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December 1, 1994

Mr. Samuel J. Chilk, Secretary
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

ATTENTION: Docketing and Service Branch

Dear Mr. Chilk:

PROPOSED RULEMAKING PACKAGE
"SHUTDOWN AND LOW-POWER OPERATIONS FOR NUCLEAR POWER REACTORS"
FEDERAL REGISTER, OCTOBER 20, 1994

Wisconsin Electric Power Company is submitting the following comments in response to the Nuclear Regulatory Commission's (NRC) Proposed Rulemaking Package on "Shutdown and Low-Power Operations for Nuclear Power Reactors" published in the Federal Register October 20, 1994.

We understand the proposed rule would require licensees to: (1) plan and control outages in a way that provides reasonable assurance that changes in reactivity, reactor coolant system (RCS) inventory, and the process of removing decay heat will occur in a controlled manner, (2) assure that containment integrity is maintained or can be reestablished in a timely manner as needed to prevent releases in excess of 10 CFR 100 guidelines, (3) provide redundant protection for safety functions through technical specifications or administrative controls, (4) evaluate the fire threat to decay heat removal systems and establish measures to ensure this function will be maintained during a fire; and (5) install additional level instrumentation to monitor mid-loop conditions in PWRs.

Wisconsin Electric Power Company remains committed to operating Point Beach Nuclear Plant in such a manner as to protect the health and safety of the public and our employees. With this commitment, Wisconsin Electric recognizes the requirement for maintaining adequate margins of nuclear safety during low-power, shutdown,

and refueling conditions. It is this recognition that has resulted in our placing nuclear safety as the paramount criteria in the development of our refueling outage plans, and in refining outage management. Wisconsin Electric has aggressively implemented the guidelines presented in NUMARC 91-06, and has incorporated a shutdown fire protection safety assessment into our outage safety assessment process. Together, we believe these steps have resulted in safer and shorter refueling outages at Point Beach Nuclear Plant. As a result of our total commitment to nuclear safety and our customers, we are pleased to be able to present the following views on the proposed rulemaking package.

Wisconsin Electric's concerns on the proposed rulemaking package concentrate on the following three areas:

- We believe that due to improved industry outage safety over the past three years (as a result of the industry's own initiative), and the existing appropriate NRC regulatory oversight provided by the Maintenance Rule, further regulatory action on low-power, shutdown, and refueling conditions is unjustified.

- We do not believe the regulatory analysis has justified the proposed rule. Concerns on the inadequacy of the regulatory analysis of the proposed rule include flawed assumptions, inaccurate cost estimates, and the assumption that there would be no increase in outage duration due to the proposed rule.

- Wisconsin Electric has concerns about the specific restrictions the proposed rule would place on the ability of utility management to safely and successfully perform required work during shutdown periods. In addition, these restrictions would impose unwarranted economic impact.

LACK OF NEED FOR FURTHER REGULATORY ACTION ON LOW-POWER OPERATIONS

Wisconsin Electric believes that there is no need for further rulemaking to regulate the low-power, shutdown, and refueling operations of domestic nuclear power plants.

- The basis of the proposed rulemaking does not recognize the improvements in outage planning and control as a result of the nuclear power industry's own improvement initiative outlined in NUMARC 91-06. We believe utility management has ultimate responsibility for the planning and control of safe outage periods.

- There is an apparent overlap of regulatory oversight between the proposed rule and the Maintenance Rule 10 CFR 50.65.

- Regulatory Analysis lacks justification.

Utility Management Responsibility for Outage Planning and Control:

In recent years, the nuclear power industry has focused significant resources on outage planning and control. This is a result of the industry's own recognized interest in reducing the number of events while shutdown, because they not only undermine the NRC and public confidence in utilities to effectively manage outages, but they also adversely impact overall plant performance by disrupting and lengthening outages. The development and successful implementation of NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," has resulted in significant improvements in reducing both the frequency and safety significance of shutdown events in the last three years making further rulemaking unnecessary. The industry's successful implementation of NUMARC 91-06 is discussed in IN 93-72, "Observations from Recent Shutdown Risk and Outage Management Pilot Team Inspections."

These improvements have not been considered by the NRC staff in the supporting Regulatory Analysis. Instead, the basis for the development of this rule was observations by, and conclusions developed by, the NRC staff in NUREG 1449. That data is many years old and was obtained before the implementation of NUMARC 91-06. Because of the improvements the industry has made in the area of shutdown operations and the failure to recognize this in the regulatory analysis, we do not believe adequate basis exists for promulgation of rulemaking in this area.

Wisconsin Electric believes that imposing additional regulatory restrictions over outage planning and control does not provide tangible benefit, and would usurp utility management's responsibility. We also believe that codification of an industry self-improvement initiative, such as NUMARC 91-06, sets an undesirable precedent for future industry initiatives. Wisconsin Electric realizes the need for an effective outage planning and control program. However, such programs should not be based upon restrictive or prescriptive regulatory requirements, but rather upon performance based programs which firmly place responsibility for outage safety on the management of the utility.

Overlap with Maintenance Rule:

Wisconsin Electric believes that the proposed rule involves an apparent overlap with the Maintenance Rule. 10 CFR 50.65(a)(3) requires that, in performance of monitoring and preventative maintenance activities, an assessment of the total plant equipment available to perform safety functions should be taken into account. The requirement of the Maintenance Rule does not differentiate between plant operation modes. Additionally, the Maintenance Rule directly relates to the key element of outage planning and control in establishing the proper availability of equipment to perform plant safety functions.

While the NRC has recognized that improvements have been made across the industry in the areas of outage planning and control, the proposed shutdown rule has been based upon the perception that there is a need to prevent backsliding from these improvements already made. Wisconsin Electric is concerned by this presumptive move toward the imposition of additional regulatory requirements, without putting the issue in its proper perspective for safety significance. The requirements of the Maintenance Rule already provide an appropriate degree of regulatory oversight on the part of the NRC applicable to shutdown operations. Concurrent with this oversight is a basis for enforcement, should a licensee fail to exercise appropriate controls over plant equipment that results in a potentially safety significant event during shutdown. NRC staff's pilot program to inspect shutdown operations of nuclear power plants, as described in IN 93-72, further provides the NRC with regulatory oversight of shutdown operations. We therefore urge the NRC to reexamine the need for further regulatory requirements in the area of shutdown operations.

Inadequacies of Regulatory Analysis

Wisconsin Electric has several concerns on the contents of the Regulatory Analysis for the proposed rule transmitted by SECY-94-176. Several of the assumptions, cost estimates, estimated effects on outage duration, age of basis information, and the use of PSA associated with the proposed rule, are inconsistent with the estimates of the licensees and NSSS vendors. The Regulatory Analysis relies heavily on qualitative information contained in NUREG-1449. The justifications in NUREG-1449 are not technically adequate to support the proposed requirements, especially in the area of containment integrity during shutdown conditions. Instead, the proposals appear to be in response to a few isolated incidents.

The Regulatory Analysis is based upon the assumption that no increase in outage duration will result from the requirements of the proposed rule. Wisconsin Electric believes that it is inappropriate to assume all nuclear plants will be affected in the same manner as it relates to outage duration. This assumption has led the NRC staff to allow for no increased outage cost in the regulatory analysis. The reasoning for these assumptions is that the required improvements in outage planning and control should help eliminate delays. This logic would require all plants to currently be managing outages equally effectively. This is not the case. We acknowledge that some plants that currently do not plan and manage outages effectively could offset some delay with the improved planning and control required by the rule. However, plants that currently plan and perform outages well will not benefit from the outage management imposed by the rule and will see outage duration increases.

Many of the requirements of the proposed rule would certainly increase the duration of refueling outages at those plants who already effectively manage outages. The requirement to maintain or reestablish containment integrity until the refueling cavity is flooded would add days to outages because of the complications it would cause in performing local leak rate test's (LLRT's), performing valve and system maintenance, and for moving equipment into and out of the containment. Restrictions on work to safety-related systems until the cavity is flooded would also add a significant delay. This is likely to occur if strict equipment operability requirements are imposed and credit is not allowed to be taken for other redundant support measures and non-safety related equipment.

Point Beach is recognized as an industry leader in the area of outage performance from a scheduling and shutdown safety perspective. Wisconsin Electric estimates that the requirements imposed by the proposed rule would extend the annual refueling outages at Point Beach Nuclear Plant by approximately seven days. At an estimated outage cost per day of $200,000 per unit, with two unit refueling outages per year, the annual increased cost due to extended outage duration alone is $2.8 million annually. Costs associated with increased outage duration must be accounted for in the proposed rule's Regulatory Analysis. This outage duration increase may be reduced to approximately four days at Point Beach Nuclear Plant by incurring additional expenses of approximately $300,000 for additional resources and modifications with no significant increase in safety.

A significant backfit for Point Beach which was not included in the Regulatory Analysis would be the addition of a Residual Heat Removal (RHR) suction bypass line. This would be required because Point Beach was designed and licensed with a single RHR suction line from the RCS. For Point Beach to meet single failure criteria for decay heat removal contained in the proposed rule without taking credit for alternative cooling methods such as reflux cooling or "Fill and Spill" with sump recirculation, an RHR suction bypass line would have to be constructed. The installation of this modification is estimated at $3.5 million per unit including the costs for replacement power.

Costs, in addition to outage duration increases, as estimated by Wisconsin Electric as related to Point Beach Nuclear Plant, which are not appropriately reflected in the Regulatory Analysis are summarized as follows:

- Additional fire hazards analysis, procedure development, and training as outlined in proposed rulemaking package - $100,000.

- Fire watches and fire protection equipment maintenance and surveillance - $5,000 per year.

- Reactor vessel level "diverse" instrumentation required by proposed rulemaking - $350,000 per unit for installation, and approximately 1 man-rem exposure per refueling outage for maintenance.

- RHR suction bypass modification - $3.5 million per unit.

- Cost of operator training on new instrumentation and associated procedures, other procedure changes due to equipment operability restrictions, classroom and simulator lesson plan and scenario development - $175,000.

All of these costs have not been adequately addressed by the Regulatory Analysis. Wisconsin Electric believes that due to this inaccurate assessment of costs associated with complying to the proposed rule, the NRC has failed to comply with the intent of the Backfit Rule as delineated in 10 CFR 50.109. Specifically, 10 CFR 50.109(a)(3) requires that "...all direct and indirect costs of implementation for that facility are justified..." in view of the increased safety to the public resulting from the proposed rule. The NRC staff must appropriately address all of these costs as the regulatory analysis is revisited.

The PRA study contained in SECY 93-190 is generalized and overly conservative analysis. The staff has not utilized up to date information as input to the abbreviated PRA in the SECY although NRC sponsored analyses are underway by Sandia and Brookhaven National Laboratories. EPRI has also performed detailed probabilistic shutdown safety assessments as part of the Outage Risk Assessment and Management (ORAM) Program. The PRA study in SECY 93-190 references NUREG-1449 as a source of information for core damage frequencies. The studies in the NUREG are many years old and do not take into account recent industry initiatives to safely manage outages.

The staff has also selectively used information to conservatively estimate ranges of core damage frequency without any discussion of uncertainties and their significance. As part of the justification for the proposed regulations, the staff concludes that, for a PWR such as Point Beach Nuclear Plant, a core damage frequency reduction of greater than 1.E-05 could be realized. Because this estimate does not account for uncertainties and is based upon overly conservative assumptions and the use of significantly out of date information, the staff's estimated reduction in core damage frequency may be greater than the actual core damage frequency due to an event at shutdown. Based on this, we believe the staff's estimate to be unrealistically large.

For these reasons, Wisconsin Electric believes the Regulatory Analysis presented in SECY-94-176 does not adequately justify the proposed regulations. We encourage the NRC to evaluate the Regulatory Analysis especially in the areas of the cost associated with complying to the new regulations, the delays it would cause to many nuclear plant refueling outages and the associated economic impact to operations, and the overestimated impact of the proposed regulations on outage safety as caused by the flaws associated with the PRA analysis.

EXCESSIVE RESTRICTIONS IMPOSED BY PROPOSED RULEMAKING

The proposed rulemaking would impose several restrictions on the licensee's ability to manage shutdown operations safely and effectively. Wisconsin Electric doubts these imposed restrictions would result in safety enhancements commensurate with the significant cost of their implementation. These concerns concentrate on the following areas:

* PWR vessel level control and the proposed additional instrumentation.

- Proposed fire protection requirements being developed in addition to Appendix R.

- Imposition of prescriptive Technical Specifications or programmatic requirements.

- RHR suction bypass modification.

PWR Vessel Level Indication & Proposed Additional Instrumentation:

Wisconsin Electric believes that adequacy of PWR vessel level indication could more appropriately be addressed through more vigorous enforcement of the requirements set forth in Generic Letter 88-17. Our position is reinforced by the NRC staff's own acknowledgment that vessel water level control has improved as a result of the requirements in GL 88-17. Any incremental safety improvement that would result from the addition of new instrumentation as required in the proposed rule has not been demonstrated.

At Point Beach Nuclear Plant, a two-loop PWR, there are two reactor vessel water level instrument loops used for indication at reduced water inventory. The two differential pressure transmitters are normally aligned with their active leg connected to the reactor vessel via an incore thimble guide tube and their dry reference legs aligned to the top of the pressurizer. Connected to the RCS in this manner, they would indicate water level accurately, should RCS pressure changes occur.

The instrument loops are scaled 0 to 100 inches of water. The top end of the scale is slightly above the reactor vessel flange. The bottom end of the scale is at the bottom of the vessel nozzles. Indicators are located in the control room. Resolution is approximately one inch and accuracy is approximately two inches. Control room operators have expressed confidence in the installed instrumentation. In addition, these instruments are independently verified by use of a standpipe, connected to a different location in the RCS, before draining the RCS to a midloop condition.

We believe this instrumentation provides appropriate indication for control of vessel level during reduced inventory operations. Furthermore, we believe it meets the intent of the proposed rule because it is not sensitive to RCS pressure changes. We do not believe further requirements to diversify instrumentation are needed.

A requirement for diverse instrumentation, which would imply ultrasonic level indication installed on the hot leg, would result in excessive maintenance costs and significantly increased personnel radiation exposure. The operating history of ultrasonic detectors indicates that they are not capable of withstanding the level of temperature associated with the hot leg of a PWR at power. The detectors would therefore be required to be installed and subsequently removed during each refueling outage. This process would result in unnecessary radiation exposure to those personnel installing and maintaining the equipment, as well as unjustified operating costs to each affected plant. We estimate the additional radiation exposure to workers at Point Beach Nuclear Plant to be one man-rem per outage.

In addition, the NRC staff's cost estimate of $190,000 per unit for the installation of "pressure insensitive" level instrumentation, is well below estimates of individual utilities and NSSS owner's groups. Wisconsin Electric has estimated the installation of such instrumentation to be at least $350,000 per unit at Point Beach Nuclear Plant. We also acknowledge that depending on plant design, much higher costs are probable according to the owner's groups. Revised cost estimates should be included in a revised Regulatory Analysis.

Fire Protection Requirements In Addition to Appendix R:

Wisconsin Electric has reviewed and considered the technical direction and guidance being proposed for fire protection assessments during low power operations, including the impact these proposed changes would have on our fire protection and outage assessment programs. It is our overall opinion that the proposed rulemaking in the area of fire protection will have a major impact on the nuclear power industry. We expect this type of assessment would require a significant amount of manpower and resources, potentially resulting in expensive plant modifications, as well as procedural and programmatic changes to address these issues.

The NRC's position regarding fire protection found in SECY 94-176; the proposed rule, 10 CFR 50.66; and associated Regulatory Guide is not well defined and thus is open to considerable interpretation by utility and NRC staff alike. For instance, defining a "realistic" fire and meeting fire protection provisions before entering cold shutdown may not be possible in all cases especially if entering cold shutdown/forced outage required by technical specifications since the extent of work may not be known. Evaluation of fire protection features should be performed before commencing the applicable work.

We intend to address the risk-significance of fires during low power operations using the PRA or FIVE techniques developed as part of our IPEEE program rather than the deterministic approach traditionally used by the NRC.

Wisconsin Electric has long known the importance of shutdown fire protection. We have incorporated a fire protection safety assessment and contingency plans into the Point Beach Nuclear Plant outage safety assessment process. However, we believe the regulatory requirements outlined in the proposed rule go well beyond the reasonable and prudent steps we have implemented at Point Beach, and have not been justified. Wisconsin Electric believes further regulatory requirements beyond the rewrite of Appendix R currently being developed is unjustified. We believe revision of NUMARC 91-06 should be pursued to include guidelines for shutdown fire protection safety assessments as are performed at Point Beach Nuclear Plant. We encourage the NRC to work with NEI to pursue performance guidelines in lieu of the prescriptive regulatory requirements presented in the proposed rule.

Equipment Operability:

The proposed rule would require licensees to maintain or reestablish containment integrity until the reactor had reached cold shutdown condition with the refueling cavity flooded. Wisconsin Electric has concerns related to the requirement of containment integrity because it places undue restrictions on many outage conditions. Wisconsin Electric interprets containment integrity as two tested barriers to withstand containment design pressure, whereas containment closure is defined as one closed barrier by the time to boil in the RCS. The proposed rule states that integrity must be in place or be capable of being reestablished in a timely manner. Containment closure by the time to boil in the RCS, as required by NUMARC 91-06, allows the flexibility needed for outage management as well as control of potential radioactive releases. This is a reasonable requirement. The Regulatory Analysis accompanying the proposed rule seems to imply closure is the intent of the rule, but this issue is not clear. Additionally, containment integrity with personnel hatch interlocks in place creates significant difficulty in moving equipment in and out of containment as well as creating a personnel hazard.

Containment design pressure is based on the energy release due to a LOCA from full power, allowing for LOOP plus single failure criteria. Imposing full pressure containment integrity requirements for cold shutdown, without allowing the licensees to take credit for pressure mitigation equipment and control strategies is

unreasonable. For instance, the containment integrity requirement of the proposed rule does not recognize the condition of the RCS being intact with the steam generators available for decay heat removal. If pressure increase will be prevented, then containment closure, not containment integrity, is reasonable and prudent.

Wisconsin Electric also believes credit should be allowed for the use of non-safety related (NSR) equipment during shutdown conditions to ensure control of core reactivity, inventory, and core cooling capability. The proposed rule, by discussing safety function, may imply that the use of NSR equipment would not be allowed. Wisconsin Electric believes NSR equipment can be used with appropriate controls on equipment availability to maintain safety functions.

Contrary to the normal Technical Specification framework, the proposed rule does not allow temporary relaxation of function redundancy (e.g., temporary relaxation of single-failure requirements). This would unduly limit a licensee's ability to repair safety-related and balance of the plant equipment concurrently. No relaxation is given for instance in reactivity control for items such as a heavily borated core or having all rods inserted into the core. Existing Technical Specifications for cold shutdown and refueling shutdown reactivity, offset any need to meet single failure criteria in these conditions.

The requirements of the proposed rule for low power operation are confusing. Utilities already have equipment specifications that control availability of key components until the reactor is placed in the cold shutdown condition. In addition, containment integrity is required until the RCS temperature is below 200oF. Also, Appendix R requirements are in place at Point Beach Nuclear Plant until the RCS temperature is below 200oF.

Similarly, the proposed rule does not allow for any passive means of decay heat removal other than a flooded cavity. Natural circulation capability with the RCS intact and steam generators available should be an allowed condition for relaxing the single failure criteria for the DHR system.

NUMARC 91-06 requirements already address containment closure, and redundancy of key safety functions. Wisconsin Electric sees no need to codify these requirements and reduce the utilities' creativity and flexibility in their management. These examples, and the containment integrity requirements, all demonstrate that the NRC has failed to adequately consider the basic differences between a shutdown unit, and a unit in start-up or at power. The only condition recognized in the proposed rule to allow for

relaxation of the single failure criteria is the refueling cavity flooded. Other conditions, such as those mentioned earlier, must also be recognized in any proposed rule, just as some already are in our existing Technical Specifications.

SUMMARY

Wisconsin Electric is firmly committed to the safe and efficient operation of Point Beach Nuclear Plant. As such, the management of nuclear safety is paramount for all of our activities during power and shutdown operations. Our implementation of an outage planning, scheduling, and management program is the result of this dedication. This program has allowed PBNP to maintain our level of nuclear safety during refueling outages, while achieving an enviable record of outage duration. This combination has resulted in significant cost savings for the customers of Wisconsin Electric.

Our program represents aggressive implementation of the guidelines presented in NUMARC 91-06. Our program also includes a shutdown fire protection safety assessment. We believe these types of improvements, seen established industry-wide in the past three years, negate the need for further regulation in this area. Wisconsin Electric also believes the NRC currently has appropriate regulatory authority over poorer performing plants, as provided by the Maintenance Rule 10 CFR 50.63.

Wisconsin Electric also disagrees with the findings of SECY-94-176, that implementing the proposed improvements in outage programs, including the prescriptive equipment operability requirements discussed earlier, constitute a substantial increase in public health and safety, warranting the cost of implementation. Our discussion of the inadequacies of the Regulatory Analysis, including out of date data, overly conservative assumptions, inadequate cost estimates, and flawed PRA analysis; indicates that the NRC has not fulfilled its own regulatory commitment of the backfit rule as outlined in 10 CFR 50.109.

Wisconsin Electric further believes the imposition of the excessive equipment operability restrictions contained in the proposed rule will cause outage management flexibility to be lost. The restrictions contained in the proposed rule are known to significantly increase outage duration, personnel exposure, and cost. All of these factors must be reexamined. We believe that once these factors are appropriately accounted for in the Regulatory Analysis, the NRC will conclude (just as has Wisconsin Electric) that any public safety and health improvements resulting

from the promulgation of this rule would be marginal at best and have not been justified. Wisconsin Electric appreciates the opportunity to provide these comments on this proposed rule and would welcome the opportunity to discuss these issues further.

Sincerely,

for

Bob Link
Vice President
Nuclear Power

MGM/jg

cc: NEI
NRC Resident Inspector
NRC Regional Administrator, R III