Distribution:
Chairman Seaborg (2)
Commissioner Ramey
Commissioner Johnson
Commissioner Costagliola
Commissioner Thompson
General Manager (2)
OGC (2)
Secretary (2)
OCR (2)
HLPrice
CKBeck
MMMann
RLDoan
CLHenderson
PAMorris
FWestern
HKShapar
PDR (50-263)
DR Reading
GErtter (DR-2218)

JUL 2 1969

Honorable Donald M. Fraser
House of Representatives

Dear Mr. Fraser:

Thank you for your letter of June 17, 1969, referring to correspondence we have had with Mr. Paul H. Engstrom, President of the Minnesota Environmental Control Citizens Association.

I am enclosing, as you requested, the exchange of correspondence between Mr. Engstrom and Mr. Harold L. Price, AEC Director of Regulation, concerning questions relating to nuclear power plants in Minnesota. Also enclosed are two exchanges of earlier correspondence between Mr. Price and Mr. John P. Badalich, Executive Director of the Minnesota Pollution Control Agency, on the same subject, which also were furnished to Mr. Engstrom. As Mr. Price noted in his letter to Mr. Engstrom, it was hoped that the answers to two earlier series of questions posed by Mr. Steve J. Gadler of the MPCA were adequately responsive to answer the third series, submitted in somewhat different form by Mr. Engstrom.

I understand that Mr. Henderson of Mr. Price's staff has been in touch with Mr. MacIver of your office on this matter and if further information is needed, please let us know.

Cordially,

(Signed) Glenn T. Seaborg

Chairman

Enclosure:
Ltr to Mr. Engstrom w/enclosures
dtd 6/17/69 in reply to his
ltr dtd 5/24/69

OFFICE ▶	ADIR:ADM	OGC	DR	OCR		
SURNAME ▶	CLHenderson/jdw		HLPrice			
DATE ▶	6/25/69	6/26/69	6/27/69	7/1/69		

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1968 O-320-507

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JUN 17 1969

Mr. Paul H. Engstrom, President
Minnesota Environmental Control
Citizens Association
1053 South McKnight Road
St. Paul, Minnesota 55119

Dear Mr. Engstrom:

I am pleased to respond to your letter of May 24, 1969, addressed to Chairman Glenn T. Seaborg of the Atomic Energy Commission, submitting a series of questions by Mr. Steve J. Gadler, a member of the Minnesota Pollution Control Agency.

In a letter to me dated September 3, 1968, Mr. John P. Badalich, Executive Director of the Minnesota Pollution Control Agency, submitted certain comments and a list of 83 questions by Mr. Gadler. On November 19, 1968, a response to this letter with enclosures was sent to Mr. Badalich. A copy of this letter and its enclosures is enclosed for your information.

On December 20, 1968, the Executive Director of the Minnesota Pollution Control Agency addressed another letter to me submitting another series of 27 further questions by Mr. Gadler. Copies of the response to this letter, dated February 17, 1969, and its enclosure (Congressional Joint Committee on Atomic Energy Hearings on Licensing and Regulation of Nuclear Reactors held in April and May 1967) are also enclosed.

We trust that the enclosures which represent a comprehensive response to questions posed by Mr. Gadler in two earlier series are adequately responsive to the series submitted with your letter in somewhat different form. Copies of the two letters from the Executive Director of the

Minnesota Pollution Control Agency above referred to and the inquiries of Mr. Gadler thereto attached are enclosed so that their character and the references in the respective responses may be identified.

Sincerely,

Original Signed by C. K. Beck

Harold L. Price
Director of Regulation

Enclosures:
1. Ltr fm Mr. Badalich dtd 9/3/68 w/enclosures
2. Ltr to Mr. Badalich dtd 11/19/68 w/enclosures
3. Ltr fm Mr. Badalich dtd 12/20/68 w/enclosure
4. Ltr to Mr. Badalich dtd 2/17/69 w/enclosures

Distribution:
Chairman (2)
HLPrice
CKBeck
MMMann
RLDoan
CLHenderson
HKShapar
PAMorris
FWestern
VOSchmidt
(50-263) PDR
DR Reading
GErtter (DR-2197)
Commissioner Ramey
Commissioner Johnson
Commissioner Costagliola
Commissioner Thompson
GM
OGC
= Secretary

6/10

OFFICE ▷	DR	OGC	DR			
SURNAME ▷	VOSchmidt/jdw		HKP/CKB HLPrice			
DATE ▷	6/6/69	6/10/69	6/11/69			

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1966 O-320-807

DR-1845

STATE OF MINNESOTA
MINNESOTA POLLUTION CONTROL AGENCY
459 BOARD OF HEALTH BUILDING
UNIVERSITY CAMPUS
MINNEAPOLIS
55440

September 3, 1968

Mr. Harold L. Price
Director of Regulations
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Price:

The matters of nuclear power plants and nuclear radiation still hold and play an important part in our monthly Agency meetings. The AEC-owned reactor at Elk River, Minnesota, periodically makes news, as does the NSP Monticello plant now under construction.

One of our Agency members, Mr. Steve J. Gadler, is greatly concerned about the operation of the Rural Electric Cooperative Association's nuclear power plant at Elk River, and I am enclosing for your information a letter dated August 12, 1968, addressed to Mr. R. C. Tuveson, Chairman of this Agency. This letter was read into the record at one of our recent meetings and does emphasize Mr. Gadler's concern about this AEC-owned reactor and its future operation.

I am also enclosing for your review and comment six pages of questions posed by Mr. Gadler that need clarification. I believe the AEC is in the best position to answer these questions. Would it be possible for your staff to prepare these answers? An acknowledgment of this request would be appreciated.

Another question that has been discussed at various times is the level of tritium in the Mississippi River below and above the location of the RECA nuclear plant at Elk River. It is my understanding that information is available from the AEC on these tritium levels, and I would therefore request that the MPCA be supplied this available data. The information should encompass the period prior to the construction of the Elk River reactor to the present date.

Our consultant, Dr. E. C. Tsivoglou, is presently under contract with our Agency and is gathering pertinent information, meeting with persons other than the Agency who are concerned with nuclear radiation, and with representatives of Northern States Power Company, General Electric Company, and others. It is anticipated that an interim report on nuclear radiation standards for Minnesota will be presented to the Agency by Dr. Tsivoglou within 45 days, and final recommendations made within 100 days. In the event Dr. Tsivoglou requests

9/6/68

additional information from the AEC regarding nuclear power plants in Minnesota, We would appreciate your cooperation in this matter.

Again, I wish to express my appreciation to you and others of the AEC staff for your cooperation in the past, and I trust this cooperative effort will continue in the future.

Very truly yours,

John P. Badalich, P.E.
Executive Director

JPB:mmb
Enclosures

Steve J. Gadler 2120 Carter Avenue St. Paul, Minnesota 55108 645-5005

August 12, 1968

Mr. R.C. Tuveson, Chairman
Minnesota Pollution Control Agency
Albert Lea, Minnesota

Dear Mr. Tuveson:

At the July meeting of the Minnesota Pollution Control Agency, Mr. Miller read into the record a letter addressed to the agency which had been signed by Mr. Edward E. Walter, General Manager of the Rural Electric Cooperative Association at Elk River, Minnesota. In view of the fact that the letter cast aspersions on the Minnesota Pollution Control Agency and specifically upon the integrity and motives of one of its members, I asked for permission, which has been granted, to make a public statement concerning the referenced letter.

The letter appears to indicate to me at least, that it maybe an attempt to silence the many people who are concerned by the amount and type of radio active contaminants discharged and being discharged into the Mississippi River at Elk River by the AEC owned reactor.

Since the operator of this facility has admitted discharging radio active contaminants including tritium into the Mississippi River which is the source of St. Paul and Minneapolis water supplies both for drinking and industrial purposes, it may just be possible that clams placed in water taken from or near the reactor discharge point may up-take some of this discharged radio activity. Clams and other Biota are unaware that the radio active contaminants have been diluted by water to AEC Specifications.

The literature is replete with references to the bioaccummulation in the fish, shell fish and the biota. Apparently all biota has the capability of up-taking and concentrating radio activity. Evidence for this is well documented. As an example:

Dr. T.R. Rice, Chief Radiobiological Program, Bureau of Commercial Fisheries Biological Laboratory, Beaufort, North Calolina, in U.S. Dept. of Health & Welfare publication #999-R-3 Studies of fate of certain "Radionuclides in Estuarine and other Acquatic Environments", Page 35 and 36, said

"When the Maximum Permissible Concentrations (MPC's) were calculated for the different radionuclides which occur in drinking water, the assumption must have been made that such concentration of radionuclides in the aquatic environment would result in not only an insiginificant return of activity to man, but would also be of no harm to aquatic organisms. This assumption has not been validated and will require the collection of considerable data before any confidence can be attached to it." And he continues, "It is known from experimental evidence that certain organisms, in addition to those of

commercial value, service as a vital link in certain food webs and can concentrate some radioisotopes to levels much greater than those occurring in the ambient water."

And finally, "With the expanding nuclear energy industry which has developed in less than 15 years, man will probably find that keeping his environment free from radioactive pollution will be more and more difficult. Thus a responsibility rests upon those who pollute the environment with these materials and upon those who must protect human health and insure the safekeeping of the living resources."

In addition to the literature, many experiments have been conducted in this area as an example, Dr. William A. Brungs, Jr., Research Acquatic Biologist, Fish Toxicology Activities, FWPCA, J.S. Dept. of the Interior, discusses an experiment by the Cooperative Studies Unit, Radiological Health Research Activities of the Taft Engineering Center, in Public Health Service Publication #999-RH-24. The experiment concerns bioaccummulation of Radionuclides in fish, tadpoles, snails, clams, including Lampsilis and Anodonta clams and other biota. A large pond, specifications detailed in cited publication, was used for this experiment According to Dr. Brungs, all biota, including the clams, concentrated radionuclides which had been introduced into the radio active water.

The MPCA is concerned with the problems of water and air pollution and I, in addition, am concerned with the integrity of the St. Paul and Minneapolis water supplies that may become unsafe because of the radio active contaminants discharged into the river by the AEC reactor.

Why am I concerned, first, because the American Health Association in their publication entitled "Public Exposure to Ionizing Radiations" caution that the eventual contamination of the environment by reactor products are a grave health question and the effects are cumulative and irreversible.

Second, Dr. Karl Z. Morgan, Director, Health Physics Division of the U.S. Atomic Energy Commission's Oak Ridge National Laboratory on Page 39 of the July 1968 issue of the American Engineer said, and I quote, "I believe that it is probable and desirable that the working level will be further reduced in the near future. This is because present scientific evidence seems to indicate there is no threshold level of exposure to any form of ionizing radiation so low that the risk of radiation damage becomes zero. In other words, there are certain types of radiation induced risks such as leukemia, bone tumors, thyroid cancers, and genetic damage that seem to relate more or less linearly with the dose". Question, are genetic mutations a future event in spite of AEC regulations to the contrary.

In his letter, Mr. Walters said,"The Rural Cooperative Power Association has always operated and will continue to operate the ERR with the utmost concern for the safety of the public and feels that the public is entitled to the facts and information concerning any matter affecting the public interest." No one can disagree with this statement since we are all concerned with the health and welfare of the public and particularly in factual information -- so lets give the public a chance to look at the record.

1. RCPA letter* dated Jan. 18, 1967, addressed to Dr. P.A. Morris, Director Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C. thru Mr. K.A. Dunbar, Manager, Chicago Operations Office from Mr. Edward E. Walters, General Manager, explaining the accident which released radio active Iodine 131 to the environment and stating that 'corrective measures have been taken to -- avoid repetition of this incident'.

2. Letter* from Lawrence D. Low, Director, Division of Compliance, U.S. AEC, Washington, D.C., dated December 26, 1967, sent thru Mr. K.A. Dunbar, General Manager, Chicago Operations Office, addressed to RCPA, Elk River, attention of Mr. Edward E. Walter. Mr. Low complains that reactor operations at a relatively high power level without reactor core emergency cooling and primary cooling make up capability and 'your associated increase of the reactor power level to 100% of the licensed limit, are contrary to prudent safety practices and should be discontinued'.

3. Page 501 of the Jan.Feb. 1968 Hearings before the Joint Committee on Atomic Energy Congress of the United States (Part I), the U.S. AEC presented the following, "A reactor can potentially be destroyed by a nuclear excursion or by the loss of core coolant resulting in release of fission products". This loss of core coolant could lead to a melt down of the fuel which would probably result in a breach of the containment releasing radio active fission products to the environment. Reactor core emergency cooling system is for use in prevention of a core melt down in the event of loss of primary coolant.

4. Publication COO-651-49 "Elk River Reactor System Monitoring Data" for July 1, 1966, through June 30, 1967, reports 23 leaking elements, increase in primary coolant activity and Iodine 131, higher tritium levels, fission gasses migration from the primary to secondary and primary system leakage.

5. Mr. Harold L. Price, Director of Regulation, U.S. AEC by letter* dated 28 March 1968 advised Mr. John T. Conway, Executive Director Joint Committee on Atomic Energy Congress of the United States that 'prior to current shutdown of ERR minor leakage of water into the lower reactor cavity was experienced' and as a result of further checks water containing radio active iodine was found which he said was 'indicative of a leak in the primary system'.

This letter then reemphasizes my concern about the radio active contaminats that are discharged into the Mississippi River above the St. Paul and Minneapolis water intakes and my concern for the safety and health of our citizens.

I believe a responsibility rests upon those who contaminate the environment with radio active materials but I know that a greater responsibility rests upon those of us whose duty it is to protect and insure the present and future public welfare.

Sincerely,

Steve J. Gadler
Member of MPCA

Letters attached as follows:

Page 3, Item 1.
Page 3, Item 2.
Page 3, Item 5.

Monticello Reactor--questions by NPCA member

Steve J Gadler

2 "The hazards associated with potential airborne radioactivity require development of methods for removing these radio active fission products from the gas streams and for determining the disposition of radio activity released to the environment" appears on page 504 of the Budget Hearings. (2) Does this indicate or imply that NSP has not been given complete information by the AEC on the dangers of radio active discharges?

3 Is stainless steel to be utilized in the feed water heaters to prevent accumulation of corrosion products?

4 Broken lower tie rods, forced the closing of the Selni reactor in April, 1967, what preventive action has been taken to prevent similar occurance at the Monticello reactor?

5 Due to erratic operation the Senn reactor was closed down on January 21, 1968 and upon removal of the reactor head it was discovered that broken pieces tentatively identified as part of the reactor internals were found in the steam generators in this respect will the Monticello operation take preventive action to prevent such an occurance? (2) How?

7 Will the vessel crack problem of the Oyster Creek Jersey Central Power and Light Company which required recheck of all field welds employed to install control housings in stub tubes attached to bottom head of reactor vessel because 137 stub welds contained defects require NSP to reassess to insure integrity of the Monticello reactor and insure safety of the operation?

8 Does the Tarapur reactor problems which are similar to Oyster Creek in that 67 stub tubes in vessel #1 and 70 of 89 in vessel #2 were cracked require welding control practices at Monticello to prevent the extensive delays being experienced at Tarapur?

9 In the event of a Fermi type of accident does AEC authorize NSP a license to abandon the plant? (2) What are the provisions in the permit issued by AEC to NSP? Are abandoning procedures, in event of nuclear excursion, provided for in the license?

10 Does the extensive cracking of fuel elements cladding in the SSER facility require qualitive and quantative check clearances between fuel rods and the cladding tubes in the Monticello reactor to insure improved safety? (481)

11 Should, since AEC states that "a reactor can potentially be destroyed by a nuclear excursion or by loss of core coolant resulting in the release of fission products", action be taken by NSP to protect its position and to meet both the goals of safety and economic operation? (501)

12 Has AEC furnished NSP with the necessary technical criteria for the controlled disposal of radio active contaminants into the environment under both normal operations and in the event of a reactor accident or nuclear excursion? (503)

13 In the Safety Evaluation for the Monticello plant and in other documents it is referred to as Monticello #1 does this mean that there will be two reactors at this location?

14 In the event that a number of fuel rods slipped from the charge machine and dropped into the parking hole of the core reflector and several feet of the element would break off and bounce back out of the hole as happened at the Peach Bottom Reactor on February 24, 1968, would this constitute the postulated serious accident on page 14 of NSP Accident Analysis?

15 Has the Fermi Plant "incredible accident" so classified by Mr. Shaw of AEC in the hearing before the Joint Committee on Atomic Energy Congress of the United States point up to NSP that nuclear power plants are not cheap?

16 Would the amount of radio active contaminants released to the environment by this nuclear excursion be of concern to the Metropolitan residents?

17 It is noted that the Public Service Company of Colorado contract specifies termination if Price-Anderson coverage and property damage and liability are not obtained and in this respect does NSP have a contract of this type with AEC?

18 Peach Bottom reactor operated by Phil. Electric Company was shut down on January 11, 1968 after 150 days of operation to investigate the increase in primary loop activity of a rise from 1/3 curie to approximately 4 curies apparently due to cracked element or blocked purge flow through the element in this respect has NSP followed up on this occurance to become familiar with the reason for such rise in curie production?

19 Has NSP considered the Fort. St. Vrain containment problem in building the Monticello plant since apparently this added protection will help safeguard the environment?

20 What will be the total amount of thermal additives that will be discharged to the Mississippi River water by Monticello #1 and #2? Will water carrying thermal additives be contaminated with radio active tritium?

22 Based on AEC experience on the Columbia River, what will be the effect on the ecology of the Mississippi River by the thermal additives to the water?

23 Can the extensive release of Iodine 131 which spread the radio active contaminant over Europe in the Windscale accident occur at the Monticello facility? If such an accident occurs who pays for all the radio active milk that would have to be destroyed due to Iodine 131?

25 Because Piqua Nuclear Facility which experienced 12 major shut down periods and experienced difficulties with control rod drives was permanently closed down will this necessitate a re-evaluation of the Monticello reactor with reference to control rod drives?

26 From page 171 of 1966 AEC publication "Major Activities of Atomic Energy" we learn that tritium was produced by fission through fuel element cladding and Battlle Memorial Institute recommended collection of the primary leakage at PM-1 facility with off site disposal of the radio active tritium. Will Monticello follow these recommendations and dispose of all tritium contaminated water by site shipment to AEC burial grounds?

28 Since fission product releases to the environment are the main hazards of nuclear reactors how will NSP guarantee the integrity of the Monticello reactor to prevent a public hazard?

29 What are costs per KWHR produced for necessary equipment to provide maximum cleaning of all radio active gases destined for discharge into the atmosphere?
30 For water? What will be costs for off shipment of all radio active liquid, solid and particulate matter?

32 AEC has committed about 100,000,000 in fiscal 1969 for safety and reactor technology and in this respect will AEC expect Monticello to be utilized to assist in carrying out the experimental program that in any case will reduce its own safety due to the gemmi-type of event that can't happen but did? (491-497)

33 What new method will Monticello employ to prevent the discharge of SR 90, C 137, I 131, and H 3 into the river?

34 In view of the water supply uses down river from the Monticello site why was this site chosen for the facility?

35 Has NSP become familar with delay occassioned in Dresden #1 of Commonwealth Edison due to cracks in the primary system in April of 1967? Will the closing of Dresden in February, 1968 to check and repair all cracks require a new material program at Monticello?

37 Will Monticello have enough capacity to contain and hold up discharge of gaseous wastes pending favorable winds?

38 How many venting or exhaust methods will be employed and will be available to vent radio active gases and materials to the atmosphere by the Monticello plant?

39 In the event of the escape accidentally of radio active gases from the plant either through the regular channels or through a nuclear excursion penetrating the integrity of the building will the Twin Cities be notified and warned about the forthcoming radio active cloud? How will the officials be notified? Who will do the notification?

40 Is all radio active materials and waste released through the stack or other outside vents properly filtered before release? Will any radio active contaminant be released to the atmosphere without filtration even after delay for one-half life decay?

42 What will it cost NSP to operate the towers on closed cycle to prevent thermal discharge to the river? What is the cost expressed in cost per KWHR? In both capital equipment and in operating costs?

45 What are the costs for transporting the radio active Monticello wastes to the AEC perpetual burial grounds? What are the cost for burial by gallon and by cubic feet? How many curies of activity will be shipped by mega watt of electricity generated?

48 What action will NSP take to prevent installing the engineering field adaptations employed at Fermi which was the probable cause of the incredible accident that forced closing and kept the $120,000,000 plant closed down for the past two years?

49 During periods of fumigation or during fumigating conditions what means will be employed to withhold radio active discharges to the atmosphere from the stack?

AEC in its budget request of 2 billion, nine hundred million in fiscal 69 only budgeted $775,000.00 for studies of the environment including environmental aspects of nuclear operations and the effects of these radio active effluents on the environment which is approximately one penny for every $30,000.00 in the AEC budget.

Preoperational testing of the ERR facility developed thousand of gallons of radio active boric acid which was released into the river by Allis Chalmers Company. Will this performance be repeated at Monticello by G.E.?

Does AEC impose a requirement on NSP Monticello plant to test safety systems and safety features and to conduct in-plant and engineering scale tests related to safety features design and engineering of large nuclear plants? Would this type of research and development endanger facility and in turn the metro area? (507)

Does NSP plan to join in the CSE (Containment Systems Experiment) Program in studying the effects of a simulated loss-of coolant accident and consequent release of radioactivity upon systems employed to reduce the post accident pressure and upon the efficiency of engineered safety systems in restricting the movement of radioactivity? (507)

In event of a maximum accident as postulated by the AEC in the "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Plants", are plans being formulated for reimbursing property losses for evacuted areas and evacuted people?

Will sufficient medical facilities be available in the event of such an emergency? Have plans been made for the medical requirements for this probably impossible nuclear event?

Please present an evaluation of the amounts of radio active products escaping from the containment structure in the event of a partial melt down? In the event of a 50% melt down of the fuel? What is the significance of the dangers from these radio active contaminants released to the environment from this type of accident?

What action will be taken to safeguard the 230,000 gallons retention tanks containing radio active wastes? What protection is provided to prevent seepage of radio active contaminants into the underground waters? What amount of radio activity is contained in these tanks?

What action to prevent sabotage of the tanks by a foreign enemy or our country?

The current operation of Peach Bottom Plant and the planned PSC Plant is to demonstrate fuel elements, prestressed concrete pressure vessels and other key components of the HTGR Plant which is beyond the present state of technology of this plant and the research and development is required for developing larger nuclear plants and in this respect will AEC require the Monticello plant to enter into these AEC research and development objectives?

Will dilution of the radio active contaminant discharged into the water prevent the reconcentration in the biota and the food chain?

67. The St. Paul Dispatch for 8 August 1968 contained information that AEC closed down the Elk River Reactor because of leaks in the primary coolant system. Will this closing increase amount of concern to NSP and to AEC?

68. In addition to the 16 nuclear facilities that have been closed permantely down it now appears that Fermi, Pathfinder, Elk River, Bonus and Peach Bottom Reactor plants may never reopen in view of these developments has AEC advised NSP to participate in reactor safety programs thru assignment of personnel to specific safety projects such as CSE and LOFT programs?

69. When will AEC release the study of the upper Mississippi on the predicative capability of a river basin?

70. Triitium which is produced in nuclear reactors and becomes a consituent of water making the water a radio active and extremely dangerous and capable of contaminating all parts of the environment and all life is called a radio active contaminant by Chairman Seaborg of the AEC. How much will be shipped from Monticello to AEC burial grounds?

71. Since shell fish, according to radiological Health Data and Reports Vol.8 Sept. 1967, are sensitive indicators of radio contaminants in water, will Monticello operations in testing the environment include shell fish in the sampling program for determination if their uptake exceeds the proposed concentration guide?

72. AEC divulges that as the fuel material is recycled in the recovery operations the concentration of contaminants increases since the highly irradiated power fuel will contain gamma or neutrons or both which emit contaminants which increase the bilological shielding requirements. Has AEC instructed NSP in this matter to in order to protect the safety and health of the people at the Reactor.

73. When will AEC furnish MPCA complete information on tritium production in all the reactors liscensed by AEC in this state?

74. Will AEC and NSP furnish to the MPCA the total amount of tritium that the proposed plants on the Minnesota and Mississippi rivers in Minnesota will discharge into the environment?

75. What will be the total amount of this radio active contaminant, that cannot be removed, altered, changed or chemically treated coursing down the heart of America via the Mississippi River to the Gulf.

76. What amount of insurance protecting the public from nuclear excursions does NSP plan to carry? Will insurance be carried for damage to property, soil, plant life, people, etc. from radio active contaminants continually discharged into the environment or from a nuclear excursion of the type which occurred in the Fermi Nuclear Plant?

77. From AEC docket of May 4, 1967, it is learned that ground level inversions will take place at Monticello about 30% of the time will radio active contaminant discharges be automatically controlled to prevent discharges when wind is not in cooperation.

78. What is meant by the statement "maximum credible accident" in relation to the safety of the residents of the Twin City metropolitan area and the Monticello reactor?

79. Is information available as to the amount of tritium produced in a BW Reactor? Will this be furnished to the MPCA?

80. How much radio active contaminants will be discharged into the Atmosphere, the river and the soil by the closed ERR at Elk River?

81. For how long?

82. What amount and types?

83. Why was ERR closed down? How much radio active contaminants was it actually discharging to environment? What was effect on Plant Personnel? Did fear of a Nuclear Excursion impel close down to prevent Fermi type experience?

NOV 19 1968

Mr. John P. Badalich
Executive Director
Minnesota Pollution Control Agency
459 Board of Health Building
University Campus
Minneapolis, Minnesota 55440

Dear Mr. Badalich:

In response to your letter of September 3, 1968, I am pleased to provide some regulatory staff comments on the various questions raised in the letter and its attachments from Mr. Steve Gadler. Also enclosed are eight information documents bearing on these questions.

I hope the staff comments and information documents will be helpful to you and your colleagues of the Minnesota Pollution Control Agency.

Sincerely yours,

Original Signed by C. K. Beck

Harold L. Price
Director of Regulation

Enclosure:
Staff Comments with attachments

REGULATORY STAFF COMMENTS ON QUESTIONS
PREPARED BY
MINNESOTA POLLUTION CONTROL AGENCY MEMBER, STEVE J. GADLER

Information bearing directly on many of the questions listed by Mr. Gadler is contained in the following documents, copies of which are transmitted herewith.

1. 10 CFR Part 20 - Standards for Protection Against Radiation
2. 10 CFR Part 50 - Licensing of Production and Utilization Facilities
3. 10 CFR Part 100 - Reactor Site Criteria
4. TID 14844 - Calculation of Distance Factors for Power and Test Reactor Sites
5. General Design Criteria for Nuclear Power Plant Construction Permits
6. ORNL-4070 - Management of Radioactive Wastes at Nuclear Power Stations
7. Staff Safety Evaluation of Monticello Nuclear Generating Plant, Unit 1
8. Portions of Section 170 of Atomic Energy Act

The first three references set forth the regulatory requirements which must be met in the siting, design, construction and operation of nuclear power plants. Radioactive releases from these plants into the air or into contiguous waters during their operating lifetime are subject to the provisions of Part 20 (Reference #1) designed to limit exposures of the public to levels well within limits recommended by the Federal Radiation Council, the National Committee on Radiation Protection, and the International Commission on Radiological Protection. As an administrative technique, these limits are translated into detailed operating restrictions based on a study at the site and of local meteorological and hydrological conditions. Instrumentation to measure releases into the air and water must be provided at each plant, and records must be kept of all releases. Both are subject to inspection by regulatory Compliance inspectors.

Factors that must be considered in evaluating proposed sites for nuclear plants are set forth in Part 100 (Reference #3). These relate both to the proposed reactor design and the characteristics peculiar to the site. The procedures to be used in estimating potential radiation exposure of offsite populations under accident conditions are given in TID-14844 (Reference #4). Safety design requirements

to provide a wide margin of public safety under both normal operating and accident conditions are given in Part 50 and in more detail in the General Design Criteria for Nuclear Power Plant Construction Permits, (References #2 and #5). The latter document was published in the Federal Register for public comment in July 1967, and is expected to be issued as a formal design requirement in the near future.

There have been no accidents to date in any nuclear plant in the United States which involved a significant offsite release of radioactivity. As regards releases during normal operations, the most recent experience information is contained in a report, ORNL-4070, (Reference #6) issued in January 1968 by the Oak Ridge National Laboratory. This contains a reference to Elk River.

Reference #7 is included in the information material being transmitted in order to give Minnesota Pollution Control Agency members an opportunity to see what matters were considered by the regulatory staff and Advisory Committee on Reactor Safeguards in their safety review of the Monticello Nuclear Power Station. This report was prepared for presentation at the public hearing held on May 25-26, 1967, in connection with the issuance of the construction permit. Although the Northern States Power designation of Unit No. 1 appears on the cover sheet for this report, we know of no present plans for additional units at the Monticello location. Among the several supplementary attachments to the staff review is a letter from the Fish and Wildlife Service of the U. S. Department of the Interior which may be of interest to MPCA members.

Approximately half of the questions listed by Mr. Gadler are concerned with various aspects of the radioactive releases from Elk River and Monticello plants into the air and into the Mississippi River during their operating lifetime. Our comments will first be directed to the substance of these questions, then will go to the miscellaneous subjects covered in the remaining questions.

Boiling water reactors such as Elk River and Monticello release small amounts of radioactive gases into the steam which go through the turbine and accumulate in the condensate system. These gases, which include tritium, xenon and krypton, and possibly some particulates, go to the holdup tank where any short-lived isotopes decay and measurements are made of the level of radioactivity in the gas. If suitable for release into the high-velocity air stream going up the stack under

the limitations of Part 20 of the Commission's regulations, the gas is passed through several high-efficiency filters to trap any particulates that may be present and then released to the atmosphere from a high stack at an exit velocity of the order of 50 ft./sec. If excessively high activities are detected during the holdup period, or if very unfavorable weather conditions prevail, release to the atmosphere will probably not be able to meet the conditions of Part 20. The Monticello plant has only a limited holdup capability which, however, should be sufficient to meet the requirements of Part 20 on atmospheric releases under normal operating and weather conditions. If a situation should arise where release under Part 20 is prohibited and the holdup tanks are filled to capacity, it would be necessary to shut the plant down until favorable conditions develop.

In the event of an accidental escape of potentially dangerous amounts of radioactivity from the stack, emergency actions would be required. Although detailed emergency procedures have not yet been developed for the Monticello plant, the basic plan will be to notify local authorities such as fire and police departments and other civil agencies that previously planned procedures should be followed. If necessary, the twin-city area would be notified. Notification would be by NSP officials or alternately by local police or fire departments. Under extreme conditions, emergency radioactive monitoring assistance might also be supplied by the U. S. Atomic Energy Commission.

In addition to the radioactivity released to the atmosphere, some radioactive liquid effluents are generated during the course of normal operations both in pressurized water reactors and boiling water reactors. These water residues are collected in onsite storage tanks, sampled to determine the activity level, and if the level is sufficiently low are eventually released into the condenser cooling water under the limitations imposed by Part 20 of the Commission's regulations.

Some tritium is present in the liquid effluent along with such other possible nuclides as Cs^{137}, Co^{60}, Sb^{124}, and Sr^{90}. Since MPCA has expressed a special interest in tritium, some comments on this subject are in order. Tritium, incidentally, is one of the less hazardous of the radionuclides produced in nuclear reactors because of its relatively low disintegration energy and relatively short residence time in the body.

First, with regard to the tritium releases at Elk River, information in the regulatory inspection files based on RCP batch release records shows that during 1967, 12.5 curies of tritium were released to the Mississippi River with the condenser cooling water from the Elk River reactor. The cooling water had a flow rate of 28,000 gpm. The releases made in batches during the year amounted to an average concentration in the cooling water of about one ten-thousandth of the maximum permissible concentration specified in Part 20 of the Commission's regulations. The average concentration of tritium in the cooling water from Monticello will depend on a number of operating factors, but must necessarily meet the restrictions imposed by Part 20.

How much effect has the tritium release from Elk River had on the tritium content of the Mississippi River? This can be estimated from the following considerations. The 12.5 curies released during 1967 with the condenser cooling water gave an average concentration of 170 pico-curies per liter in that water (a pico-curie is 10^{-12} curie). Mixing of the cooling water with the Mississippi River gave a further dilution to approximately 3 pico-curies (pci) per liter. To place this number in proper perspective, USPHS data for 1966 indicate a tritium concentration in surface waters of the United States ranging from 2000 to 15,000 pci/liter. The estimated 3 pci/liter added to the Mississippi by the Elk River plant during 1967 is insignificant compared to the normal background content. It is much too small to be measured, since the minimum detectable level difference is 500 pci/liter. Hence there would be no detectable difference between the tritium content of the Mississippi upstream and downstream of Elk River.

To reduce the level of radioactivity (other than tritium) in the liquid effluent released to the Mississippi River, the Monticello facility will incorporate, in its liquid radwaste system, non-regenerative demineralizers employing resins which after they are spent are disposed of as solid radioactive waste.

The liquid waste storage tanks are located in the reactor building which provides secondary containment for the reactor. (The 230,000 gallon tanks referred to in one of the questions do not contain radwaste. They are condensate storage tanks and contain only non-radioactive water.) The building in which the radioactive

liquid waste tanks are located is a concrete structure which could contain gross leakage from the tanks. The level of radioactivity in these liquid wastes will vary from time to time, but normally a concentration of the order of 0.1 curie per liter would be expected.

At present there are 27,650 gallons of contaminated water at the Elk River reactor. It contains a total activity of about 1.5 curies. We understand that it is planned to discharge this contaminated water into the Mississippi River at a rate of 4500 gallons per month over a 5-month period.

With regard to effect of dilution of the radioactive material discharged into the water on the reconcentration in the biota and the food chain, we have the following comments. Dilution will not prevent reconcentration in biota. But, since the equilibrium concentration in the biota is proportional to the concentration in the water, the dilution of the released radioactivity by the river will reduce the concentrations which would otherwise occur in organisms growing in the water if there were no dilution. The meaningful question with respect to public health and safety is whether the average concentration of a given nuclide in the river will result in a concentration in the biota such that the latter becomes a significant source of exposure to man. Operating experience with power reactors and information on types and quantities of radionuclides likely to be released from such reactors indicate that this is not likely to be the case. Environmental monitoring programs of the facility licensees, various health agencies and the Atomic Energy Commission are designed (1) to confirm that actual radionuclide releases from power reactors, and their behavior in the environment, are as anticipated or (2) to detect any significant variance that might occur.

Turning now to the substance of the miscellaneous questions in Mr. Gadler's list, each applicant for a construction permit to build and operate a nuclear power plant at a proposed location is required to submit along with his application a Preliminary Safety Analysis Report containing detailed information on the site selected for the plant, and on the proposed plant design. The education of the applicant in the nuclear field is his own responsibility, but before a construction permit or operating license is issued there must be a

finding on the part of the AEC that the applicant is technically qualified to construct and operate the proposed plant safely. This technical competence is subject to continuing scrutiny by the Compliance inspectors throughout the entire operating life of the plant.

A number of questions in Mr. Gadler's list express his concern that construction and operation of the Monticello plant may be subject to some or all of the difficulties experienced at other nuclear stations, such as Senn, Selni, Oyster Creek, Tarapur, Fermi, Piqua, and Dresden 1. The answer to all the questions is the same, -we do not think there is any essential relationship between what happened at any of these reactors and what may be expected to happen at Monticello. Some of the operational difficulties were due to unforeseen factors associated with the developing technology of nuclear power. None of them created a hazard to public safety. Most of the construction difficulties experienced to date have been due to deficiencies in quality assurance and quality control in the selection and fabrication of materials, components and systems that go to make up the finished nuclear plant. Much emphasis is being placed on these matters, and the Commission is taking a very active part in the development of codes, standards and criteria governing the design and construction of nuclear power plants. Of course, this does not preclude the possibility of difficulties at other plants now under construction, including Monticello. However, any difficulties that arise having the potential of affecting public safety must necessarily be resolved before the plant will be permitted to operate.

As regards the use of stainless steel in the tube-side of the feedwater heaters at Monticello and other similar nuclear installations, this is done to minimize corrosion products in the water passing through the reactor core. Feedwater demineralizers are used for the same purpose. Activation of corrosion products in the reactor coolant water raises its radioactivity to an unnecessarily high level and poses undesirable operating problems.

Various types of postulated accidents are analyzed for their potential consequences in the applicant's safety evaluation of proposed nuclear power plants. For the Monticello plant several different types of accidents considered by NSP are discussed on pages 14-19 of Reference #7. The refueling accident corresponding to the one referred to at Peach Bottom No. 1 is discussed on pages 15 and 16. This was assumed to result from dropping a spent fuel assembly during refueling. The fission products released would be from those fuel rods mechanically damaged. The gas-cooled Peach Bottom reactor is entirely different from the boiling water reactor at Monticello.

On the subject of thermal releases, approximately 3.4 billion BTU per hour will be released to the environment during full power operation of the Monticello plant. This will be released to the Mississippi River when flow conditions permit. When the river flow is too low to provide the required 1000 cubic feet per second of cooling water the heat energy will be dissipated to the atmosphere via a cooling tower.

Pre-operational and periodic tests of safety features and plant protection systems are required at all nuclear power stations. Such tests involve no hazard to public safety. NSP will not be involved in any part of the Commission's safety research and development program involving loss of coolant experiments, although they will get the results of experiments conducted.

Evaluation of the amounts of radioactive products escaping from the BWR containment structure in the event of a partial meltdown of the fuel is discussed in section 5.4 of Reference #7 under the subject heading "Loss of Coolant Inside the Drywell." This sets forth the assumptions and procedures followed in estimating the potential offsite radiation exposure due to the postulated loss of coolant accident.

As regards the matters of liability and indemnity, section 170 of the Atomic Energy Act sets forth two requirements which must be met before any nuclear power reactor can be operated. First, the company shall have and maintain "financial protection", i.e., insurance, to cover public liability claims. In Northern States Power's case this would be in the amount of $74,000,000. Second, the company must enter into an indemnity agreement with AEC whereby AEC provides indemnification for public liability over and above the $74,000,000 of insurance, so that the total insurance plus indemnity equals $560,000,000. These funds are available to cover certain public liability (legal liability) in the unlikely event of a nuclear occurrence which causes significant damage to persons or property offsite. Moreover, provisions have been made for speedy payments for damages. A copy of these provisions, as published for comment in the Federal Register last May, is enclosed as Reference #8. These provisions, with essentially minor changes, were published on October 31, 1968, in the Federal Register as effective regulations.

As regards the matter of sabotage, 10 CFR section 50.13 of the Commission's regulations states that an applicant for a license to construct and operate a reactor is not required to provide for design features or other measures for the specific purpose of protection against the effects of attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States. In connection with this rule, the Commission has pointed out that many of the safety features incorporated in the design of a reactor facility, while not having as their specific purpose protection against the effects of enemy attacks and destructive acts, could serve a useful purpose in that regard. Prominent among these are the massive containment for the reactor and procedures and systems for a rapid shutdown of the facility in the event of an emergency. Moreover, to the extent that the matter of "industrial sabotage" of a nuclear reactor may be appropriate for consideration, it will be considered by AEC at the operating license stage.

As a final item of information, a licensee may not abandon a nuclear plant without first being authorized by the AEC to do so. Chapter 10 CFR section 50.82 provides as follows:

> Section 50.82 Applications for termination of licenses.
>
> (a) Any licensee may apply to the Commission for authority to surrender a license voluntarily and to dismantle the facility and dispose of its component parts. The Commission may require information, including information as to proposed procedures for the disposal of radioactive material, decontamination of the site, and other procedures, to provide reasonable assurance that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public.
>
> (b) If the application demonstrates that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public, and after notice to interested persons, the Commission may issue an order authorizing such dismantling and disposal, and providing for the termination of the license upon completion of such procedures in accordance with any conditions specified in the order.

08-1969

STATE OF MINNESOTA
MINNESOTA POLLUTION CONTROL AGENCY
459 BOARD OF HEALTH BUILDING
UNIVERSITY CAMPUS
MINNEAPOLIS
55440

December 20, 1968

Mr. Harold L. Price
Director of Regulations
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Price:

I wish to acknowledge receipt of your letters dated November 19, 1968, regarding 1) information as to a gaseous diffusion plant in Minnesota, and 2) response to my letter of September 3, 1968, regarding various questions submitted by Mr. Steve J. Gadler, with attachments.

Your comments and that of your staff are greatly appreciated and are now being reviewed by members of the Agency, our staff, and also our consultant on radioactivity.

Since the original submission to you of some 80 questions posed by Mr. Gadler, he has drafted an additional 27 questions that bear consideration by the Atomic Energy Commission. I have enclosed a copy of these questions signed by Mr. Gadler and again ask that these be answered in his behalf and as a matter of information to our Agency.

One further question I neglected to ask you at the outset, and for your comment, was a statement that was made by the Congressional Joint Committee on Atomic Energy in the congressional report under date of February 1968, that states: "Until experience is gained and adequate safeguards are proved out, prudence dictates that large reactor installations be fairly far removed from population centers."

If this is true, why, then, was the Monticello nuclear power reactor located only forty miles upstream from the Minneapolis-St. Paul Metropolitan Area, having a population of approximately two million people, and the water supply for in excess of one million people? Would you please clarify for us the statement as it appeared and is quoted in the Congressional Record?

Again I wish to express my appreciation to you and others of the AEC staff for your cooperation in providing the information requested in the past, and I trust that the above request for additional information and answers will be forthcoming in the very near future.

Very truly yours,

John P. Badalich, P.E.
Executive Director

JPB:mmb
Enclosure

CONTAMINATION OF ST. PAUL - MINNEAPOLIS AND SUBURBAN WATER SUPPLIES BY MONTICELLO AND ELK RIVER ATOMIC REACTORS

1. What are the types and amounts of radioactive pollutants that will be discharged into the Mississippi River by the Monticello reactor per day? Per year?

2. In the eventof a serious atomic accidont that would contaminate tho Mississippi River with radioactive pollutants will AEC provide the Twin Cities water for drinking and industrial purposes?

3. If not, why did the AEC approve NSP a permit at Monticello?

4. Is an emergency water supply for the St. Paul and Minneapolis water systems in existing U.S. Atomic Energy Commission plans if the river is contaminated with radioactive pollutants?

5. Has a probable atomic accident at the Monticello reactor that would prevent utilizing Mississippi River water by St. Paul and Minneapolis been discussed with concerned public water officials?

6. In the event of the emergency in (4) above how will industries dependent upon the Mississippi water stay in operation?

7. In the event of an atomic or other accident at the Monticello reactor that would pollute the Mississippi River water for all down-river users especially the St.Paul - Minneapolis residents who will pay for the added water costs if an emergency source of water becomes available?

8. Since the health and safety of the public which includes integrity of the St. Paul - Minneapolis water supplies is a responsibility of the Atomic Energy Commission both by law and its own regulations, how will the Atomic Energy Commission prevent the pollution of the Mississippi River with radioactive pollutants which are a million to a billion times more toxic than any chemical known to man?

9. Since the Atomic Energy Commission has permitted the construction of the Monticello reactor above the St. Paul and Minneapolis water intakes on the Mississippi River will the Atomic Energy Commission carry out the intent of the congress and prevent the discharging of radioactive materials into the river thereby providing for the health and safety of the down-river residents.

10. What type of communication networks are to be provided in case of the inevitable atomic accident at the Monticello atomic reactor which would destroy St. Paul - Minneapolis water supplies?

11. What are the present plans or arrangement for alerting St. Paul - Minneapolis water officials of an accidental discharge of radioactive materials into the Mississippi River at Monticello?

12. Since the Atomic Energy Commission is responsible for the "health and safety" how will they prevent sabotage of the 250,000 gallon radioactive water retention tanks at Monticello?

13. In the event of sabatage or accidental bursting of the 250,000 gallon radioactive water retention tanks who will advise St.Paul water officials about the accident.

14. Who will advise St. Paul and Minneapolis public officials of the serious radioactive contamination of the river?

15. Who will determine the amount and type of radioactive materials discharged into the river? Who advises who, when and by what means?

16. Since semantics plays such a large role in nuclear literature and terminology and the Atomic Energy Commission refers to serious atomic accidents as incidents or occurrences, is it possible to withhold information affecting the safety and health of people by reporting an atomic accident at Monticello as an incident?

17. Since it is incumbent upon the operation of any atomic facility within this state to make full and complete disclosures concerning types and amounts of radioactive materials to be discharged into the environment, how does NSP intent to provide the information and to whom?

18. Does NSP intend to dilute radioactive materials for discharge into the Mississippi River at the same ratio used by the U.S. Atomic Energy Commission's reactor at Elk River?

19. Does dilution of these radioactive toxic materials that NSP desires to discharge into the St. Paul - Minneapolis water supplies reduce their dangers to the drinking populaces?

20. Since dilution of these cumulative types of radiation does not reduce their irreversible characteristics, how can the NSP or the Atomic Energy Commission protect the public health and safety since the populace will be drinking radio active water?

21. What will be saving to the NSP stockholders in KWH produced by the Monticello atomic reactor thru the discharging into the environment and thereby polluting St. Paul and Minneapolis, instead of out-state shipment for burial and perpetual Atomic Energy Commission care?

22. Since radioactive nuclides or radioactive materials are all subject to a law of nature that the rate of physical decay natural to each cannot be altered to make them less radioactive regardless of the amount of dilution or dispersion or dejusion, how does the Atomic Energy Commission propose to preserve the environment and prevent the radioactive pollution of the St. Paul - Minneapolis water supplies?

23. Since the Mississippi River is the source of water for St. Paul and Minneapolis and others down-river, why does NSP desire to discharge radioactive wastes into the river?

Page 2 of 3 pages
12 questions

24. Since all radiation regardless of the dose is cumulative and irreversible and since the radioactive waste from the atomic reactor at Monticello if discharged into the river will increase substantially, the radioactive dosages to the St. Paul and Minneapolis water users why does NSP want to use the Mississippi River for radioactive waste disposal?

25. Since a long series of small radioactive insults to the human body may accumulate to produce long-delayed serious injury why has the U.S. Atomic Energy Commission affirmed and approved the Monticello atomic reactor that wants to discharge radioactive pollutants into the river and the atmosphere thereby increasing the dosages to down-river residents with its routes of water and atmospheric disposal?

26. Since the most tempting and most economical radioactive disposal route for the Monticello reactor is the Mississippi River, what assurances will the MPCA and down-river water users that NSP is not "riding the river"?

27. Since the U.S. Atomic Energy Commission is not concerned with the integrity of the St. Paul and Minneapolis water supplies, what right do they have to pollute these waters?

Page 3 of 3 pages

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

FEB 17 1969

Mr. John P. Badalich
Executive Director
Minnesota Pollution Control Agency
459 Board of Health Building
University Campus
Minneapolis, Minnesota 55440

Dear Mr. Badalich:

Thank you for your letter of December 20, 1968. As regards the additional questions contained in your recent letter and its attachment, some further comments may be helpful.

The distance from dense population centers of nuclear power generating stations now under construction or in operation ranges from a few miles up to forty miles or more. None of them are located in metropolitan centers, but other reactors may be eventually. All of the plants, regardless of their location, are required by statute and the Commission's regulations to be designed, constructed and operated so as not to endanger the health and safety of the public. An extensive discussion of siting considerations is contained in the enclosed report of the Congressional Joint Committee on Atomic Energy Hearings on the Licensing and Regulation of Nuclear Reactors held in April and May 1967.

Approximately half of Mr. Gadler's second list of questions relates to his concern about routine releases of radioactivity into the Mississippi River and into the air during operation of the Monticello plant. Since a major part of the information transmitted with my earlier letter to you dated November 19, 1968 was devoted to this subject in response to about half of Mr. Gadler's first list of questions, I will not try to repeat what was in that transmittal which should serve to answer the environmental

release questions in the second list as well as the first. In summary, such environmental releases are restricted under Part 20 of the Commission's regulations to quantities which are not likely to result in exposures to members of the general public exceeding the limits recommended by the National Council on Radiation Protection and Measurements, the International Commission on Radiological Protection and the Federal Radiation Council.

The remaining questions in Mr. Gadler's second list are directed to accident situations and the emergency procedures for notifying various authorities in the event that major releases of radioactivity into the environment should occur. This was also discussed at some length in my previous transmittal. While it is not possible to rule out such accidents on an absolute basis, the safeguards built into the plant design are so extensive as to make it extremely unlikely that any dangerous amount of radioactivity would be released offsite even in the event of credible accidents inside the containment structure. Emergency procedures to cope with unlikely substantial radioactive releases offsite, including notification of appropriate public officials, are required to be developed by all licensees prior to the start of nuclear power plant operations. Such procedures will be included in the final safety analysis report prepared by Northern States Power Company and reviewed for adequacy by the staff and the Advisory Committee on Reactor Safeguards prior to granting a license to operate the Monticello plant. This report will be a part of the public record, and a copy will be placed in the Commission's Public Document Room when completed.

Sincerely yours,

(signed) Harold L Price

Harold L. Price
Director of Regulation

☆ U. S. GOVERNMENT PRINTING OFFICE : 1967 - 271-114

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REMARKS re BR-2197

re ltr fm Paul H. Engstrom, Pres. of the Minn. Environmental Control Citizens Association dtd 5/24/69 - requests someone contact Mr. McIver in the Congressman's office to discuss questions submitted in Engstrom's letter

Reply for Chairman's signature
"Dear Mr. Fraser"

Note fm the Chairman's office
"Transmit correspondence to Engstrom & indicate staff contact"

Is notification to the JCAE recommended? _____

REFERRED TO	DATE
Henderson S/section	6/19/69
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Beck	PDR (50-263)
Bunn	
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DIRECTOR OF REGULATION
COMMUNICATIONS CONTROL

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U. S. AEC

OFFICE OF THE CHAIRMAN

DR-2218

6-19
(Date)

TO: DR Code 180

___ For appropriate handling X-4755

DR Reply for Chairman's signature

For information: GM ✓ Commissioners ✓ DR___

Remarks REPLY; TRANSMIT CORRESPONDENCE TO ENGSTROM & INDICATE STAFF CONTACT

Julius H. Rubin
For the Chairman

DONALD M. FRASER
5TH DISTRICT, MINNESOTA

332 HOUSE OFFICE BUILDING
202-225-4756

DALE MACIVER
ADMINISTRATIVE ASSISTANT

Congress of the United States
House of Representatives
Washington, D.C. 20515

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STATE DEPARTMENT ORGANIZATION AND FOREIGN OPERATIONS

INTERNATIONAL ORGANIZATIONS AND MOVEMENTS

DISTRICT OF COLUMBIA COMMITTEE

June 17, 1969

Dr. Glenn T. Seaborg, Chairman
U. S. Atomic Energy Commission
Washington, D. C.

Dear Dr. Seaborg:

On May 24, Paul H. Engstrom, President of the Minnesota Environmental Control Citizens Association, wrote you enclosing a list of questions relating to power plants run by Atomic Energy in Minnesota.

I would appreciate your having someone on your staff contact Mr. MacIver in my office to discuss these questions. If you have prepared an answer to Mr. Engstrom and are able to share that correspondence with me, it would be helpful.

Your cooperation is appreciated.

Sincerely,

Donald M. Fraser

Rec'd Off. Dir. of Reg.
Date 6/19/69
Time 4:20

DR 2218

DR-2197

MECCA

MINNESOTA ENVIRONMENTAL CONTROL CITIZENS ASSOCIATION

1053 South McKnight Road, Saint Paul, Minnesota 55119

May 24, 1969

Dr. Glenn T. Seaborg, Chairman
United States Atomic Energy Commission
Washington, D. C.

Dear Dr. Seaborg:

The Minnesota Pollution Control Agency recently gave its approval for a waste discharge permit for a nuclear reactor at Monticello, Minnesota.

In the haste to pass this permit many questions about this facility remained unanswered to the satisfaction of the people of this state.

One member of the Minnesota PCA drafted several lists of questions he felt should be answered. One such list was intended for the U. S. Atomic Energy Commission. A copy of this set of questions was released to the press but it is our understanding that this list was never forwarded to you from the PCA. The questions, therefore, remain unanswered.

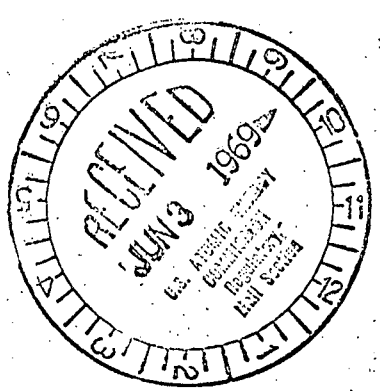
I am enclosing a copy of these questions for you. I hope you will give them your prompt attention.

Very truly yours,

Paul H. Engstrom

Paul H. Engstrom
President

cc: Senator Eugene McCarthy
Senator Walter Mondale
Congressman Joseph Karth
Congressman Donald Fraser
Congressman Clark MacGregor



Rec'd Off. Dir. of Reg.
Date 6/3/69

DR-2197

April 30, 1969

Monticello Nuclear Generating Plant Questions Pertaining to the AEC (List #3)

by

Steve J. Gadler, P.E.
Member of the Minnesota Pollution Control Agency

1. Since the health and safety of the Minneapolis-St. Paul metropolitan population down river and down wind from the Monticello Nuclear Reactor plant is of concern, why did the AEC -

   a. Approve the request to build and operate a reactor which according to the NSP Final Safety and Analysis Report has undeveloped components?

   b. License the construction and operation of an experimental type of reactor under the Research and Development section of the Atomic Energy Act?

      1. Is the Monticello site or plant licensed? Or are both licensed?

   c. Permit the discharge of radioactive pollutants into the Mississippi which is the source of drinking water for approximately one third of the people living in Minnesota and for the down river populations to the gulf of Mexico and a source of water for industry and for agricultural irrigation?

   d. Fail to make any plans to provide a source of water supply for down river users in the event of a nuclear accident at Monticello which would destroy the river as a source of drinking water?

   e. Not advise the USPHS that the Mississippi River water was used for irrigation down river from the Monticello plant?

   f. Overlook producing complete and thorough studies on the total effect to the Mississippi River Valley ecological system from the contemplated radioactive waste discharges into the air and water environments from Monticello, Elk River, Prairie Island and other reactors?

   g. Neglect to consider the damage to the quality of the water and to the river biota from the thermal pollutants to be discharged from Monticello, Elk River, Prairie Island and other being planned for this area?

2. Since the public health is of concern what control will be imposed on the operator by AEC -

   a. In event the plant is closed down because of accident or obsolescence?

b. For disposition of site, radioactive structure and reactor after final close down?

c. To prevent abandonment in order to protect the public interest?

d. To decontaminate and control area as long as necessary to protect the public health and safety?

3. The AEC literature indicates that many reactors such as Fermi, Pathfinder, Piqua, Bonus, Hallum, Elk River, etc., have been closed and others such as Dresden, Peach Bottom, Oyster Creek, etc., have experienced difficulties due to many factors such as equipment failures, deterioration of metal, which has resulted in unscheduled radioactive waste releases to the environment. It therefore appears that the reactors are still in various stages of research and development and that all the necessary experimental work has not been accomplished and in view of these salient facts affecting the health and safety of all Americans, why did AEC not -

a. Conduct and complete all research and development work to develop a reactor technology before -

1. Imposing experimental nuclear plants on the economy?

2. Exposing American citizens to the risks of ionizing radiation from the radioactive waste discharged to the environment from these reactors?

b. Disseminate complete information to the public concerning -

1. The present health and future risks to the population from exposure to the radioactive wastes discharged into the environment?

2. Accidents and accidental discharges of radioactive wastes from reactors?

3. Total amount of radioactive wastes being discharged to environment, to be discharged, and the probable effects to health?

c. Close down reactors discharging radioactive wastes above AEC limits rather than to permit operations when reactors were experiencing difficulties?

d. Develop positive and secure instrumentation and monitoring methods to insure complete and effective data concerning amounts of radioactive wastes discharged to the environment?

e. Withdraw all operational licenses under the research and development section of the Atomic Energy Act?

f. Provide complete plans for establishing -

1. Alert warning networks?

2. Adequate medical facilities and evacuation procedures in the event of a nuclear accident?

4. The Sacramento Municipal Utility District plant is designed by Westinghouse to eliminate the discharge of any radioactivity to the water environment. Mr. Seaborg, Chairman of the AEC in a speech to an Air Pollution Symposium in Washington D. C. in 1967 said that the AEC is capable of designing plants without smoke stacks. In view of the SMUD system and the Seaborg statement -

a. How much time will be necessary to develop a reactor plant that can contain all radioactive wastes?

b. What are these costs per megawatt of electric power produced?

c. What is the amount of radioactive wastes produced per megawatt of electric power in a BWR type plant of the Monticello size?

5. The literature indicates that the AEC has permitted all nuclear reactors to discharge tritium substantially above level permitted for other radioactive wastes, why does AEC -

a. Permit tritium discharges to the environment?

b. Only utilize estimates instead of accurate on-line measurements for tritium discharges from reactors?

c. Why has USPHS recently established a tritium monitoring network?

6. According to information released by AEC, it appears hold up tanks will be utilized at the Monticello plant to meet the requirements of the limitations imposed by 10 CFR 20. In event of an inversion which should preclude discharge of radioactive wastes to the atmosphere -

a. What action can be taken by plant operators if tanks are already full when inversion occurs and more radioactive gaseous wastes must be handled?

b. Will plant be closed down under these conditions?

c. Are tanks at Monticello of sufficient capacity to hold up all gaseous radioactive wastes under adverse conditions to protect the public health and safety?

d. What will be done with wastes produced during shut down if tanks are full?

Monticello Nuclear Generating Plant Questions Pertaining to the AEC

7. According to AEC if excessively high radiation levels are detected during periods when radioactive gases are held up from discharge to environment or if unfavorable weather conditions prevail, release to the atmosphere will probably not be able to meet conditions of 10 CFR 20.

   a. In such an event does AEC advocate violation of its own regulations?

   b. What are the possible courses of action and recommendations to avoid the discharges under the conditions set forth in item 7 above?

8. The Advisory Committee on Reactor Safeguards of the Atomic Energy Commission by letter to Chairman Seaborg dated April 13, 1967 recommended -

   a. Stress analysis report for the reactor vessel be reviewed by independent experts since this is the first Nuclear plant to use a field welded and erected pressure vessel, a procedure new to the industry.

   b. That the AEC Regulatory staff satisfy itself with respect to the adequacy of the isolation valve test program and follow the development of the detailed design since in the event of a steam line rupture external to the reactor containment the steam line isolation valves must close rapidly.

   c. That NSP provide supplementary facilities for retention of radioactive wastes during periods of low river flow since during periods when cooling tower are utilized for recirculation of condenser cooling water the volume of discharge water into which the radioactive wastes can be diluted will be greatly reduced.

   In view of the importance of the above items to the health and safety of the public, detailed information should be presented to the Agency on the status and results of the ACRS Committee's recommendations?

9. The Monticello Unit #1 design incorporated at least 12 features (itemized on page 16 of Partial Summary of the Facility Description and Safety Analysis Report) which have not yet been demonstrated in reactor plant operation. All of these items were reviewed by the AEC Staff and the Advisory Committee for Reactor Safeguards, however since these important safety features which concern health and safety were only reviewed and not approved detailed information must be presented to the Agency showing -

   a. Where and when the listed items were found approvable and capable of meeting all safety requirements to protect the health and safety of the public?

   b. Recommendations as to the possibility of safe operation of these items which are new features and have not previously been operated in BWR reactors, without undue risk to health and safety of the public?

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c. Of the 12 listed items, which items have been completely developed and approved for use at Monticello by the AEC Staff and the Advisory Committee on Reactor Safeguards? When and by whom approved?

d. Of remaining items needing approval how many require additional research and development?

e. What is estimated approval date?

f. What are recommendations on operating the plant without AEC approval of all the tested and necessary engineeral safeguards?