supplied by the staff and LP&L demonstrates not only the overall reliability of the original basemat evaluations, but also the structural soundness of the mat.

To be sure, some differences of opinion exist among the experts consulted as to the exact cause of the cracking.[13] Nevertheless, we are convinced that, regardless of the causative mechanism, the cracking is not safety significant. The many tests and evaluations of the concrete mat and the soil around and beneath it strongly support this conclusion.

Although some cracks are up to 10 feet deep, they are only about 0.007 inch wide. BNL Addendum 2, supra, at 4, 8.[14] They are tightly closed and are likely to stay that

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[13] The principal area of dispute concerns whether the thermal effect of cement hydration, or differential settlement induced by dead loads, is the primary cause of the cracking. BNL points out, however, that the pattern of the cracking is more indicative of the latter cause, whereas cracking from normal concrete drying and shrinkage is more random. BNL Addendum 2, supra, Appendix F at F-6.

[14] Actual measurements showed the width of the cracks at the top surface of the mat to be between 0.003 and 0.005 inch (about the thickness of the paper on which this decision is printed). Mr. Muenow, who conducted nondestructive testing of the mat (see p. 12, supra), concluded that the cracks at depth and outside the shield wall are 0.007 inch, with an accuracy of ± 20 percent. The results of nondestructive testing of the mat under the reactor containment building (RCB) are considered less accurate than the results of testing on the area outside the

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way because of the compressive force of lateral soil pressure. Knight Affidavit, supra, at 22.[15] The cracks are vertical, indicating that they are not attributable to diagonal tension failure. Id. at 30. The concrete is reinforced with steel rebars that are designed to carry tensile forces. Holley Affidavit, supra, at 13, 15.[16] Calculations based on very conservative assumptions (i.e., no credit taken for existing compressive forces) show that the shear capacity of the mat is almost twice the shear demand. BNL Addendum 2, supra, at 12-13. Tests based on conditions more severe than found at Waterford show that shear slip along the cracks during an earthquake would be less than 0.01 inch. Id. at 13.[17] Further, dynamic

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RCB; thus, Mr. Muenow has reportedly concluded that cracks underneath the RCB could not exceed 0.015 inch. This is, however, a very conservative upper limit on crack width. None of the measurements has shown any crack actually to be of this width, and there is no reason to expect the cracks under the RCB to be wider than those elsewhere in the mat (i.e., 0.003 to 0.007 inch). See Holley Affidavit, supra, at 6.

[15] This is also "indicative of a stable situation with no further [crack] growth." Board Notification No. 85-025, supra, Enclosure 2, Staff Comments with Regard to Dr. Chen at Item 5.

[16] Dr. Ma's concern that the cracks in the concrete might diminish the basemat's ability to carry tensile forces is therefore misplaced. See Ma Report, supra, at 16.

[17] Relying on the even more conservative assumptions and data suggested by Dr. Ma, the maximum shear slip during
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analyses performed by BNL show that the cracking has little effect on the plant's response to both horizontal and vertical earthquake movements. Id., Appendix D (as modified, Letter to Appeal Board from S. E. Turk (Mar. 11, 1985)). Other experiments by BNL indicate that the cracking in the Waterford basemat has a negligible (if any) effect on the strength and stiffness of the mat. Id., Appendix E. Data and tests show that the soil and clamshell blanket beneath the concrete are relatively uniform and well compacted. Id., Appendix G; Board Notification No. 85-025, supra note 8, Enclosure 2, Staff Comments with Regard to Dr. Chen at Item 3.

Moreover, LP&L has promised to submit to the staff, before exceeding five percent power, a surveillance program that will address (1) settlement of the basemat, (2) changes in ground water chemistry that could corrode the reinforcing steel in the mat, (3) seasonal variations in ground water levels, and (4) mapping of cracking in the basemat and adjacent vertical walls. See ALAB-753, supra note 1, 18 NRC at 1326-28.[18] Also before exceeding five percent power,

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an earthquake would be only 0.014 inch. Board Notification No. 85-025, supra, Enclosure 2, Staff Comments with Regard to Dr. Ma at Item 2.

[18] On the strength of the staff's recommendation, the Commission authorized the issuance of a full-power license
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LP&L must commit itself to performing certain confirmatory analyses recommended by BNL. See ALAB-786, supra, 20 NRC at 1093 n.10. See also note 3, supra.[19] The analyses must be completed and submitted to the NRC for review before restart after the first refueling outage. In addition, the staff has requested LP&L to evaluate the actual stresses caused by the differential settlements of the mat during construction. Knight Affidavit, supra, at 36-37; Board Notification No. 85-025, supra, Enclosure 1.[20]

In these circumstances, we conclude that no significant safety issue exists as to the basemat. Joint Intervenors' second motion to reopen on this matter is therefore denied.[21]

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to LP&L on March 15, 1985. CLI-85-3, 21 NRC __, pending on petition for review sub nom. Oystershell Alliance v. NRC, No. 85-1182 (D.C. Cir. filed Mar. 25, 1985). We thus assume that LP&L has already fulfilled these commitments.

[19] Dr. Ma initially questioned the value of these analyses. He now seems to regard the dynamic analyses as "essential." Compare Ma Report, supra, at 24-25, with Board Notification No. 85-019, supra, Ma Comments at 5.

[20] These various staff-imposed requirements include many of the actions suggested by Dr. Chen. See Chen Statement, supra, at 10.

[21] Joint Intervenors' remaining motion to reopen on quality assurance (QA) and management competence (see note 1, supra) raises basemat issues that overlap to a large degree with the matters we raised a month earlier in ALAB-786. See, e.g., Joint Intervenors' Motion to Reopen the Record (Nov. 8, 1984) at 39-44. The motion also alleges
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It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

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a systemic breakdown in construction QA, which in terms would include the basemat. To the extent that such arguments concern the integrity of the mat itself and the adequacy of the QA program for the mat, Joint Intervenors' claims are without merit for the reasons stated in this decision. Irrespective of our ultimate judgment on the charge of a systemic QA breakdown, any QA problems associated with the basemat have been satisfactorily resolved.