A

Finelli
2-17-81 A

Hood ×25 → ×32 Feb 19, 1981 B

Thornburg
2-20-81 C

Gilray
2-20-81 D

Naida
2-26-81 E

Joe Kane
3-26-27-81 F

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Division of Resident & Project Inspection

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Projects Branch 1

R. C. Knop, Acting Chief

Projects Branch 2

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C. Jones, Projects Inspector
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J. Waters, RI, Zion Station

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B. Fitzpatrick, RI, Kewaunee Site
B. Guldemond, SRI. Pt. Beach Site
D. Hague, RI, Pt. Beach Site

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M. Branch, RI, LACBWR Site
J. Hughes, SRI, Perry Site
T. Daniels, SRI, Zimmer Site
P. Gwynn, RI, Zimmer Site

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L. Clardy, RI, Duane Arnold
J. Harrison, SRI, Marble Hill Site
C. Brown, SRI, Monticello Site
A. Madison, RI, Monticello Site
C. Feierabend, SRI, Prairie Island
B. Burgess, RI, Prairie Island

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GASTON FIORELLI

Organization: U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region III

Title: Chief, Reactor Construction and Engineering Support Branch

Grade: GS-15

Birth Date: May 16, 1929

Education: B.S. Chemical Engineering, University of Wisconsin, 1951

Graduate Courses in Advanced Mathematics, University of Washington, 1964 - 1966

Experience:

1979 - 1980 Branch Chief (Senior Inspector), Reactor Construction and Engineering Support Branch, Region III - Supervises and manages the inspection program for reactors under construction in Region III (NRC)

1968 - 1979 Branch Chief (Senior Inspector), Reactor Operations and Nuclear Support Branch, Region III - Supervised and managed the inspection program for operating reactors in Region III. (AEC/NRC)

1967 - 1968 Reactor Operations Inspector, Reactor Operations and Nuclear Support Branch - Inspected reactors under construction and in operations. (AEC)

1956 - 1967 Reactor Operations Management - Advanced from Reactor Operations Shift Supervisor to Operations Manager. Responsibilities involved the supervision of day-to-day reactor operations and shutdown activities during an eight-hour period and progressed to the direction and management of one Handford Production Reactor. (GE)

1954 - 1956 Chemical Operations Unit Manager - Managed a chemical processing plant associated with biological warfare media. (U.S. Army Chemical Corps)

1953 - 1954 Reactor Control and Refueling Specialist - Supervised crews involved in the control, refueling, and maintenance of nuclear reactors. (GE)

1951 - 1953 Nuclear Engineer - Operated facilities involving plutonium and tritium separation. Inspected vendor facilities producing process equipment for plutonium separation. (GE)

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck, Member
William C. Parler, Member

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket Nos. 50-329
50-330

Mr. Harold F. Reis, Washington, D. C., for the applicant, Consumers Power Company.

Messrs. Myron M. Cherry and Robert Graham, Chicago, Illinois, for the Saginaw Intervenors (Saginaw Valley Nuclear Study Group, et al.).

Mr. Harold J. Vogel, Minneapolis, Minn., for the Mapleton Intervenors (Nelson Aeschliman, et al.).

Mr. Milton R. Wessel, New York, N. Y. (Mr. James N. O'Connor, Midland, Mich., with him on the brief), for the Intervenor Dow Chemical Company.

Mr. David E. Kartalia, for the AEC Regulatory Staff.

MEMORANDUM AND ORDER

(ALAB-106)

By initial decision dated December 14, 1972, the Atomic Safety and Licensing Board authorized the Director of Regulation to issue construction permits to Consumers Power Company (applicant), for a dual purpose pressurized water nuclear power plant, designated the Midland Nuclear Plant, Units 1 and 2. The plant, which is designed to produce not only electricity but, as well, process steam to be sold by applicant to the Dow Chemical Company, would be located on the south shore of the Tittabawasee River in Midland County, Michigan at a site adjacent to an existing plant of the Dow Chemical Company.

Separate sets of exceptions to the initial decision were filed by the Mapleton Intervenors and the Saginaw Intervenors. Responses in support of the initial decision were filed by the applicant and the AEC regulatory staff. The Dow Chemical Company, another intervenor, filed a memorandum indicating support of the responses filed by the applicant and staff. Oral argument was directed by our order of February 12, 1973 (ALAB-100) and was held on March 14, 1973. Each of the above-mentioned parties participated.

We have not at this time completed our consideration of all of the many issues raised in this case. We nevertheless have determined that, with respect to one particular aspect of the case—quality assurance and quality control (QA)—, prompt decision and action on our part are necessary. Based on our review of the record, including the relevant exceptions and responses thereto, and the oral argument, we have concluded that the initial decision reflects an erroneous view of the ambit of a board's responsibilities in the QA area and, as a result, inadequately deals with issues which have been raised in that area (see transcript of oral argument, pp. 46-47, 78-106, 122-136, as well as Saginaw Intervenors' Exception III. F.). Since we find the record sufficient for us to resolve those issues and to impose conditions which will satisfy applicable requirements, we hereby do so, and are modifying the initial decision to reflect both the additional findings and the supplementary conditions which we believe are necessary on this record.

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I

One of the most significant elements of the Commission's "defense-in-depth" approach to nuclear safety is its emphasis upon quality assurance and quality control in the construction of nuclear power plants. Under current regulatory provisions, every applicant for a construction permit is required by 10 CFR §50.34 to include in its preliminary safety analysis report (PSAR) a description of the QA program to be applied to the design, fabrication, construction, and testing of the structures, systems and components of the facility. Specific criteria for QA programs are spelled out in Appendix B to 10 CFR Part 50. Among other things, the regulations require the description of the QA program to include "a discussion of how the applicable requirements of Appendix B will be satisfied," 10 CFR §50.34(a)(7).

Before the Licensing Board, the Saginaw Intervenors raised the issue whether the applicant would be likely to implement properly the QA program. In this connection, there were introduced into evidence AEC inspection reports which described, *inter alia*, a number of deficiencies in the applicant's implementation of the QA program in connection with work under a previously granted exemption.[1]

The Licensing Board considered the issue of quality assurance and quality control in paragraphs 28 and 29 of the initial decision. The Board also made the ultimate findings required by AEC regulations as a predicate to the issuance of a construction permit, including those encompassing the technical qualifications of the applicant and public health and safety matters. (Initial Decision, par. 80(3) and (5)). The Board held that its only function respecting quality assurance and quality control was to ascertain whether the applicant has adopted a QA program which, *if implemented in accordance with the representations of the application*, will satisfy the requirements of Appendix B. The Board found it to be the responsibility of the Director of Regulations—and consequentially beyond the ambit of its own responsibility—to assure that the program was in fact carried out as approved. (Initial Decision, par. 28).

The Licensing Board acknowledged that the AEC inspection reports in the record reflected, *inter alia*, some deficiencies in the applicant's implementation of the QA program in the construction activity which the applicant carried out under its exemption. The Board stated that it had considered these reports, but only for the limited purpose of determining whether there was "any evidence" which would be inconsistent with its making findings favorable to the applicant on the ultimate issues in the proceeding (e.g., technical qualification of the applicant, and whether issuance of construction permits would be inimical to the public health and safety). In that narrow context, it found "no such evidence."[2]

In Exception III. F., the Saginaw Intervenors challenge the Licensing Board's disposition of this issue, contending that the evidence in the record of "shoddy" QA practices demonstrates that the applicant is "incapable of, and cannot be relied upon to, perform adequate quality assurance and quality control."[3] Further, the intervenors assert that, as a matter of law, more must be shown than "merely the adoption of a plan in compliance with Appendix B": that in addition there must be established "the workability of the plan and the probability that the applicant and the contractor will follow the plan."[4]

In their briefs, the applicant and staff supported the Board's approach. They took the position that only the program was in issue, and that details relating to enforcement were outside the scope of the proceeding.[5] But at the oral argument before this Board, both the applicant and staff modified this view: they now appear to concede the relevance of such reports, but only as to whether the applicant (including its architect-engineer) is technically qualified.[6]

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[1] AEC Compliance Office Reports 329 and 330/70-1 through 329 and 330/71-1, introduced as Saginaw Intervenors' Exhibit 36 (Tr. 4571).

[2] Initial decision, par. 29.

[3] Saginaw Intervenors' Exceptions, p. 53-24.

[4] *Id.*, p. 53-27 (fn. 15).

[5] Applicant's Brief, p. 49; Staff's Brief, p. 28.

[6] AB Tr. 88-89, 123-126.

II

We turn first to the question as to whether it is permissible for a licensing board, in a situation such as is here presented, to limit its inquiry—as the Licensing Board here did—to determining merely whether the applicant has adopted a QA program which, if implemented in accordance with the representations of the application, will satisfy the requirements of Appendix B. We conclude that, in the circumstances of this case, the Board was not entitled to do so.

No QA program is self-executing. Thus, irrespective of how comprehensive it may appear on paper, the program will be essentially without value unless it is timely, continuously and properly implemented. This being so, it seems to us to follow that it is not enough for a licensing board to satisfy itself that, *if* implemented, the program described in the PSAR will adequately protect the health and safety of the public. At least where, as here, there has been a legitimate question raised in the course of the proceeding, the board must go on to inquire into whether there is, in fact, a reasonable assurance that the applicant and its architect-engineer *will* carry out the program in accordance with its terms. And, if the inquiry leads it to conclude that the record does not permit an affirmative finding on that score, it then becomes the board's responsibility to take whatever action is required—including possibly the outright denial of the construction permit—to provide some measure of assurance that there will not be an improperly constructed facility which might present safety problems.[7]

The inquiry which the board must make is not necessarily resolved by a determination of whether, in a broad sense, the applicant and its architect-engineer are "technically qualified." A demonstration that technical qualifications do exist does not necessarily provide reasonable assurance that the QA program described in the PSAR will be faithfully fulfilled. To the contary, as important as qualifications may be, of no less significant is the matter of managerial attitude. Unless there is a willingness—indeed, desire—on the part of the responsible officials to carry it out to the letter, no program is likely to be successful.

Based on these considerations, we hold that the Licensing Board viewed the scope of its QA inquiry, as expressed in paragraphs 28 and 29 of the initial decision, too narrowly. In the context of the preser' proceeding, it was incumbent upon the Board to do more than simply ascertain, as it did, that if the QA program were implemented in accordance with the representations in the application, the requirements of Appendix B would in fact be satisfied. The Board also should have determined whether there was a reasonable assurance that the applicant and its architect-engineer would carry out the terms of the program.

III

With these principles in mind, we now turn to a consideration of those portions of the record which bear upon the applicant's QA program. To begin with, we have found nothing which would cause us to overturn the Licensing Board's findings as to the consistency of the QA program with the requirements of Appendix B. We have reviewed the QA manuals for both the applicant and its architect-engineer. Both of these manuals, as presently revised, appear to present a satisfactory overall program to meet the quality assurance criteria of Appendix B. Insofar as implementation of the program is concerned, however, a review of the evidence in this case causes us serious concern.

The basis for this concern is illuminated by the contents of the AEC inspection reports in evidence. Compliance inspections of the Midland facility began on January 14, 1970, with a meeting held at the plant and attended by several representatives of the applicant and at least one representative of Bechtel Corp., the architect-engineer.[8] The purpose of the meeting was "to inform the applicant of the purpose, scope, and organization of the forthcoming intensive QA review of the QA program for the Midland project."

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[7] We recognize, as did the Licensing Board, that, with respect to quality assurance (as well as other aspects of reactor construction and operation), the regulatory staff has on-going enforcement responsibilities to make certain that the permittee or licensee complies with all of the requirements imposed upon it. But this consideration scarcely affects a Licensing Board's duty, *prior* to authorizing a construction permit, to resolve legitimate questions relating to the likelihood that the applicant will fulfill these requirements. The presence of police officers on the highways is, after all, not deemed to justify the issuance of a motor vehicle license to a person who does not offer a reasonable assurance that he both can and will comply with the traffic laws which those officers are charged to enforce.

[8] CO Report No. 329 and 330/70-1.

An initial QA inspection was made on March 10, 11 and 12, 1970,[9] in which the applicant's QA program itself was discussed and deficiencies then existing in the program described in terms of the various criteria of Appendix B. Some discrepancies were noted which involved Criteria II, IV, VI, IX, X, XI, XII, XIV and XV. A discussion of these discrepancies was held with the applicant's management personnel on April 7, 1970 in order to verify their understanding with regard to the QA program. The report reflected that the applicant "indicated intent to resolve each of the deficiencies in a timely manner."[10]

A second inspection was held on May 1, 1970[11] to "(a) review both CP... and Bechtel's plans for site QA/QC activities, (b) determine extent of implementation, (c) review work performance and QC procedures and record keeping practices, and (d) determine the status of excavation efforts." QA programs for the Midland project covering such areas as excavations, foundation preparation, concrete placement and reinforcement steel were reviewed. During the day an inspection was made of the testing laboratory facilities and discussions held on the required QC documentation.

A further inspection was made on June 26, 1970, during which a detailed discussion was undertaken concerning the applicant's QA program. In particular, the discussion centered on the placement of concrete, and the applicant's QA audit involving such matters as air tests, cylinder tests, vibration of concrete, concrete temperature, slump-time, and pour records. The report of this inspection noted that the applicant on May 28, 1970 had requested an exemption under 10 CFR Part 50 to proceed with certain work prior to the granting of a construction permit.[12] The report further reflected Bechtel's intent, if such an exemption should be granted, to have several persons at the site who had expertise in such things as batch plant operations and concrete placement. According to the report, Bechtel stated its onsite personnel would collectively have the necessary qualifications to handle all of the work anticipated under the exemption. Similarly, the applicant stated that its staff "will be adequate to control the work contemplated under the exemption."

The next inspection was made between September 29 and October 1, 1970, during which period work was proceeding under the exemption received by the applicant on July 30, 1970. The report of this inspection noted, *inter alia*, the following examples of nonconformance with the QA program.[13]

1. improper use of vibrators during concrete pours;
2. improper testing of the concrete by the site's testing laboratory;
3. improper sampling of the concrete for slump tests; and finally
4. "the QA and QC inspection personnel present at the concrete pour location did not promptly identify and correct apparent deviations from the ACI-301 Standard regarding consolidation of concrete."

It is apparent from the foregoing that the architect-engineer did not have properly trained construction personnel to handle the vibration of the concrete and that neither he nor the applicant had QA engineers on site sufficiently knowledgeable in concrete work to recognize the deficiencies in the procedures. As reflected in the inspection report, the architect-engineer and applicant once again stated that they expected to have properly trained crews and inspectors on site for further operations.

The last inspection prior to shutdown of construction was made on January 7, 1971. At that time, the applicant was questioned about advance planning to "restore the site to full construction status when required."[14] A representative of the applicant stated that this planning was the architect-engineer's responsibility and that "he anticipated that it would include adequate steps to verify the integrity of the existing structures, etc., before resuming construction." The inspection report states that "the applicant was urged to give consideration to this aspect of the facility shutdown status."

On the basis of the evidence summarized above, we find that neither the applicant nor the architect-engineer has provided reasonable assurance that the QA program will be implemented properly, even though both organizations have experience in building reactors. They have in this project not demonstrated their concern with maintaining QA programs in synchronization with their construction programs, nor have they demonstrated that they will have properly trained people on site to implement the QA program.

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[9] CO Report No. 329 and 330/70-2.
[10] CO Report No. 329 and 330/70-3.
[11] CO Report No. 329 and 330/70-4.
[12] CO Report No. 329 and 330/70-5.
[13] CO Report No. 329 and 330/70-6.
[14] CO Report No. 329 and 330/71-1.

We deem it no answer that, as suggested by a staff witness, deficiencies such as the type disclosed here are "typical problems that occur" and "fall into a general category of problems that we do run into continually in our inspection work at Midland and other sites."[15] We would like to think that such failures to adhere to a QA program are not accepted as normal in reactor construction. In any event, the heart of the confidence in engineered safety features lies in the assurance that the quality of construction fully meets all specifications.

Despite the failure of the Board to deal adequately with QA issues, it did not reject any evidence offered on this subject. Moreover, the record not only includes extensive information on the QA aspects of construction but it also shows that the actual structural work which has been performed on the Midland plant appears to be satisfactory.[16] For these reasons, there would be little utility in remanding the case to the Licensing Board for further findings or evidentiary proceedings.

IV

Because of the history of the failure of the applicant and the architect-engineer to observe the required QA practices and procedures, as documented in this record, we have concluded that additional QA conditions must be imposed upon the applicant. These conditions, to which the outstanding construction permits are to be deemed subject, and which are to be considered as a predicate for the permits now to remain in effect, are as follows:

1. By April 9, 1973, or the date of resumption of construction activities (whichever is later), the applicant shall furnish a complete report to this Board, with copies to all other parties to this proceeding, on the quality assurance action being undertaken by the applicant and/or its architect-engineer to assure that the construction work already performed and the materials now on the site are in satisfactory condition. This report, in addition to covering actual construction work and materials, shall also cover inspection and calibration of instrumentation to be used in the QA program.

2. On the date specified in condition 1, *supra*, and on the first day of each calendar quarter thereafter, reports shall be submitted to the regulatory staff on the construction work to be performed during that quarter. Such reports shall contain the names of the QA supervisors and engineers of both the applicant and the architect-engineer who will be on site during the period covered by the report.

3. A statement of the QA qualifications of each individual named in the reports required by conditions 1 and 2 will be supplied in the report in which he or she is first mentioned.

4. A monthly nonconformance report covering the previous month's work will also be forwarded to the staff, with enough detail so that the reasons for the discrepancies, if any, will be apparent. When a discrepancy is discovered too near the end of the reporting period to permit determination of adequate corrective measures by the end of the period, the corrective measures shall be given in the next monthly report.

This Board requests that, for its information, copies of all reports required by conditions 2, 3, and 4, *supra*, be forwarded to it by the staff on a timely basis, together with any comments that the staff may have. This Board would also appreciate receiving staff comments on the report required by condition 1, and these comments should include the results of any staff inspection.

It is the expectation of this Board that the staff will closely monitor the activities of the applicant and architect-engineer with reference to the QA program described in the PSAR, as that program has been or may be amended. To this end, the staff's enforcement responsibilities are in no way limited by the conditions herein prescribed, and the staff is free to take any remedial action over and above these conditions which it may deem necessary.

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[15] Tr. 4608-09.

[16] CO Report No. 329 and 330/71-1. This, of course, does not mitigate the seriousness of the deviations from proper quality assurance practices; since the Commission has accepted certain Code requirements as a necessary concomitant of proper quality assurance, the fact that structural deficiencies did not result must be accredited to pure luck or happenstance.

Since we have not completed our consideration of the other exceptions which have been filed, and the other aspects of the initial decision, we express no view on them now. In taking this action, however, we do not wish to be understood as endorsing a piecemeal review of licensing-board actions. Such review usually would be contrary both to views which we have previously expressed,[17] and to the spirit of the Commission's Rules of Practice.[18] In normal circumstances we would dispose of all of the issues posed by exceptions and by an initial decision in one opinion. Here, however, we viewed the evidence in the quality assurance area as constituting a special circumstance which warranted an unusual course of action—particularly in view of the possibly imminent resumption of construction and the concomitant importance of assuring adequate QA activities in connection with such construction. Hence, we factored out the single issue with which we have here dealt.

Accordingly, the initial decision, and the construction permits issued as a result thereof, are hereby modified to the extent indicated in this opinion. At a later date this Board will render a further opinion, disposing of the remaining exceptions.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

Margaret E. DuFlo
Secretary to the Appeal Board

Dated: March 26, 1973

[17] *Wisconsin Electric Power Co., et al.* (Point Beach Nuclear Plant, Unit 2), ALAB-87, WASH-1218 (Suppl. 1) 578 (December 22, 1972).

[18] Cf. 10 CFR §2.730(f).

NOTE:

The contents of this package are maintained in a three-ring notebook by William Paton Titled: Deposition Exhibits After 2/15/81