

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

In the Matter of)
)
NORTHERN STATES POWER COMPANY) Docket No. 50-263
)
(Monticello Nuclear Generating)
Plant, Unit 1))

INITIAL DECISION
AUTHORIZING THE PROVISIONAL LICENSING
OF FULL POWER OPERATION

PRELIMINARY STATEMENT

1. This proceeding involves the application of the Northern States Power Company (NSP or applicant) for a provisional operating license for Unit 1 of its Monticello Nuclear Generating Plant. This facility, with a single-cycle, forced circulation boiling water reactor, is designed to operate at steady state power levels up to 1670 megawatts thermal. It is located in Wright County, Minnesota on a site partially in that county and partially in Sherburne County, Minnesota.

2. The initial application for all necessary licenses to construct and operate the facility, dated August 1, 1966, was filed with the Commission under section 104b of the Atomic Energy Act of 1954, as amended. The application for a provisional construction permit included amendments 1 through 8. After the application was reviewed by the AEC regulatory staff and the Advisory Committee on Reactors Safeguards (ACRS), a public hearing was held before an atomic safety and licensing board to consider whether a provisional construction

permit should be issued by the Commission. There were no intervenors and the proceeding at the hearing was uncontested. Pursuant to an order in the Initial Decision by that board, Provisional Construction Permit CPPR-31 was issued on June 19, 1967.

3. Subsequently, applicant submitted amendment 9 to its application, dated November 7, 1968. This amendment, which superseded the application with its first eight amendments, requested a license to operate the facility at its rated power level of 1670 megawatts thermal. The amendment included the applicant's Final Safety Analysis Report (FSAR). The FSAR was thereafter supplemented by amendments 10 through 28 to the application. The last amendment, dated July 21, 1970, requested extension of the construction permit to February 1, 1971. By order dated July 31, 1970, the regulatory staff granted the extension.

4. Since the filing of November 7, 1968, the application and the amendments thereto have been under continuing review and evaluation by the regulatory staff. During the course of its review and evaluation, the regulatory staff held numerous meetings with the applicant and made use of studies on specialized subject matters by independent experts, e.g., air dispersion of gaseous effluents (Air Resources Environmental Laboratory, Environmental Science Services Administration); site hydrology (Geological Survey, U.S. Department of the Interior); ecological effects (Fish and Wildlife Service, U.S. Department of the Interior); reactor vessel stress

analysis (Teledyne Materials Research); structural design adequacy (Nathan M. Newmark Consulting Engineers); and site seismology (U. S. Coast and Geodetic Survey).

5. The ACRS has also reviewed the amended application for an operating license and, after identifying several items for resolution by the applicant and the regulatory staff and making several recommendations, concluded that the plant can be operated at power levels up to 1670 megawatts thermal without undue risk to the health and safety of the public. The ACRS reported on the suitability of the Monticello site in a letter dated May 11, 1966; on the construction permit application in a report dated April 13, 1967; on the operating license application through amendment 24 in a report dated January 10, 1970; and on changes to the reactor vessel nozzle safeends, as described in amendments 26 and 27, in a report dated June 16, 1970.

6. Following review by the regulatory staff and the ACRS of the updated application for an operating license, the Commission, pursuant to the Atomic Energy Act of 1954, as amended, and its own regulations, announced by publication in the Federal Register on March 11, 1970 (35 Fed. Reg. 4344) that a public hearing would be held before this Atomic Safety and Licensing Board (Licensing Board) to consider whether a

provisional operating license should be issued to the applicant. The published notice of hearing specified seven issues for consideration by the Licensing Board in arriving at its determination. These issues are identified by the topical headings in the section herein entitled "Findings of Fact."

7. The notice of hearing set the time and the place of the hearing and provided for a prehearing conference. It also explained how interested persons could petition for leave to intervene in the proceeding as parties and how persons wishing to express their views at the hearing could do so without becoming intervening parties under the Commission's Rules of Practice governing limited appearances.

8. As scheduled in the notice of hearing, the Licensing Board held a prehearing conference on April 7, 1970 at Buffalo, Minnesota. The conference was open to the public. The Licensing Board changed the situs of the hearing to United States Federal Courthouses in St. Paul and Minneapolis in response to requests of, and to facilitate attendance at the hearing by, interested people in the Twin Cities area. The hearing sessions were held on April 28 - May 1, June 15 - 18, August 5 - 7, and November 19, 1970, all dates inclusive. Other than when a limited amount of in camera testimony was taken on November 19, the hearing sessions were open to the public. The Licensing Board also held conferences with the parties on July 14, August 4, September 24, and November 10-11, 1970. These conferences, in

The United States Federal Courthouses in St. Paul and Minneapolis, were also open to the public.

9. The State of Minnesota Pollution Control Agency (MPCA), through its executive director and chief executive officer, John P. Badalich, and the Assistant Attorney General for MPCA, G. Robert Johnson, made a limited appearance under section 2.715(c) of the Commission's Rules of Practice. This section provides to an interested state which has not become a party an opportunity to participate in the proceeding and to introduce evidence, interrogate witnesses and advise the Licensing Board. MPCA offered no evidence and interrogated no witnesses. It did advise the Licensing Board as follows: (a) of its views that an operating license should be granted only if it requires the applicant to comply with the conditions of the MPCA permit, or in the alternative, that the operating license should be denied until such time as the courts determine the issues in the actions pending over the state's jurisdiction to limit discharges of radioactive materials into the environment; (b) of its opposition to the applicant's motion for an interim operating license for fuel loading and low power start-up testing; and (c) of its opposition to the applicant's later motion for an interim license authorizing start-up testing and ascension to power.

10. Other limited appearances, under section 2.715(a), were made by the following persons and organizations:

City of St. Paul (by Kenneth J. Fitzpatrick, Assistant Corporation Counsel);

St. Paul Planning Board (statement of Mrs. Fred C. Norton, Chairman, Subcommittee on Prevention of Radioactive Contamination, presented by Stephen J. Gadler, Board member);

St. Paul Trades and Labor Assembly (by Anthony DeZiel, Business Agent);

Clear Air, Clear Water Unlimited (by John Pegors, Chairman, Legislative Committee);

League of Women Voters of Minnesota (statement of Mrs. O. J. Janski, State President);

Minnesota Committee for Environmental Information (by Peter Kreisman);

Minnesota Conservation Federation (statement of Alan J. Holmes, Chairman, Committee on Pollution, presented by John Pegors);

Minnesota Environmental Defense Council (statement of its Chairman Donald W. Andrews, presented by Vice Chairman John Pegors);

Northern Star Chapter, Sierra Club (by William Cunningham);

Mrs. Celeste M. Colson, Cedar, Minnesota

Mrs. Paula Davis, Eagle Bend, Minnesota; and

Mrs. Joseph Waxweiler, Albertville, Minnesota.

The statements of these limited appearors generally expressed misgivings or outright opposition to the proposed operation of the applicant's plant; they indicated concern over the plant's impact upon the environment, especially the Mississippi River as the source of public water supply; and they

recommended a variety of conditions to be imposed upon any operating license should one be authorized. The applicant and the regulatory staff, as part of their respective direct cases, presented testimony in response to the limited appearors. A copy of such testimony, set out in the transcript of the hearing on August 7, was forwarded to each of the above limited appearors by direction of the Licensing Board.

11. The Licensing Board received four timely petitions to intervene from the following: Minnesota Environmental Control Citizens Association (MECCA), a non-profit organization of "concerned citizens" incorporated under the laws of the State of Minnesota with members residing in the Twin Cities area and throughout the State of Minnesota; Michael Donahue, a sophomore high school student living in Elk River, Minnesota, about fifteen miles from the plant site and a few hundred feet from the Mississippi River; Messrs. Kenneth Dzugan, Theodore Pepin and George B. Burnett, III (Dzugan et al.), three graduate students at the University of Minnesota; and Clear Air, Clear Water Unlimited, a citizens group which had made a limited appearance in the construction permit proceeding. The Licensing Board granted the four petitioners leave to cure defects in their original petitions and upon receipt of amended petitions and without objection from the applicant or the regulatory staff, permitted

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

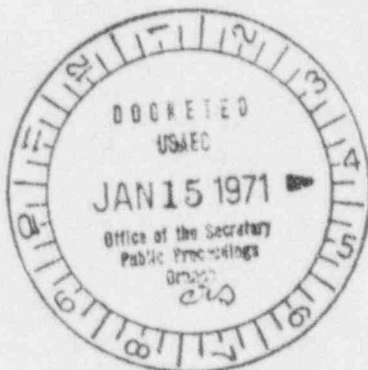
In the Matter of

NORTHERN STATES POWER COMPANY

Docket No. 50-263

(Monticello Nuclear Generating Plant,
Unit 1)

INITIAL DECISION
AUTHORIZING THE PROVISIONAL LICENSING
OF FULL POWER OPERATION



ATOMIC SAFETY AND
LICENSING BOARD
John C. Geyer
Eugene Greuling
Valentine B. Deale, Chairman

d

APPEARANCES IN BEHALF OF PARTIES

Gerald Charnoff, Esq.
Donald E. Nelson, Esq.
in behalf of
Northern States Power Company
Applicant

Thomas F. Engelhardt, Esq.
Joseph B. Knotts, Jr., Esq.
in behalf of
Regulatory Staff of the
United States Atomic Energy Commission

William J. Hennessy, Esq.
Lawrence D. Cohen, Esq.
in behalf of
Minnesota Environmental Control Citizens Association

Kenneth Dzugan
Theodore Pepin
George B. Burnett III
pro se

Michael Donahue
pro se

each of the petitioners to intervene except Clear Air, Clear Water Unlimited.* That organization was permitted to make a limited appearance. Following the initial hearing session, April 28 - May 1, 1970, Mr. Donahue did not participate in the proceeding. The active parties in the proceeding throughout the period of the hearing were the applicant, the regulatory staff, MECCA and Dzugan et al.

12. The applicant and the regulatory staff were each represented by counsel on a regular basis; MECCA was represented most of the time in the public hearing and conferences by one or another of two attorneys from different law firms; to the extent of his participation in the proceeding, Mr. Donahue represented himself; and Messrs. Dzugan, Pepin and Burnett represented themselves, with one or another or two of them representing all three on most occasions.

13. With MECCA and Dzugan et al. opposing the proposed provisional operating license, the proceeding is a contested one within the meaning of section 2.4(n) of the Commission's Rules of Practice.

*See Licensing Board's "Order Granting and Denying Petitions for Leave to Intervene," dated April 8, 1970. The petition of Clear Air, Clear Water Unlimited was denied because of its failure to set out contentions in reasonably specific detail as required under 10 CFR 2.714(a). Mr. Donahue's petition was granted on a two to one vote by the members of the Licensing Board, the Chairman being in the minority.

ADDITIONAL PROCEDURAL CONSIDERATIONS

14. On April 12, 1970 -- five days after the prehearing conference on April 7 and two weeks before the beginning of the scheduled hearing on April 28 -- the applicant filed with the Licensing Board a motion for a interim provisional operating license authorizing initial fuel loading and low power startup testing at power levels of five megawatts thermal and without the reactor vessel head in place. This motion was subsequently modified, renewed and updated. The ultimate granting of the motion, following its denial on May 1 because of the then incomplete status of the record, was effected on August 24 by the Licensing Board's "Initial Decision Authorizing Provisional Operating License for Fuel Loading and Low Power Start-up Testing." Pursuant to this Initial Decision, Provisional Operating License DPR-22 was issued to the applicant on September 8, 1970.

15. On April 24, 1970, the Chairman of the Licensing Board, with the prior approval of the two technical members, ordered a subpoena to be served upon the Director of Regulation calling for the production of specified inspection reports. The ensuing, protracted difficulties and controversies, their impact on the proceeding and their final resolution are immediate subjects of the following documents of record: the Licensing Board's certification of July 6, the Appeal Board's responding memorandum of August 20, and the Commission's related memorandum of August 26; the Licensing Board's submission of rulings of October 6, the Appeal Board's responding

memorandum of October 20, and the Commission's related memorandum of October 21; and the Licensing Board's memorandum of December 22.

16. On July 17, the Chairman under authority conferred on him at 10 CFR 2.718 and with the concurrence of the two technical members of the board issued an order and memorandum pertaining to discovery and definition of contentions. In keeping therewith, MECCA and Dzugan et al. took depositions of five members of the regulatory staff on July 27 and of eleven employees either of the applicant or of its principal contractor, General Electric Company, on July 30. These depositions, which pertained to the Division of Compliance inspection reports as then available to the parties with certain deletions, were incorporated in the evidentiary record without objection at the hearing on August 5.

17. At the board's conference with the parties on September 24 -- at a time when the controversy over the AEC inspection reports was still unsettled and when the hearing record was still open -- the applicant, by motion, sought the Licensing Board's authorization for operation of its plant at power levels up to 88% capacity but in no event less than a peak level of 50% capacity. In presenting its motion to the Licensing Board, applicant's counsel indicated that the motion, which contemplated operation of the plant with the reactor vessel head in place, was made in the context of the anticipated early readiness of the plant to operate beyond the then authorized peak power level of 5 megawatts thermal without the

reactor vessel head in place. In its answer to the motion, the regulatory staff had no objection to the Licensing Board authorizing the proposed ascension in power so long as provision was made for certain items identified by the AEC Division of Compliance to be performed, completed or resolved by the applicant. In their joint answer, MECCA and Dzugan et al. opposed the applicant's motion because of concern over the incompleteness of the record and possible violation of a permit issued by Minnesota Pollution Control Agency (MPCA). The answer filed by MPCA, as a limited appearor, argued that it would not be proper for the Licensing Board to grant the applicant's motion prior to completion of the hearing.

18. After consideration of the record of the hearing (closed November 19) as well as the post-hearing filings of proposed findings and conclusions, the Licensing Board, by order of December 24, announced its conclusions with respect to the pending issues in the notice of hearing and its determination to issue an Initial Decision authorizing the granting of a license to the applicant for full power operation of its plant (i.e., at power levels not in excess of 1670 megawatts thermal). Such a license was identified as one in substantially the form of the provisional operating license at Staff Exhibit 1, as corrected and revised. Further, pending the preparation of its Initial Decision in final form, the Licensing Board authorized the Director of Regulation to amend the applicant's provisional operating license (authorized by the Licensing Board on August 24 and issued on September 8)

so as to permit the applicant to operate its plant at power levels up to 500 megawatts thermal and with the reactor vessel head in place. According to the December 24 order, the Director of Regulation's amending authority was conditioned on his satisfaction as to the readiness of the applicant to proceed with the operation of its plant at the higher power levels and on the absence of any inconsistency between the provisional operating license as amended and the form of the full power operating license referenced in the order.*

*By a written communication dated December 30, 1970 to the Chairman of the Licensing Board, Dzugan et al. objected to the December 24 order. Relating the order to the applicant's motion of September 24 (as orally modified that day at the Licensing Board's conference with the parties), wherein applicant sought interim authority to operate its plant up to 1469 megawatts thermal but in no event less than a peak level of 835 megawatts thermal, the intervenors contended that the Licensing Board "should either grant the relief requested or none at all." The Licensing Board regards the objection of the intervenors as being without merit or substance.

Referring to 10 CFR 2.762, the regulatory staff filed with the Atomic Safety and Licensing Appeal Board its exceptions, dated December 31, to the December 24 order and requested that the order be stayed pending the issuance of the Initial Decision. The thrust of the regulatory staff's argument was twofold: first, the authorization provided for in the December 24 order is appropriate only in an Initial Decision and second, the order did not meet the formal regulatory requirements for an Initial Decision.

On January 4, 1971, applicant filed with the Atomic Safety and Licensing Appeal Board its reply to the regulatory staff's exceptions to the Licensing Board's order. Applicant's reply, drawing upon statutory and case law, pressed the point that the authorization under the December 24 order was legally valid and urged that the Appeal Board promptly deny the regulatory staff's request for a stay of the order.

At the time of the filing of this Initial Decision, the Appeal Board had not ruled on the regulatory staff's request for a stay of the December 24 order.

IDENTIFICATION OF PRINCIPAL EVIDENCE

19. The applicant and the regulatory staff jointly submitted certain direct evidence which was introduced into the record as Joint Exhibit A. This Joint Exhibit A, which was amended on two occasions by the addition of certain documents, consisted of 40 items. These items were copies of filings by the applicant with the Commission, copies of correspondence between the applicant and the regulatory staff in connection with the application for a provisional operating license, and certain other documentary materials pertinent to the application.

20. The applicant submitted its direct case primarily on the basis of three major documents and certain oral testimony. The first of the three documents was entitled "Applicant's Summary of the Application for the Provisional Operating License for the Monticello Nuclear Generating Plant No. 1," dated March 19, 1970. This document was sponsored by seven witnesses -- four from the applicant and three from its contractor, General Electric Company. The second document was entitled "Description and Evaluation of Plant Features Which May Not Be Complete During Initial Fuel Loading and Low Power Start-up Testing," dated April 10, 1970. It was sponsored by the same seven witnesses who sponsored the first document. The applicant's Vice President-Finance and Treasurer sponsored the third document, "Financial Qualifications of Northern States Power Company," dated March 26, 1970.

21. The other evidence comprising the applicant's case included testimony directed toward inquiries of the Licensing Board and toward considerations raised by persons making limited appearances. In addition, the applicant supported its case by updating and expanding upon information previously presented (including the submission of its plant's emergency plan). The applicant's case was subject to extensive cross-examination by the intervenors. Altogether, 37 persons -- each having special or expert qualification -- testified as witnesses for the applicant, as follows. (Attachment A): 18 from the applicant, 12 from General Electric Company, 2 from Bechtel Corporation, 2 from Chicago Bridge and Iron Company, 1 from NUS Corporation, 1 from Nuclear Services Corporation, and 1 from St. Cloud State College, Minnesota.

22. The principal evidence submitted by the regulatory staff in support of the proposed provisional operating license consisted of the following: a document entitled "A Safety Evaluation by the Division of Reactor Licensing, U. S. Atomic Energy Commission, in the matter of Northern States Power Company, Monticello Nuclear Generating Plant, Unit 1, Docket No. 50-33" and supplement No. 1 thereto (both sponsored by four witnesses of the regulatory staff) and the AEC Division of Compliance inspection reports pertaining to the construction of the applicant's plant, inclusive of reports on the applicant's primary contractors and exclusive

of irrelevant and proprietary data. In addition, the regulatory staff provided oral testimony in response to questions raised by persons making limited appearances and to inquiries of the board. The regulatory staff also updated its testimony as the hearing moved along. Its witnesses were extensively cross-examined by the intervenors throughout the course of the hearing. Altogether, the regulatory staff called 15 witnesses as follows (Attachment B): 13 from four of its Divisions -- 7 from Compliance, 4 from Reactor Licensing, 1 from Reactor Standards, and 1 from Radiation Protection Standards -- 1 from Parameters, Inc. (consulting engineers) and 1 from Bureau of Commercial Fisheries, North Carolina. Each of the regulatory staff's witnesses possessed special or expert qualifications.

23. MECCA's direct case consisted of oral testimony of four witnesses (Attachment C). Two of the witnesses had special technical qualifications. The other two witnesses testified as lay citizens, representing their organization and offering a variety of general opinions and questions. MECCA's witnesses were cross-examined by the applicant, the regulatory staff, Mr. Donahue, and Dzugan et al.

24. Neither Mr. Donahue nor Dzugan et al presented any direct evidence.

25. The Licensing Board examined witnesses throughout the hearing.

FINDINGS OF FACT
(In accordance with the noticed issues)

Issue Number 1

Whether the applicant has submitted to the Commission all technical information required by Provisional Construction Permit No. CPPR-31, the Act, and the rules and regulations of the Commission to complete the application for the provisional operating license.

26. The Northern States Power Company's application as heretofore described included the applicant's Final Safety Analysis Report required under §50.34(b) of the Commission's regulations. The application and the record of the present proceeding contain extensive information about the plant, including data and information about the site and the basis of its suitability, the design and construction of the plant, quality assurance and quality control programs, engineered safeguards, design features not fully developed and evaluated at the time construction was authorized, proposed technical specifications pursuant to §50.36 of the Commission's Regulations, emergency plans, the applicant's technical and financial qualifications, and the plant's bearing upon the common defense and security and the health and safety of the public. At the time the construction permit was issued, certain design features of the plant were identified by the staff and the ACRS as areas requiring further information to be developed and submitted. These areas, relating to flood protection, effluent control during periods

of minimum river flow, seismic design, tornado protection, reactor vessel stress analysis, isolation valve testing, and on-site emergency power supply, have all been included in applicant's FSAR. The regulatory staff's testimony at the hearing, including its own safety evaluation, confirmed the sufficiency of the applicant's data in terms of Commission requirements.

Issue Number 2

Whether construction of Unit 1 has proceeded and there is reasonable assurance that it will be completed, in conformity with Provisional Construction Permit No. CPPR-31, the application, as amended, the provisions of the Act and the rules and regulations of the Commission.

27. The regulatory staff's Division of Compliance has followed closely the progress of the construction of the Monticello plant through a series of on-site inspections and conferences with cognizant personnel of the applicant and of its contractors. The inspection activities, conducted both at the site and at the fabrication shops, included review and audit of applicant's quality assurance and quality control programs, inspection of quality assurance and control records, observation of construction work in progress, review of construction procedures, observation of major testing, review of functional testing programs, and review of preparations for facility operations. The nature and extent of the regulatory staff's attention to the plant's construction, and its knowledge with respect thereto, were indicated by the testimony of regulatory staff witnesses responsible for AEC surveillance of the plant's construction and by 49 inspection

reports of the Division of Compliance on the Monticello plant construction which, except for certain deletions, were made part of the evidentiary record. These reports covered inspections during the period beginning October 26, 1966 and ending October 2, 1970. The staff witnesses confirmed the testimony of the applicant's witnesses that the construction of the Monticello plant has gone forward and will be completed in accordance with AEC requirements.

28. During the course of construction of the containment, a crack was discovered on January 18, 1968 in the containment vessel at a location where an insert plate was welded to the shell. The evidence shows that an extensive program was employed to isolate the cracking, establish its cause, and to make the necessary repairs. The cracking was found to be surface type cracking caused by the presence of hydrogen, high residual shrinkage stresses, discontinuities at the surface and high hardness. Non-destructive testing methods showed no indication of subsurface cracking in areas where surface cracking had been detected or in areas which were free of surface cracks. The cracks were repaired and the containment was inspected and tested to assure that no cracking resulted from the repair procedure and that the cracks were properly repaired. The repair and evaluation procedures were independently reviewed and found acceptable by the Hartford Steam Boiler and Inspection Company and the regulatory staff.

Issue Number 3(i)

Whether there is reasonable assurance that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public.

Plant Site

29. The site of the Monticello Nuclear Generating Plant, Unit 1, consists of 1325 acres located partially in Sherburne County (on the east bank of the Mississippi River) and partially in Wright County (on the west bank of the River). The plant is located in Wright County. The site is about 22 miles southeast of St. Cloud (1960 population 33,815) and 30 miles northwest of Minneapolis. The nearest residence is offsite, approximately 2750 feet from the plant. The area surrounding the site is primarily agricultural. A low population zone with a radius of one mile includes a population of about 25. The minimum exclusion zone radius is 1600 feet. The plant design takes into account meteorological, hydrological, ground water, and soil conditions, as well as the possibility of credible earthquakes, windstorms, tornadoes, and floods.

30. That portion of the Mississippi River which traverses the site is part of the restricted area for purposes of determining offsite dosages. The evidence shows no credible circumstances under which an individual could remain on the river in the area of the plant long enough to receive a dose from normal operation in excess of .5 rem. The local sheriff has advised the applicant that in emergencies he will remove persons from the river area.

Features of the Plant

31. The nuclear steam supply system is a General Electric boiling water reactor design which is identical in most features to Commonwealth Edison Company's Dresden Unit 2, recently licensed by AEC for operation, and is similar to other operating boiling water reactors. The reactor is a single-cycle, forced circulation, boiling water reactor producing steam for direct use in the steam turbine. The reactor will be fueled with slightly enriched uranium dioxide pellets sealed in Zircaloy fuel rods. Reactivity control is provided by movable control rods and variable recirculation flow. The primary containment system, consisting of a steel drywell and a steel pressure suppression chamber, is designed to accommodate the pressures and temperatures which would result from, or occur subsequent to, a failure equivalent to a double-ended, circumferential rupture of a reactor coolant recirculation system line resulting in the loss of reactor water at the maximum rate. The primary safety functions of the secondary containment, consisting of the reactor building and the standby gas treatment system, are to minimize ground level release of airborne radioactive materials, and to provide for controlled, filtered, elevated release of the reactor building atmosphere under postulated design basis accident conditions. The reactor building provides secondary containment during periods when the primary containment system is in service, and primary containment during periods when the primary containment is open.

32. In addition to the primary and secondary containment systems, the plant has a number of safety features designed for limiting the consequences of accidents, including the highly unlikely loss-of-coolant accident. The principal safety features include the emergency core cooling systems, the reactor standby gas treatment system, a reactor protection system designed to automatically shutdown the reactor when pre-established safety limits are reached and a standby liquid control system which provides backup reactivity shutdown capability in the unlikely event that shutdown cannot be accomplished by control rods alone.

33. The reactor primary coolant system includes the reactor pressure vessel, the two-loop reactor coolant recirculation system, and the main steam piping. The water circulating in the primary system is used both to cool the reactor core within the pressure vessel and to produce steam for the production of electrical power.

34. With respect to the capability of detecting a loose object in the core which might interrupt the coolant flow patterns, applicant testified that the velocities of the coolant at the bottom of the vessel were too slow to carry objects of significant size up into the core region. The testimony indicated that if a "postage stamp size" piece of metal could somehow find its way into the reactor, it might be carried up into the core and cause local coolant blockage around a specific fuel rod. It was further testified that such blockage could conceivably interrupt the coolant flow enough to

cause the rod to fail. According to the testimony, the failure of one or two rods would release no significant amount of radioactivity into the primary coolant. Applicant also noted that calculations and tests show that the flow through a channel would have to be blocked by 80 or 90 percent to produce fuel clad failure. Should radioactivity in the coolant exceed specified limits, the steam line radiation monitors would detect it and cause the reactor to shut down.

35. To ensure the integrity of reactor systems, including the primary coolant system, the components are fabricated and inspected in accordance with applicable engineering codes and standards which include provisions for detailed quality control measures taken during fabrication. Testimony by applicant, on cross-examination, revealed that the welds of the pressure vessel were inspected by various scientific methods and that the vessel was fabricated, inspected and pressure tested in such a manner as to be certified and stamped under the A. S. M. E. code for nuclear vessels.

Liquid Effluents

36. Liquid wastes generated by normal operation of the plant are collected and processed through a radwaste system which removes radioactive contaminants by filtration and/or ion exchange demineralization. Radioactivity is also reduced through decay during storage in holdup tanks. Liquid wastes with high levels of radioactivity, after processing to remove

contaminants, are returned to the plant condensate storage system for reuse within the plant. Liquid waste with low levels of radioactivity is processed, stored, sampled, analyzed, diluted, and periodically released into the Mississippi River under carefully controlled conditions to ensure that allowable concentration limits are not exceeded.

37. The drinking water intakes of St. Paul and Minneapolis, the nearest public water intakes, are 33 miles and 37 miles, respectively, from the plant. Testimony by applicant and the staff indicated that the annual average concentration of radioactivity in the discharge canal would be no more than a few percent of authorized release limits under Part 20 of AEC regulations. There would be further reduction of concentration by dilution in the river. The consequences of the worst possible accidental release from the liquid radwaste storage tanks or from the condensate storage tanks to the river at the plant site boundary result in a short-term concentration of radioactivity less than 10 CFR Part 20 limits.

Gaseous Effluents

38. Radioactive gases generated during normal operation of the plant will be stored to provide radioactive decay time, filtered, diluted, and finally released through the plant offgas stack which provides further dilution in the atmosphere. Releases will be monitored and controlled to ensure that the radiation dose at the theoretical point of highest exposure

offsite, i.e., at the site boundary, will be below the limits of Part 20 of AEC's regulations. Exposures further away from the site boundary will be still less. A continuous monitoring system automatically terminates release when preset limits are reached.

39. The dose calculations of the applicant and of the regulatory staff take into consideration the entire spectrum of meteorological conditions at the plant site. Applicant's testimony indicates that gaseous effluents can be released even during periods of the most adverse and unstable atmospheric conditions without exceeding 10 CFR Part 20 limits.

40. Technical testimony by the applicant indicated that offsite accumulation, resulting primarily from deposition of particulate materials with long half lives, constituted a negligible contribution to offsite dose. Technical testimony by the staff indicated that their calculation did take into account the accumulation of fission products with long half lives, and that if any accumulation did occur it would be promptly detected by the applicant's radiological monitoring program.

41. The applicant's offsite dosage calculations are performed using a mathematical model or formula derived from empirical observations. Applicant expressed confidence in the model and testified that the model used is an analytical model developed at AEC's Hanford Laboratory on the basis of experimental results observed over many years and verified by using meteorological, off-gas, and dose measurements made at the Brookhaven National Laboratory. During operation of the plant, the calculated

models will be verified by actual measurement under applicant's radiation monitoring program.

42. Applicant testified that the possible chemical alterations in molecules which incorporate tritium had been considered by the International Commission on Radiological Protection when it established the standards for tritium intake and that the effects are negligible and of no importance in determining the radiological significance of tritium.

Environmental Monitoring

43. The applicant initiated in June 1968, an environmental radiation monitoring program to determine and evaluate the effects of the plant's operation on the environment. The program will continue through plant startup and operation, and includes the collection and analyses of samples of air, water, soil, vegetation, milk and aquatic life. Studies are being conducted in cooperation with the Minnesota Department of Health, and the applicant has taken into account the recommendations of the Fish and Wildlife Service, U. S. Department of the Interior. Annual reports of the monitoring program are widely distributed to Federal and State agencies and are available to other interested parties. Applicant is also conducting a companion ecological monitoring program dedicated to the study of the aquatic environment on a six-mile stretch of the Mississippi River in the vicinity of the plant. The first program includes the study of concentration of radioactive materials in aquatic life, and the ecological

program will include monitoring and analysis of the effects of thermal discharges on the aquatic environment.

Issue Number 3(ii)

Whether there is reasonable assurance that the activities authorized by the provisional operating license will be conducted in compliance with the rules and regulations of the Commission.

44. There is nothing in the record to suggest that the applicant will not comply with rules and regulations of the Commission in the operation of the Monticello plant. Applicant's testimony indicates determination to meet Commission requirements and the regulatory staff's testimony affirms that applicant has a very good record of responsiveness and cooperation in attending to and resolving concerns expressed by the Advisory Committee on Reactor Safeguards and the regulatory staff itself. The regulatory staff is charged with continuing responsibility for securing compliance with Commission rules and regulations.

Issue Number 4

Whether the applicant is technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the rules and regulations of the Commission.

45. Applicant has gained useful nuclear experience in the construction and operation of the Pathfinder Atomic Power Plant. The supervisory staff chosen to manage operations at the Monticello plant

is composed of formerly licensed reactor operators at the Pathfinder plant and the qualifications of the key supervisory and professional personnel meet the "Proposed Standards for Selection and Training of Personnel for Nuclear Power Plants," Draft No. 9, July 3, 1969, prepared by the American Nuclear Society Standards Committee.

46. The applicant estimates an average annual cost of \$8.8 million for each of the first five years of operation. The record indicates that the applicant's operating revenues will be ample to cover these costs and to enable it to engage in the activities authorized by the full power provisional operating license..

Issue Number 5

Whether the applicant has furnished to the Commission proof of financial protection in accordance with 10 CFR Part 140 "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations.

47. Applicant has satisfied its present financial protection requirements under 10 CFR Part 140 of the Commission's regulations by furnishing to the Commission proof of financial protection in the amount of \$1,000,000, as needed for the period fuel is stored on the site, in the form of a Nuclear Energy Liability Insurance Association Policy No. NF-174, and by entering into Indemnity Agreement No. B-42 with the Commission applicable to fuel storage. Applicant has obtained letters from the Nuclear Energy Liability Insurance Association and

Mutual Atomic Energy Liability Underwriters committing to provide aggregate financial protection of up to \$82 million, the maximum amount required by the Commission's regulations for a full power license for a facility of the size of the applicant's.

Issue Number 6

Whether there is reasonable assurance that Unit 1 will be ready for initial fuel loading with nuclear fuel within 90 days from the date of issuance of the provisional operating license.

48. This issue is moot. Fuel loading was initiated on September 8 and completed on September 23 under a license issued by the Director, Division of Reactor Licensing, pursuant to authorization by this Licensing Board in its Initial Decision of August 24, 1970.

Issue Number 7

Whether issuance of the provisional operating license under the terms and conditions proposed will be inimical to the common defense and security or to the health and safety of the public.

49. The activities to be conducted under the provisional operating license will be within the jurisdiction of the United States, and all of the directors and principal officers of the applicant are United States citizens. The applicant is not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. The activities to be conducted do not involve any restricted data, but the applicant has agreed to safeguard any such data which might become involved in accordance with the

Commission's regulations. Special nuclear material for use as fuel in the facility will be subject to Commission regulations and will be obtained from sources of supply available for civilian purposes.

Design Basis Accident

50. In determining the safety of the reactor design, detailed safety evaluations and analyses were made by applicant and the regulatory staff, and reviewed by the ACRS, to determine the capability of the design to mitigate the consequences of a design basis accident should it occur. Design basis accidents are the worst accidents postulated for the reactor. The evidence ~~indicates~~ that the regulatory staff's evaluation and applicant's evaluation of the ~~consequences~~ consequences of a loss of coolant accident at the plant take into consideration the fission product release which would result from a 100% core meltdown notwithstanding the fact that a 100% core meltdown is precluded by the incorporation of highly redundant networks of engineered safeguards to cool the core in the event of a loss of coolant accident. Safety evaluations by applicant and the regulatory staff indicate that the doses which could result from a design basis accident are well within the guideline values of Part 100 of the Commissions regulations.*

*Although the accident doses calculated by applicant and the regulatory staff were both well within the Part 100 guideline values, the latter's calculated doses were higher than those of the applicant. Testimony by both parties explained that the calculations involve the assignment of many parametric values related to the size of the source of radioactivity, transport and behavior mechanisms of radioactive materials, meteorological conditions, and dose conversion factors. In nearly all cases the regulatory staff used more conservative parametric values leading to a higher calculated accident dose. The regulatory staff's witness noted the conservatism of the regulatory's approach and suggested that the applicant's parametric values, leading to lower calculated doses, were probably more realistic than corresponding values used by the regulatory staff.

Such doses would not be expected to cause biological injury to persons in the vicinity of the plant.

Emergency Plans

51. Applicant has prepared a plan describing the emergency organization and the arrangements to be effected in the unlikely event of an accident which might affect the general public. Emergency communications have been installed to provide uninterrupted liaison between onsite personnel and offsite support groups and agencies. Applicant has made emergency arrangements with responsible agencies of the State of Minnesota and with appropriate local officials, and has made emergency medical arrangements with a local hospital for treatment of contaminated patients.

52. Applicant's emergency plan had been submitted as a part of the FSAR. Applicant introduced as an exhibit in these proceedings detailed procedures which supplement the emergency plan and which will become a chapter of the plant operations manual. In response to questioning by this Board, the regulatory staff testified that the detailed procedures conformed to the regulatory staff-approved emergency plan, and, further, that the plan and the procedures meet the emergency planning guidelines of the Commission's proposed amendment to 10 CFR Part 50 of its regulations, and meet the intent of a draft document which the regulatory staff had prepared for the use of applicants in developing

their emergency plans. The regulatory staff testified that applicant's emergency plan had been reviewed to determine that its various elements were sufficient to provide reasonable assurance that measures can and will be taken in the event of an emergency to adequately protect the health and safety of the public and to prevent damage to property. The regulatory staff also testified that the detailed implementation procedures describe the assignment of emergency duties of plant personnel and off-site groups, define classes of emergencies and the range of possible accidents, define the action of responsible individuals both within and without applicant's organization in responding to the emergency and evacuating off-site personnel, provide details for post-accident monitoring of effluents and the environment by the applicant's staff and the Minnesota Department of Health, describe the communications network for on-site and off-site communications, state the role of local authorities if evacuation becomes necessary, describe the plan for traffic control, including detour plan, and include an expanded reentry procedure which specifies the criteria for reentry of affected areas.

53. Applicant's calculated doses resulting from a design basis accident would not require evacuation of any people outside of the exclusion area. The exclusion area is a fenced area within the plant site over which applicant has complete control. The AEC's more

conservative dose calculations would not indicate the need for more than limited evacuation of the low population zone, that is, an area within a radius one mile from the plant. About 25 people live within a one-mile radius of the plant. Evacuation plans have been formulated and will be coordinated by the offices of the Wright County Sheriff, the Sherburne County Sheriff, and the Monticello area Civil Defense Coordinator.

54. Testing of the applicant's emergency plan according to AEC Division of Compliance inspectors was satisfactorily completed during the first week of September. The testing included verification of all communication channels and simulation of an activity release. An evaluation test was conducted with plant and supporting personnel performing their assigned functions in accordance with the emergency plan. Evacuation was effected quickly and in an orderly fashion.

Plant Security

55. Access to the applicant's plant will be safeguarded by a number of fences. Gates in the security fence will be locked when unattended. The locks and keys at the plant site are part of a non-commercial keyway system established by the lock manufacturer specifically for the applicant. Protection of plant facilities will also be available from local law enforcement authorities and National Guard personnel, when appropriate. The design of the plant structures and

equipment which are important to the safety of the plant include allowance for the effects of floods, tornadoes, and earthquakes. These design measures taken together with the inaccessibility to the reactor vessel and primary system piping during operation and the redundant safeguard systems inherently provide substantial protection against any public safety consequences of possible industrial sabotage or civil disturbances.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

56. Pursuant to the National Environmental Policy Act of 1969 and the Commission's implementing policy statement effective at the time of the hearing*, the Commission issued a detailed statement of the environmental considerations involved in the applicant's plant. Such statement was introduced into the record of this hearing as Staff Exhibit 2.

PROPOSED FINDINGS AND CONCLUSIONS OF THE PARTIES

57. There were two occasions for the parties to submit proposed findings and conclusions concerning authorization to the applicant of a full power provisional operating license -- once on August 24 and again on November 30, 1970. The applicant presented proposed findings and conclusions on each occasion. The later submission superseded

*Appendix D, 10 CFR Part 50, 35 F. Reg. 5463 (April 2, 1970).

the earlier one. The regulatory staff filed proposed findings and conclusions on August 24 and amended them on November 30. MECCA and Dzugan et al. submitted a joint argument on August 24, which included certain proposed findings and a conclusion, and a similar, supplemental joint argument on November 29. Mr. Donahue submitted nothing by way of a post-hearing filing. The proposed findings and conclusions of the applicant and those of the regulatory staff are in accord with this Initial Decision. The joint arguments of MECCA and Dzugan et al. are not.

58. The joint arguments, which have been rejected by the Licensing Board, seek to support the conclusion that there should be no authorization of the provisional operating license. To a notable extent, the joint arguments dwell on irrelevant considerations. They also rely heavily on opinionated statements of the intervenors, on allegations not supported in the record, and on overdrawn conclusions and unwarranted generalizations. More particular consideration of the joint arguments of MECCA and Dzugan et al. is set out at Attachment D.

CONCLUSIONS

59. As indicated in its order of December 24, 1970, the Licensing Board has concluded that --

- a. The applicant has submitted to the Commission all technical information required by Provisional Construction Permit No. CPPR-31, the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission to complete the application for the provisional operating license;
- b. The construction of Monticello Nuclear Generating Plant, Unit 1, has proceeded, and there is reasonable assurance that it will be completed in conformity with Provisional Construction Permit No. CPPR-31, the application, as amended, the provisions of the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission.
- c. There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;

- d. The applicant is technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the rules and regulations of the Commission;
- e. The applicant has furnished to the Commission proof of financial protection in accordance with 10 CFR Part 140, "Financial Protection and Requirements and Indemnity Agreements" of the Commission's regulations; and
- f. The issuance of the provisional operating license under the terms and conditions proposed will not be inimical to the common defense and security or to the health and safety of the public.

The provisional operating license referenced in the above conclusions is a license, covering full power operation (i.e., up to steady state power levels not in excess of 1670 megawatts thermal), in substantially the form of the proposed license at Staff Exhibit 1, as corrected and revised, inclusive of the cited Technical Specifications.

60. The board further concludes that the following issue in the notice of hearing is moot, namely, whether there is reasonable assurance that the Monticello Nuclear Generating Plant, Unit 1, will be ready for initial loading with nuclear fuel within 90 days of the

date of issuance of the provisional operating license. As noted earlier, loading the plant with nuclear fuel was begun on September 8 and completed on September 23, 1970.

ORDER

61. Pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's regulations, IT IS ORDERED that --

- a. Upon verification by the Director of Regulation that the Monticello Nuclear Generating Plant, Unit 1, has been completed in conformity with Provisional Construction Permit CPPR-31, the application, as amended, the provisions of the Act, and the rules and regulations of the Commission, and upon his receipt of proof that the applicant has provided financial protection in the amount required by the Commission's regulations, the Director of Regulation is authorized to issue to Northern States Power Company a provisional operating license in substantially the form of the proposed license at Staff Exhibit 1, as corrected and revised, such license to supersede the one authorized by the Licensing Board on August 24 and issued on September 8, 1970; and

- b. In accordance with paragraph (e) of section 50.57 of the Commission's regulations as of the time of the notice of hearing,* this Initial Decision shall become effective ten days after its issuance subject to (i) the review thereof and further decision by the Atomic Safety and Licensing Appeal Board, upon exceptions filed by any party, and (ii) such order as the Atomic Safety and Licensing Appeal Board may enter upon such exceptions or upon its own motion within forty-five (45) days after the issuance of this Initial Decision.**

*As in effect at the time of the notice of hearing on March 9, 1970, section 50.57 pertained to "provisional" operating licenses like the subject license of this proceeding. Amendments to Commission regulations, effective April 30, 1970, eliminated "provisional" construction permits and "provisional" operating licenses for production and utilization facilities. However, the amendments do not apply in proceedings for such provisional permits or licenses if the notices of hearing or notices of proposed issuance had been published prior to March 31, 1970 (35 Fed. Reg. 6644, April 25, 1970). Paragraph (c) of the revised section 50.57, which is entitled "Issuance of Operating License" is identical in language to paragraph (e) of the earlier section 50.57.

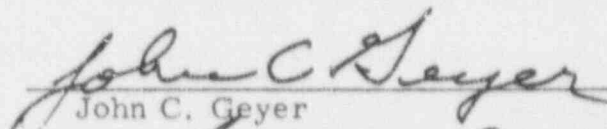
**By this order, the Licensing Board grants the applicant's "Motion for Expedited Effectiveness of Initial Decision Authorizing Full Power Operation," dated November 30, 1970, and rules against the joint objection of MECCA and Messrs. Dzugan, Pepin and Burnett, as set forth in their statement of opposition to the motion, dated December 7, 1970. The readiness or near readiness of the applicant's plant to begin to ascend to full power operation is sufficient "good cause" for the granting of the applicant's motion. The statement of opposition by the intervenors affords no basis for the Licensing Board to deny applicant's motion.

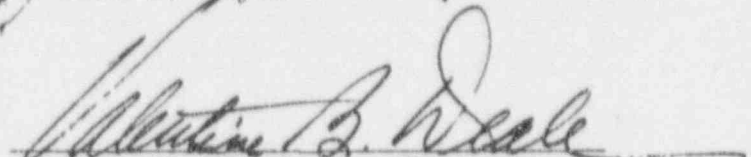
APPEAL AND REVIEW PROCEDURES

62. Within twenty (20) days after service of this Initial Decision, any party to this proceeding may file exceptions to this Initial Decision and a brief in support of them with the Atomic Safety and Licensing Appeal Board. Copies of such exceptions and brief shall be served on all other parties. Further, any party to this proceeding may file a brief in support of or in opposition to exceptions filed by any other party within ten (10) days after the service of exceptions. The foregoing time schedule is prescribed at section 2.762 of the Commission's Rules of Practice. The Rules of Practice, 10 CFR Part 2, include additional information about administrative appeal and review procedures applicable to this Initial Decision.

63. Because of illness, Dr. Eugene Greuling did not participate in the preparation or issuance of this Initial Decision.

ATOMIC SAFETY AND LICENSING
BOARD


John C. Geyer


Valentine B. Deale, Chairman

Washington, D. C.

January 15, 1971

APPLICANT'S WITNESSES

Lead Witnesses

Northern States Power Company

| | |
|--------------------|--|
| Arthur V. Dienhart | Assistant Vice President with management responsibility for NSP activities in the licensing of physical plant facilities and in environmental studies associated with such facilities. |
| Charles E. Larson | Plant Superintendent, Monticello Nuclear Generating Plant. |
| Morgan H. Clarity | Assistant Plant Superintendent, Monticello Nuclear Generating Plant. |
| Charles J. Ross | Nuclear Engineer, NSP's Plant Engineering and Construction Department. |

General Electric Company

| | |
|--------------------|---|
| Joseph B. Violette | Project Manager for Monticello Nuclear Generating Plant. |
| Carl F. Falk, Sr. | Manager, Chemical Process Design, Atomic Power Equipment Department. |
| Grover L. Davis | Engineer, Atomic Power Equipment Department, with responsibility for coordinating the preparation of applicant's FSAR and amendments thereto. |

Quality Control Witnesses

Northern States Power Company

| | |
|-------------------|---|
| William V. Jokela | Assistant Manager, Plant Engineering and Construction Department, having responsibility for quality assurance programs for all NSP plants under construction. |
|-------------------|---|

Phillip Krumpos Field Engineer, Quality Assurance Group
at Monticello Nuclear Generating Plant.

James V. Sullivan Quality Assurance Engineer, Monticello
Nuclear Generating Plant.

General Electric Company

Lawrence Chockie Technical Consultant, Atomic Power
Equipment Department.

James J. Fox Specialist in Nuclear Systems, Atomic
Power Equipment Department.

Lawrence W. Wolf Design Engineer, Atomic Power Equipment
Department.

Others

Richard C. Anderson Project Engineer, Bechtel Corporation
(current assignment - Monticello plant).

Dr. Alfred Joseph Hopwood Associate Professor of Biology, St. Cloud
State College, Minnesota.

John W. Lingafelter Vice President, Technical Services,
Nuclear Services Corporation.

Edward E. Varnum Director of Corporate Nuclear Quality
Assurance, Chicago Bridge and Iron
Company.

Additional Witnesses

Northern States Power Company

G. F. Johnson Vice President - Finance, and Treasurer.

E. C. Ward Director, Engineering, Vice Presidential
Staff Department.

E. C. Glass Manager of Planning.

| | |
|--------------------|---|
| Douglas Antony | Plant Results Engineer, Monticello Nuclear Generating Plant. |
| Bert W. Clark | Environmental Monitoring Programmer, Monticello Nuclear Generating Plant. |
| Leon R. Eliason | Radiation Protection Engineer, Monticello Nuclear Generating Plant. |
| Kenneth Gelle | Senior Mechanical Engineer, having project engineering responsibilities for Monticello Nuclear Engineering Plant. |
| Gordon Jacobson | Plant Results Engineer, Monticello Nuclear Generating Plant. |
| Ronald Jacobson | Plant Chemist, Monticello Nuclear Generating Plant. |
| Albert W. McDermid | Supervising Engineer, Electric Plant Section, Power Production Department. |
| Marcus Voth | Nuclear Engineer, Monticello Nuclear Generating Plant. |

General Electric Company

| | |
|-------------------|--|
| Adolph M. Hubbard | Manager of Materials Engineering, Atomic Power Equipment Department. |
| Pio W. Ianni | Manager, Systems Conforming Unit of Systems Engineering Organization, Atomic Power Equipment Department. |
| Lee Miller | Fuels Application Group Manager, Reactor Fuels and Reprocessing Department, having responsibility for the integration of all activities relating to the fuel of the Monticello Nuclear Generating Plant. |
| Jack Sherman | Quality Assurance Specialist (non-destructive testing). |
| John Staley | Plant Test Engineer, Atomic Power Equipment Department. |

Woodrow A. Williams

Manager, Radiological Systems Conformance, Atomic Power Equipment Department, having responsibility for conducting radiological and meteorological evaluations relating to reactor safety systems.

Others

Charles A. Aronson

Mechanical Group Supervisor, Bechtel Corporation.

Morton I. Goldman

Vice President and General Manager, Environmental Safeguards Division, NUS Corporation.

Roger Reedy

Manager of Special Structures Design, Chicago Bridge and Iron Company, having responsibility for design of nuclear and other pressure vessels.

REGULATORY STAFF'S WITNESSESAEC Division of Reactor Licensing

| | |
|---------------------|---|
| Daniel R. Muller | Chief, PWR Projects Branch #1. |
| Irwin Spickler | Meteorologist in Site, Environmental, and Radiation Safety Group. |
| Dudley Thompson | Chief, Operational Safety Branch. |
| Domenic B. Vassallo | Senior Project Leader, PWR Projects Branch #1. |

AEC Division of Compliance

| | |
|------------------------|---|
| Boyce H. Grier | Director, Region 3. |
| William J. Collins | Metallurgical Engineer, Technical Support Branch. |
| Clarence D. Feierabend | Reactor Inspector, Region 3. |
| Cecil Jones | Reactor Inspector, Region 3. |
| Edward L. Jordan | Reactor Inspector, Region 3. |
| George Wayne Reinmuth | Senior Reactor Inspection Specialist. |
| Harold D. Thornburg | Senior Reactor Inspector, Region 3, having responsibility for supervision of Division of Compliance Inspection Program for Monticello Nuclear Generating Plant. |

N. B. The following states make up Region 3 --
 Minnesota, Illinois, Indiana, Iowa,
 Michigan, Missouri, Ohio, and Wisconsin.

AEC Division of Radiation Protection Standards

| | |
|----------------------|--|
| Dr. John V. Nehemias | Chief, Technical Assistance Branch (Environmental Health). |
|----------------------|--|

AEC Division of Reactor Standards

Laurids Porse

Reactor Engineer.

Others

John P. Baptist

Project Leader, Vertebrate Project,
Pollution Studies Program, Radiobiological
Laboratory, Bureau of Commercial Fisheries,
Beaufort, North Carolina.

Richard Lofy

President, Parameters Inc., consulting
engineers.

MECCA WITNESSES

| | |
|-----------------------|--|
| Adolph J. Ackerman | Resident of Madison, Wisconsin; independent consulting engineer (licensed to practice in Minnesota). |
| Mrs. Shirley K. Hunt | Resident of Minneapolis, Minnesota; member, MECCA's Board of Directors. |
| Russell J. Hatling | Resident of Minneapolis, Minnesota; member of MECCA; writer by occupation. |
| Dr. Richard Meierotto | Member, MECCA's Board of Directors; Ph.D. in fisheries and wildlife, University of Minnesota. |

JOINT ARGUMENTS OF MECCA AND DZUGAN ET AL.
AND LICENSING BOARD'S VIEWS THEREON

JOINT ARGUMENT
August 24, 1970

Unnumbered Paragraphs

On the first page of their joint argument, MECCA and Dzugan et al. objected to the Licensing Board foreclosing questions about AEC radiation standards. With no reference to supporting evidence, the intervenors expressed their belief that "AEC standards are unsafe and constituted undue risk to the public."

The Licensing Board had no basis for entertaining any intervenors' challenge of the AEC radiation standards within the terms of the Commission's guidelines for making such a challenge.* That the focus of the hearing was compliance with AEC standards and not the standards themselves was recognized and accepted by Dzugan et al. in their opening statement by Mr. Pepin. Further, the intervenors chose not to make an affirmative case against the standards offering no direct evidence of their own on the subject. The mere statement of opinion by the intervenors is of no evidentiary value. Their effort to probe the basis of the standards through cross-examination of witnesses present for other purposes was properly cut short.

On the second page, the intervenors' comments about the role of the Minnesota Pollution Control Agency (MPCA) with respect to a certain permit being sought by the applicant and also about the pending litigation in the federal court over the rights of states to set stricter radiation standards than those of AEC are inconclusive and irrelevant. The Licensing Board conducts proceedings before it according to rules and regulations and direction of the Commission.

Numbered Paragraphs

The editorializing in paragraph 1 about public interest and knowledge pertaining to nuclear power developments in general and the Monticello plant in particular is irrelevant.

Paragraph 2 fails to appreciate the proceeding before the Licensing Board is an AEC proceeding and not a State of Minnesota proceeding.

*Memorandum, Matter of Baltimore Gas and Electric Company, August 8, 1969.

The intervenors give no account to the fact that the form of the provisional operating license considered in the proceeding includes the following provision and that the form of license authorized by the Licensing Board in its Initial Decision on August 24, 1970 contains such provision:

"Northern States shall observe such standards and requirements for the protection of the environment as are validly imposed pursuant to authority established under Federal and State law and as are determined by the Commission to be applicable to the facility covered by this provisional operating license. This condition does not apply to (a) radiological effects since such effects are dealt with in other provisions of this provisional operating license, or (b) matters of water quality covered by Section 21(b) of the Federal Water Pollution Control Act, as amended."

This Initial Decision does not affect the continuing applicability of the foregoing provision.

The subpoena controversy and related matters raised in paragraph 3 have already received detailed consideration on the record. See paragraph 15 of this Initial Decision for pertinent references.

Paragraph 4 notes the usefulness of information about other nuclear power plants. The point is uncontroverted.

Paragraph 5 restates the intervenors' complaint about being foreclosed from challenging AEC radiation standards, which are based on recommendations which had been developed by the Federal Radiation Council and approved by the President.

Paragraph 6 questions a passing comparison by the applicant of the Monticello plant to Dresden II. The board does not agree that the comparison is improper. See paragraph 31 of this Initial Decision.

According to paragraph 7, there exists in the reactor "a substantial defect of design" because of a lack of some kind of system to detect small loose objects in the main pressure vessel. This conclusion is without warrant. See paragraph 34 of this Initial Decision.

Paragraph 8 complains about the lack of 100% accessibility to examine every foot of the longitudinal weld seams in the reactor pressure vessel. The complaint fails to recognize that the security of welds is assured in many ways and is not dependent on every weld being checked in one particular way, and that the applicant's total program of fabricating the reactor pressure vessel has been a sound one. See paragraph 35 of this Initial Decision.

With respect to the applicant's calculations of radiation dosages from stack emissions, the intervenors' objection, at paragraph 9, to the use of scientific work of others developed from experimental results over a period of many years is unrealistic. Further, correction and verification will be provided for through the applicant's radiation monitoring program. See paragraph 41 of this Initial Decision. The intervenors' concern with the method used for the error analysis is without substance in the particular context, the integrity of the containment vessel not being brought into question.

Paragraph 10 evidently confuses particulate filters in the offgas line to the stacks, which have an efficiency of 99.97%, with stand-by gas treatment filters referred to in the Technical Specifications as requiring an efficiency of 99%. The noted error in an applicant's statement regarding Krypton-85 has been corrected by the applicant. The stated belief of the intervenors that the error is "one of the numerous attempts of the Applicant to mislead both the public and the board ..." is not justified.

In paragraph 11, the intervenors indicate their opinion that table 9-3-2 of the FSAR was "incredibly deceptive." Although the cross-examination and the related testimony about the table were confused, the Licensing Board found the table itself quite understandable when read in the context of the FSAR. In any event, the Technical Specifications 3.8(A) establish maximum allowable offgas release rates.

Paragraph 12 expresses the intervenors' opinion regarding the applicability of the concept of a design basis accident to the Monticello plant. The design basis accident analyses of the applicant and of the regulatory staff are in keeping with the Commission's regulations. See paragraph 50 of this Initial Decision.

Paragraph 13 states an opinion about the desirability of the regulatory staff to test the applicant's plant security and indicated distress with the response of a regulatory staff witness in deposition on July 27 that the plant security system had not yet been tested. Checking the plant's security system is a responsibility of the regulatory staff and the manner and time of its performance of this responsibility (which is a continuing one) are properly within the regulatory staff's discretion.

Paragraph 14 is at variance with the practical consideration noted in the record and the Commission's reactor site criteria pertaining to "exclusion area" at 10 CFR 100.3(a). See paragraph 30 of this Initial Decision.

The intervenors' criticism of the AEC inspection program, subject matter of paragraph 15, is discussed below under the separate heading, "Objection to AEC Inspection Program."

Paragraph 16 amounts to an opinion about how operations of the applicant's plant should be monitored. Supporting data are absent.

Paragraph 17 discusses a possible addition of gaseous holding tanks for the Monticello facility, which is not embraced by the application. The intervenors offered their opinion about the subject.

With respect to the intervenors' opinion in paragraph 18 regarding the experience gained by the applicant at the Pathfinder plant, the intervenors offered no supporting evidence.

With respect to paragraph 19, the concept, "without undue risk to the health and safety of the public," is a statutory concept which is refined in practical application through implementation of the Atomic Energy Act of 1954, as amended, and supporting rules and regulations, including standards of permissible limits for radiation exposure.

Paragraph 20 states that the intervenors do not believe that the individual members of the Licensing Board "are or can be impartial." The intervenors sought no disqualification under the procedure at section 2.704 of the Commission's Rules of Practice. In citing a "typical example of the board's bias," the intervenors mischaracterize the efforts of one of the board members to identify for the record the reasons for differences in certain radiation dosage calculations by the applicant and by the regulatory staff. See footnote to paragraph 50 of this Initial Decision.

Paragraph 21 correctly states that the applicant has the burden of proving the safety of its plant. For the reasons set forth in the Initial Decision, the Licensing Board has concluded that the applicant sustained its burden of proof.

Paragraph 22 states the intervenors' objection to the Licensing Board's ruling that what happens to waste fuel after it leaves the Monticello plant is not a proper consideration for the hearing and is beyond the Licensing Board's jurisdiction to consider in evidence.

The intervenors' conclusion in their joint argument of August 24 that the issuance of a provisional operating license should be conditioned upon six specified considerations is evidently superseded by the unqualified conclusion in their November 29 argument that no provisional operating license should be issued. The Licensing Board rejects both conclusions, the authorization provided for in this Initial Decision being amply supported by the record of the hearing.

JOINT ARGUMENT
November 29, 1970

The first two and one-half pages plus (prior to the topical heading, "Primary Containment--Leak Rate Test") consist of a variety of opinions and commentary about procedural considerations involved in the controversy surrounding the subpoenaed inspection reports. There is no occasion to dwell further on this controversy. See paragraph 15 of this Initial Decision for pertinent references in the record.

The intervenors' stated concern about the leak rate test of the primary containment places undue emphasis upon one method of error analysis as compared with another in terms of the ultimate conclusion about the safety of the Monticello plant. The completion of the leak rate test is a prerequisite to licensing for operation above the level of 5 megawatts thermal. The test had not been satisfactorily completed as of the time of the regulatory staff's filing of proposed findings and conclusions (November 30). The satisfactory completion of the test is properly left for the regulatory staff's determination.

The intervenors noted that the seismic recording system at the Monticello facility cannot directly cause a SCRAM. By implication, the intervenors appear to suggest that seismographic instrumentation ought to be able to trigger directly a SCRAM. The record contains no evidence to support such an implied conclusion. The evidence does show that the Monticello facility is designed to ride through any earthquake projected for the area.

Arguing on the basis of a reported deviation by the applicant from the specified fuel loading sequence, the intervenors make an overdrawn conclusion about the adequacy of the training of the applicant's personnel and speculate about the possibility of a serious accident. The evidence shows that both the applicant and the regulatory staff identified the deviation and reacted promptly. The deviation involved no public health or safety hazard.

The intervenors' argument concerning AEC's inspection program and related matters is discussed below under the separate heading, "Objection to AEC Inspection Program."

The intervenors express concern about moisture found in some of the fuel rods. The evidence shows that the problem attendant to moisture and fuel rods is a manageable one. Under the present plant setup, operations can take place without hazard to public health and safety and without the maximum permissible limits for radiation exposure being approached. There is no occasion for conditioning operations as the intervenors propose.

The intervenors make further reference to the controversy surrounding the subpoenaed inspection reports. The facts of record contradict their apparent complaint that the subpoena was never complied with or never answered. Once more, see paragraph 15 for pertinent references to the record.

The conclusion of the intervenors in their joint argument of November 29 is that "NO [sic] operating license should be issued for all the reasons set forth in our conclusions dated August 24, 1970 and based upon additional data obtained since that time." As stated before, the Licensing Board rejects this conclusion and affirms that the record of the hearing supports the authorization provided for in this Initial Decision.

OBJECTION TO AEC INSPECTION PROGRAM

MECCA and Dzugan et al. have contended that the Monticello plant construction has not been adequately tested and inspected by the regulatory staff in that the regulatory staff does not do any "independent" testing and in that the AEC inspection program does not provide for resident inspectors at the reactor site.

The record shows that the AEC program for inspection of reactors under construction is directed toward verifying, on a sampling basis, that the completed facility conforms to the application, the Atomic Energy Act of 1954, as amended, and implementing regulations. At periodic visits to the reactor site and to selected vendor shops, the regulatory staff, among other things:

- a. reviews the applicable quality assurance and quality control programs and their implementation, including compliance with applicable codes;
- b. reviews quality control records, including material test reports and non-destructive test records;
- c. observes construction work in process and construction methods, including concrete placement, equipment installation, and non-destructive testing;
- d. witnesses major construction tests;

- e. reviews operating organization; and
- f. reviews testing and operating plans and procedures.

Under the AEC inspection program, it is not the responsibility for AEC inspectors themselves to perform tests; it is their responsibility to make independent reviews and evaluations of appropriate records, including non-destructive test documentation, and to check adherence to AEC requirements for quality assurance programs (10 CFR Part 50, Appendix B). The AEC inspectors make independent judgments of test results and the validity of test procedures. For example, the record shows that the results of the integrated leak rate test of the primary containment conducted by the applicant in March and April 1970 were not considered acceptable by AEC inspectors, and the testing had to be performed again. As of the time of the filing of the regulatory staff's amended proposed findings and conclusions on November 30, the completion of the leak rate test to the satisfaction of the regulatory staff still had not been accomplished.

No evidence was adduced to support the opinion of the intervenors that resident inspectors would necessarily do a better job of inspection than inspectors who make frequent random visits to the site. There is nothing in the record to challenge the reasonableness of the Commission's approach or to indicate that its policy for carrying out an inspection function was not within its statutory discretion. The intervenors would simply do it differently.

In arguing their view about how the AEC inspection function ought to be conducted, the intervenors attempted to move into areas of privileged information which might have been appropriate for the exploration if the inspection program had been on trial. The Licensing Board thus had occasion to rule that the need of the regulatory staff to keep to itself its own inspection techniques, procedures, instructions, and the like outweighed the need of the intervenors to have disclosure. For the intervenors were doing no more than pursuing a proposition which rested on the substitution of their judgment for that of the Commission in the reasonable exercise of its statutory discretion. See the Licensing Board's Memorandum of December 22, 1970.

Aside from the foregoing differences over how the agency ought to conduct an inspection program, it is noted that AEC inspection personnel concerned with the Monticello plant testified at the hearing and were subject to extensive cross-examination by the intervenors. The inspection reports on the Monticello plant were also part of the record.

No evidence was adduced to challenge the regulatory staff's conclusion that the Monticello plant construction conforms with the construction permit, the application and the Commission requirements.

Further, it is sufficient for the Licensing Board to find that construction "has proceeded and there is reasonable assurance that it will be completed" in conformance with the construction permit, the application and the Commission's requirements. The Licensing Board is not required to await the resolution of any remaining unresolved item prior to issuing its Initial Decision. The authorization herein makes the actual issuance of the provisional operating license contingent upon the regulatory staff's verification of the Monticello plant's completion in accordance with all applicable requirements.



UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

Page 1
PDR

In the Matter of

NORTHERN STATES POWER COMPANY
(Monticello Nuclear Generating
Plant Unit 1)

Docket No. 50-263

CERTIFICATE OF SERVICE

I hereby certify that copies of the INITIAL DECISION dated January 1971 in the captioned matter have been served on the following by deposit in the United States mail, first class or air mail, this 16th day of January 1971:

Valentine B. Deale, Esq., Chairman
Atomic Safety and Licensing Board
1001 Connecticut Avenue, N. W.
Suite 504
Washington, D. C. 20036

Donald E. Nelson, Esq., Vice
President and General Counsel
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Dr. John C. Geyer, Chairman
Department of Geography and
Environmental Engineering
The Johns Hopkins University
Baltimore, Maryland 21218

Mr. D. F. McElroy, Vice President -
Engineering
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Dr. Eugene Greuling
Professor of Physics
Duke University
Durham, North Carolina 27706

Dr. R. N. Barr, Secretary and
Executive Officer
State Department of Health
University Campus
Minneapolis, Minnesota 55440

Dr. Rolf Eliassen
Department of Civil Engineering
Stanford University
Stanford, California 94305

Chief, Industrial Commission
137 State Office Building
St. Paul, Minnesota 55101

Joseph B. Knotts, Esq.
Regulatory Staff Counsel
U. S. Atomic Energy Commission
Washington, D. C. 20545

Commissioner of Conservation
State of Minnesota Department
of Conservation
St. Paul, Minnesota 55101

Gerald Charnoff, Esq.
Shaw, Pittman, Potts, Trowbridge
& Madden
910 Seventeenth Street, N. W.
Washington, D. C. 20006

Honorable Harold E. LeVander
Governor, State of Minnesota
St. Paul, Minnesota 55101

Honorable L. J. Barthel, Chairman
Wright County Board of Commissioners
Buffalo, Minnesota 55313

d

G. Robert Johnson, Esq.
Special Assistant Attorney General
State of Minnesota
717 Delaware Street, S. E.
Minneapolis, Minnesota 55440

Mr. John P. Badalich, Executive
Director
State of Minnesota Pollution
Control Agency
717 Delaware Street, S. E.
Minneapolis, Minnesota 55440

Rev. Paul H. Engstrom, President
Minnesota Environmental Control
Citizens Association
26 East Exchange Street
St. Paul, Minnesota 55101

Information copies to:

Mr. John Pegors, President
Legislative Committee
Clear Air-Clear Water Unlimited
315 Tenth Avenue North
Hopkins, Minnesota 55343

Mr. Leonard W. Levine, President
St. Paul Board of Water
Commissioners
Room 216, Courthouse
15 W. Kellogg Boulevard
St. Paul, Minnesota 55102

Mr. Donald W. Andrews, Chairman
Minnesota Environmental Defense
Council
1515 8th Avenue North
St. Cloud, Minnesota 56301

Dr. Dean E. Abrahamson
1092 25th Avenue, S. E.
Minneapolis, Minnesota 55414

William J. Hennessy, Esq.
Hall and Hennessy
55 Sherburne Avenue
St. Paul, Minnesota 55103

Mr. Michael Donahue
R. R. 3
Elk River, Minnesota 55330

Messrs. Kenneth Dzigan, Theodore
Pepin and George Burnett
Department of Physics
University of Minnesota
Minneapolis, Minnesota 55455

Mrs. Mary Drascuzli
Water Resources Chairman
League of Women Voters of
Minnesota
555 Wabasha
St. Paul, Minnesota 55101

Mr. John Rose, Vice President
Minnesota Conservation Federation
4313 Shady Oak Road
Hopkins, Minnesota 55343

Dr. Dean E. Abrahamson, President
Minnesota Committee for Environmental
Information
P. O. Box 14026
University Station
Minneapolis, Minnesota 55414

Mr. Warren Boske
Conservation Chairman
Sierra Club, North Star Chapter
3040 North Lee
Minneapolis, Minnesota 55422

Mr. George McPartlin, Chairman
City Planning Board of St. Paul
1010 Commerce Building
St. Paul, Minnesota 55101

Mrs. Celeste M. Colson
Rt. 1, Box 28 C
Cedar, Minnesota 55011

Mrs. Joseph Waxweiler
Rt. 1, Box 27
Albertville, Minnesota 55301

Kenneth J. Fitzpatrick, Esq.
Assistant Corporation Counsel
City of St. Paul Corporation Council
City Hall
St. Paul, Minnesota 55102

Mr. William Cunningham
Sierra Club, North Star Chapter
3043 North Lee
Minneapolis, Minnesota 55422

Mrs. O. J. Janski, State President
League of Women Voters of Minnesota
255 Wabasha Street
St. Paul, Minnesota 55102

Mr. Peter Kreisman
Minnesota Committee for
Environmental Information
P. O. Box 14026
University Station
Minneapolis, Minnesota 55414

Mrs. Fred C. Norton, Chairman
Subcommittee on Prevention of
Radioactive Contamination
St. Paul Planning Board
St. Paul, Minnesota 55102

Honorable Walter F. Mondale
United States Senate
Washington, D. C. 20510

Honorable Joseph E. Karth
House of Representatives
Washington, D. C. 20515

Mr. Jerome Richgels
Secretary-Treasurer
St. Paul Trades and Labor
Assembly
410 Auditorium Street
St. Paul, Minnesota 55102

Mrs. Eugene C. Buck
1013 South 7th Street
Stillwater, Minnesota 55082

Mrs. John Wegler, Secretary
Fourth District, Democratic-
Farmer-Labor Party
1510 Grand Avenue
St. Paul, Minnesota 55105

Mr. Adolph Ackerman
Consulting Engineer
1250 Sherman Avenue
Madison, Wisconsin 53703

Honorable Ancher Nelsen
House of Representatives
Washington, D. C. 20515

Mrs. Paula Davis
P. O. Box 235
Eagle Bend, Minnesota 56446

Lakeview School
Robbinsdale School District
4110 Lake Drive
Room 203 - Fifth Grade
Minneapolis, Minnesota 55422

Miss Carolyn S. Polowy
Businessmen for the Public
Interest
108 North Dearborn Street
Suite 1001
Chicago, Illinois 60602

Mr. Robert Goligoski
St. Paul Dispatch
55 E. 4th Street
St. Paul, Minnesota 55101

Minneapolis Public Library
Environmental Research Center
1222 S. E. 4th Street
Minneapolis, Minnesota 55414
Attention: George Bloom

Honorable Carl Nordberg (10)
Cler, Wright County Courthouse
Buffalo, Minnesota 55313

C. R. Stephens

Office of the Secretary of the Commission

cc: Mr. Deale
Mr. Knotts
Mr. Yore
H. Brown
H. Smith