UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION '83 MAR 21 P1:44

Wisconsin Electric Power Company
POINT BEACH NUCLEAR PLANT UNITS 1 & 2
DOCKET NOS. 50-266 AND 50-301
Operating License Amendment
(Steam Generator Tube Sleeving Program)

DECADE'S BRIEF IN SUPPORT OF ITS EXCEPTIONS
TO BOARD'S INITIAL DECISION

Pursuant to 10 C.F.R. §2.762, Wisconsin's Environmental Decade, Inc. ("Decade"), hereby submits its Brief in Support of Its Exceptions to Board's Initial Decision, dated February 11, 1983. This brief focuses the refusal of the Atomic Safety and Licensing Board ("Board") to first establish the degree of assurance necessary to protect the public safety before it found that the level of assurance proffered was adequate, without waiving the other exceptions that are not specifically addressed in this brief due to limited time and resources.

THE BOARD REFUSED TO MAKE PREREQUISITE FINDINGS ON THE DEGREE OF ASSURANCE NECESSARY TO PROTECT THE PUBLIC SAFETY

As an administrative agency, the Nuclear Regulatory Commission ("Commission") and its designated agents must act according to clear standards, and may not act arbitrarily and capriciously. 42 U.S.C. §706.

Congress has established as the statutory standard to control the Commission's action:

"In any event, no license may be issued to any person

> within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public." 42 U.S.C. §2133.

In turn, the Commission has established as the administrative regulation to control its conduct, as well as its Licensing Board's actions:

> "In determining that a license will be issued to an applicant, the commission will be guided by the following considerations:
>
> "(a) The processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals, in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the regulations in this chapter, including the regulations in Part 20, and that the health and safety of the public will not be endangered." 10 C.F.R. §50.40(a). [Emphasis added.]

> "The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture." 10 C.F.R. Part 50 App. A. Crit. 14. [Emphasis added.]

The Board had before it below a proceeding to determine whether to approve a new procedure (sleeving) intended to repair one part of the reactor coolant pressure boundary (steam generator tubes) that is failing. Tr. 1385.

Sleeving involves the insertion of a nominal 3/4 inch tube, approximately [extremely thin] inch in wall thickness, into a nominal 7/8 inch tube, approximately .005 inch in wall thickness, from the confined radioactive primary side of the steam generator by temporary workers, and then joining the ends of the first tube to the inside face of the second tube by a complex proprietary process. Appl. Ex. 1.

When it made its determination as to whether to approve this sleeving process, the Board was not free to act arbitarily, but

rather it was required to make a reviewable record on whether the new procedure was "inimical to the health and safety of the public," 42 U.S. C. §2133, whether the "public health and safety will be endangered", 10 C.F.R. §50.40(a), and whether it will provide a "low probability of abnormal leakage, of rapidly propagating failure or of gross rupture", 10 C.F.R. Part 50 App. A Crit. 14.

In making this factual determination of whether sleeving met these tests, the Board should have compiled evidence on the consequences to "the health and safety of the public" from a sleeve induced tube failure under various accident conditions, 10 C.F.R. §50.40(a), and weigh that in relation to whether there is a "low probability" of such a failure, 10 C.F.R. Part 50 App. A Crit. 14.

Instead of proceeding rationally and in accordance with the Commission's regulations, however, the Board improperly excluded as irrelevant evidence on both the safety consequences of a tube failure and on the number of such failures sufficient to precipitate those consequences. By excluding this evidence, the Board incapacitated its ability to ascertain "how safe is safe enough", because a lower probability of occurrence is required when the consequences of its occurrence are more injurious.

In our Motion Concerning Litigable Issues, dated July 21, 1982, for example, we proffered the following evidence in support of the proposition that tube failures could precipitate uncoolable conditions in the core, and that the failure of <u>just one tube</u> out of 6520 tubes could lead to these conditions, such

that an extremely high degree of assurance was required:

> "The basis for our concern about the present course of actions being pursued by the task force * * * lies in the indeterminancy of the adequacy of the present code formulations. * * * [A] clear demonstration of coolability by wide margins is necessary to satisfy this uncertainties[sic] regarding the ECCS capability; that is, cooling by narrow margins would have to be regarded by him as an essentially uncoolable situation. * * * Some of the essential areas of uncertainty in predicting ECCS performance are reflooding and steam binding. * * * Of paramount concern in this area, however, is the possible effect of steam generator tube failures on the ECCS." REG ECCS Task Force, Memorandum to ECCS Task Force Members, dated June 16, 1972.

> "[I]t was the consensus of the [American Physical Society] group that steam generator tube failure during a severe LOCA could occur frequently. Moreover, it appears that rupture of a few tubes (on the order of one to ten) dumping secondary steam into the depressurized primary side of th reactor system could exacerbate steam binding problems and induce essentially uncoolable conditions in the course of a LOCA * * *." Report to the American Physical Society by the Study Group on Light-Water Reactor Safety, 4/ Review of Modern Physics(Summer 1975), at p. S85.

> "Furthermore, serious weakening of these tubes from similar causes [of tube degradation] could, in the event of a loss-of-coolant-accident (LOCA), result in tube failures that would release the energy of the secondary system into the containment." Regulatory Guide 1.83(Rev. 1), at p. 1.

> "If the shock loads imposed by the LOCA cause a critical number of tubes to fail, say by a double ended (guillotine) break, the inflow from the secondary side can cause choking of flow during ECC preventing adequate cooling of the core. The critical number of tubes is relatively small." Office of Nuclear Reactor Regulation, NRC Program for the Resolution of Generic Issues Related to Nuclear Power Plants(1978), NUREG-0410, at p. C-29.

> "The failure of a number of steam generator tubes as a result of the pressure transients during a loss of coolant accident could render the emergency core cooling system ineffective." Risk Assessment Review Group, Report to the U. S. Nuclear Regulatory Commission(1978), NUREG/CR-0400, at p. 48.

"Recent studies have shown that as few as ten tubes would need to have ruptured during a LOCA (assuming a leakage rate of 130 gal/min per ruptured tube) before the cladding temperature would be significantly affected (i.e. peak cladding temperature (PCT) [greater than] 2200°F)." Evaluation of Steam Generator Tube Rupture Events(1980), NUREG-0651, at p. I-2.

"One area [of research] that has not been considered sufficiently using recent accident analysis codes is estimation of the consequences of a transient or some other failure that might lead in turn to the failure of a significant number of tubes. Such failures could lead to the degradation of ECCS function." Office of Reactor Safety Research Group, Report to the President's Nuclear Safety Oversight Committee(1981), at p. I-2.

"The consequences of multiple tube failure, excess of the design base, have not yet been rigorously studied. * * * In the event of a LOCA, the core reflood rate could be retarded by steam binding. * * * S[team] G[enerator] tube failures would create a secondary to primary leak path which aggravates the steam binding effect and could lead to ineffective reflooding of the core." Nuclear Reactor Research, Steam Generator Status Report(Feb. 1982), at p. 2 to 3.

In response to this proferred evidence during the summary disposition phase of the proceeding, the Board summarily excluded even the consideration of this critical evidence with the statement that:

"Decade's allegedly litigable issues * * * do not relate to the safety of tube sleeving and are irrelevant to an application for a license amendment concerning steam generator tube sleeving. These alleged issues are relevant to tube sleeving only if tube weakening is assumed to have occurred. * * *

"This is not an application to build or operate a nuclear power reactor. In an amendment proceeding, the relationship of steam generators to the remainder of the plant is not germane. In this case, applicant already has an operating license, granted after the safety of its reactor was considered." Memorandum and Order, dated October 1, 1982, at pp. 7 to 8.

The Board stated that this evidence is relevant only "if tube weakening is assumed to have occurred," and then, without ever ruling on the possibility of tube weakening, it determined

the safety issue to be irrelevant.

For the limited purpose of making a pre-trial ruling on which issues may be ajudicated, it would be impossible to preclude the possibility of failures in sleeved tubes, and therefore the exclusionary ruling cannot stand.

The previous problem of corrosion-inducing environments in confined spaces such as the tube-to-tubesheet crevice in steam generators at pressurized water reactors is well known. Nuclear Reactor Regulation, Steam Generator Tube Experience (1982), NUREG-0886, at p. 14. In turn, the insertion of sleeves inside the original tubes creates a new confined space, this time in the sleeve-to-tube annulus, and, in those cases where the original tube is degraded through-wall, secondary water with its inevitable impurities will enter the annulus and concentrate corrodents. This fact cannot be in serious dispute inasmuch as it is admitted in the Licensee's own application:

> "The behavior of the annulus between the tube and sleeve, with respect to the capability to concentrate secondary side bulk water inpurities [sic], is judged to be similar to that of that original tube/tubesheet crevice." Appl. Ex. 1, at p. 6.7

Thus, the possibility of failures in tube failures must be acknowledged, and the Board's reasoning for excluding consideration of safety must fall.

It may be expected that the Licensee will respond with claims that the effect of failures in sleeved tubes may be delayed or retarded relative to failures in unsleeved tubes for various reasons. But that kind of response of wholly irrelevant.

Regardless of the frailty of these expected claims, even if taken as true, they would only speak to the ultimate weighing of

the merits by the decision maker. They would not go to the pre-trial question of excluding from ajudication all evidence on the consequences of a failure and on the number of failures necessary to precipitate those consequences, evidence which is essential to drawing conclusions on whether the public health and safety is adequately protected.

The Board also implied that these safety issues have been dealt with before, such that any further consideration would be duplicative. It should be emphasized that this is patently untrue. In fact, the Commission has not yet formally investigated the consequences of steam generator tube failure during loss-of-coolant-accident ("LOCA") conditions -- whether in a sleeved or unsleeved tube, as shown by the statements of the Commission's own staff, as well as by outside agencies:

> "One area [of research] that has not been considered sufficiently using recent accident analysis codes is estimation of the consequences of a transient or some other failure that might lead in turn to the failure of a significant number of tubes. Such failures could lead to the degradation of ECCS function." Office of Reactor Safety Research Group, Report to the President's Nuclear Safety Oversight Committee(1981), at p. I-2.

> "The consequences of multiple tube failure, excess of the design base, have not yet been rigorously studied. * * * In the event of a LOCA, the core reflood rate could be retarded by steam binding. * * * S[team] G[enerator] tube failures would create a secondary to primary leak path which aggravates the steam binding effect and could lead to ineffective reflooding of the core." Nuclear Reactor Research, Steam Generator Status Report(Feb. 1982), at p. 2 to 3("Status Report").

> "At the times Point Beach Unit 1, Surry Unit 2, and Prairie Island Unit 1 were licensed, there were no specific analysis requirements for S[team] G[enerator] T[ube] rupture events. * * *
>
> "* * *
>
> "The staff does not require licensees to analyze loss-of-coolant accidents (LOCAs) concurrent with an SGT break,

> but does require all LOCA analyses to include the effects of the plugged tubes on reduced RCS flow." Nuclear Reactor Regulation, Evaluation of Steam Generator Tube Rupture Events (March 1980), NUREG-0651, at p. 1-2.

In its final order, the Initial Decision dated February 4, 1983, the Board reiterated its refusal to consider the magnitude of the consequences of a ruptured sleeved tube in order to determine the level of assurance required. Id., at p. 5 n. 8. This time the Board defended its action by a line of argument that concluded that the probabilities of a failure is lower in a sleeved tube than in a sleeved tube:

> "We therefore conclude that there is no serious safety or environmental issue of which we are aware that requires us to undertake our own furtner inquiry." Id., at p. 34.

As stated above, the Commission has never made any determination whether the possibility of a failure in an unsleeved tube during LOCA poses an unacceptable risk. That being given, it is totally irresponsible to claim that there "is no serious safety issue" from failures in sleeved tubes solely with rererence to the possibility of failures in unsleeved tubes which has never been considered.

The sheer enormity of the Commission's steadfast refusal over a period that spans ten years to even consider the safety implications of failing steam generator tubes must be recounted. The Commission, and its predecessor Atomic Energy Commission, has refused to act on these concerns from the very begining when they were first raised in 1972 by its own scientists. Indeed, the Atomic Energy Commission later conceded that, although there had been some discussion of the subject, no one was even assigned to study the question. In the Matter of Generic ECCS Rule-Making,

AEC Docket RM-50-1, Tr. 2335.

Two years later, citizen organizations uncovered these concerns that had been submerged inside the bureaucracy and attempted to insert them into a pending Atomic Energy Commission generic safety hearing. But, the agency abruptly cut off questions on the subject. Id., Tr. 2337.

That refusal to act on safety concerns nearly a decade ago on its own or when pressed by others was criticized soon thereafter by the nation's most prestigious scientific body, the American Physical Society, which found that "the potential for steam generator tube leakage is a serious problem which was precluded from evaluation at the [generic safety hearings in 1973]." Report to the American Physical Socity bythe Study Group on Light -Water Reactor Safety, 47 Review of Modern Physics(Summer 1975), at p. S-85.

Chastized by the American Physical Society, the tube integrity issue was raised in a succeeding licensing proceeding a year later, involving the Prairie Island Nuclear Plant, but the record was closed without resolution af'er "the staff made a commitment * * * to conduct a 'generic appraisal of the likelihood and consequences of the customary transient and accident anaylses with assumed tube failure'". In the Matter of Northern States Power company, Docket 50-282 and 50-306, Dec. of ALAB (Sept. 2, 1976), at p. 198, n. 41.

However, this commitment was not fulfilled. Two years later, anotner independent scientific panel known as the Lewis Committee pointed to the still unresolved nature of the problem, Risk Assessment Review Group, Report to the Nuclear

Regulatory Commission(1978), NUREG/CR-0400, at p. 48, and three years later the agency's staff was still discussing what should be done to evaluate the problem at some point in the future. Nucler Regulatory Commission, Task Action Plans for Unresolved Safety Issues Relted to Nuclear Plants(1980), NUREG-0649, at A-3.

Then, beginning in 1979 -- seven years after the first warning -- the nuclear industry experienced the outbreak of runaway corrosion in the steam generators of several nuclear plants including Point Beach. Nuclear Reactor Regulation, team Generator Tube Experience(1982), NUREG-0886, at pp. 14 to 31.

Prodded by the threat of legal action from concerned citizens, the Nuclear Regulatory Commission agreed to hold a series of hearings on Point Beach, but, following in its earlier footsteps, the agency restricted the scope of these hearings in such a way as to exclude testimony on the very safety questions which were at issue.

This action was so far outside the bounds of responsible behavior that two of the five Commissioners issued a stinging dissent, stating in relevant part:

> "One need not have high expectations about the contribution that a hearing might make to the safety of the plant in any given case to be distressed abou the levels of illusion involved * * *.
>
> "The agency so misstates history that it is clearly either incapable of giving an accurate account of its own past doings or else its legal positions are being chosen after the desired result (in this case no meaningful opportunity for hearing) has been decided.
>
> " * * *
>
> "The hearing being offered * * * is a sham * * *.
>
> "Most unfortunate of all is the way in which the Commission's pell mell retreat from meaningful public inquiry * * * suggests to the staff and the outside world tnat the agency is run by people living in fear of their own citizenry.

> "In the wake of the Kemeny and Rogovin Report's calls for more effective public involvement, the Commission responds with a hearing offer that is a transparent sham." In the Matter of Wisconsin Electric Power Company Docket 50-266, Order (May 12, 1980).

The Board's refusal to act rationally and in accordance with applicable regulations in the case at bar continues the sad legacy left by the Commission itself. Unless rectified on appeal, that unwavering abbdication of regulatory responsibility will someday, soon, inevitably lead to a nuclear nightmare.

DATED at Madison, Wisconsin, this 16th day of March, 1983.

Respectfully submitted,

WISCONSIN'S ENVIRONMENTAL DECADE, INC.

by

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AFFIDAVIT OF MAILING

STATE OF WISCONSIN)
)
COUNTY OF DANE)

CAROL PFEFFERKORN, being duly sworn on oath, deposes and states that on March 16, 1983, she personally deposited into the United States First Class Mails, a copy of the Decade's Exceptions to the Board's Initial Decision, in the above-captioned matter, to the following Service List.

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Carol Pfefferkorn

Subscribed and sworn to before me
this 16th day of March, 1983.

Notary Public, State of Wisconsin
My commission is permanent.