

December 15, 1999

The Honorable Susan M. Collins
United States Senate
Washington, DC 20510-1904

Dear Senator Collins:

I am responding to the letter you sent to Dennis K. Rathbun of the U.S. Nuclear Regulatory Commission (NRC) on November 17, 1999, in which you requested information on concerns raised by one of your constituents, S. Simone Stickney, regarding the Year 2000 (Y2K) readiness of U.S. nuclear power plants, and the reliability of power supplies.

I am pleased to inform you that as of November 4, 1999, plant licensees have reported that all nuclear power plants are Y2K ready. This readiness includes contingency plans for the Y2K transition. The safe operation of the nuclear power plants is expected to contribute to a stable and reliable grid during the Y2K transition.

As background information, over the past several years the NRC staff has been working with nuclear industry organizations and licensees to address Y2K issues. We continue to maintain an appropriately aggressive regulatory framework for overseeing Y2K readiness efforts at all nuclear power plants. These activities, as summarized in the enclosure, provide an integrated and comprehensive approach for addressing Y2K issues. Additional Y2K information on all operating nuclear power plants is available on NRC's Web site at the following address: <http://www.nrc.gov/NRC/NEWS/year2000.html>. This Web site identifies Y2K resources and has Y2K information on all operating nuclear power plants, including press releases, periodic reports, and other related information.

Ms. Stickney wanted to know whether nuclear reactors would experience problems if offsite power from the electrical grid were lost and expressed concerns about emergency diesel generator reliability. As discussed herein, offsite power supplies and emergency diesel generators are expected to perform reliably during the Y2K transition.

The electrical power grid is expected to be stable and reliable during the transition from 1999 to 2000. The North American Electric Reliability Council (NERC), an industry group, reported on August 3, 1999, that more than 99 percent of the nation's bulk electric systems are Y2K ready and that NERC believes the electric power industry will operate reliably into the Year 2000. It is anticipated that nuclear power plants will not need to employ their backup power supplies.

If a loss of offsite power were to occur in an area serviced by an operating nuclear power plant, the result would be an automatic plant shutdown as the turbine and reactor protective design features respond to the disturbance. The loss of offsite power is an anticipated transient for which all nuclear power plants are designed to safely respond. Typical design features include

multiple grid tie-ins to minimize the potential for a loss of offsite power, along with redundant backup onsite power sources (e.g., diesel generators and batteries) capable of supporting a safe plant shutdown. Although a total loss of offsite power is uncommon, nuclear power plants have experienced these transients in the past with no adverse consequences.

The redundant backup onsite power is typically provided by two diesel generators that are tested regularly and are required to have at least a 7-day supply of fuel oil for operation. NRC regulations require the diesel generators to be highly reliable and licensees to demonstrate diesel generator operability by test on a regular basis. For example, in 1993 the industry-wide average reliability of diesel generators was in excess of 0.98, or 98 percent. This means that diesel generators successfully started 98 times for every 100 attempts to start them.

The possibility of electric grid instabilities and blackouts during Y2K critical dates has been addressed by NRC, NERC, and licensees. The scope of licensee Y2K programs, including contingency planning, covers the onsite power and other emergency power systems at the plants, including diesel generators. NRC audits and reviews of licensee Y2K program activities to date have verified licensee consideration of these systems, and no associated Y2K issues relating to onsite emergency power systems have been identified. Moreover, licensees are taking anticipatory measures for the Y2K transition, including completing surveillances and ensuring that diesel generator fuel supplies are "topped off." Existing regulatory and technical specification requirements provide high confidence in diesel generator operability, availability, and reliability. Additionally, diesel generator reliability in emergency situations has been high, as demonstrated during weather-related power upsets. For example, following the 1992 landfall of Hurricane Andrew at the Turkey Point nuclear power plant when all offsite power was lost, diesel generators operated reliably for approximately 6 days providing electrical power to plant systems until offsite power was restored. Therefore, we do not consider it necessary to impose additional backup power requirements on licensees during the Y2K critical dates.

With regard to Ms. Stickney's reference to reactor cooling water flow, typical cooling water flow at a large pressurized water reactor during operation is 240,000 to 400,000 gallons per minute (gpm). Typical cooling water flow when the reactor is shutdown is 6000 to 9000 gpm. Ms. Stickney also raised a question concerning weapons systems. The NRC cannot comment on weapons systems as we have no jurisdiction over them.

The NRC remains committed to its oversight of the Y2K readiness efforts of nuclear power plant licensees in order to ensure safe operation of these facilities throughout 1999, 2000, and beyond.

Honorable S. Collins

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Please contact me if you have any additional questions on this matter. We are sending a copy of this letter and its enclosure to Ms. Stickney.

Sincerely,

/RA/

William D. Travers
Executive Director
for Operations

Enclosure: Summary of NRC's Y2K Activities and Plant Y2K Readiness Status

cc w/encl: S. Stickney

Honorable S. Collins

- 3 -

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SUMMARY OF NRC's Y2K ACTIVITIES AND PLANT Y2K READINESS STATUS

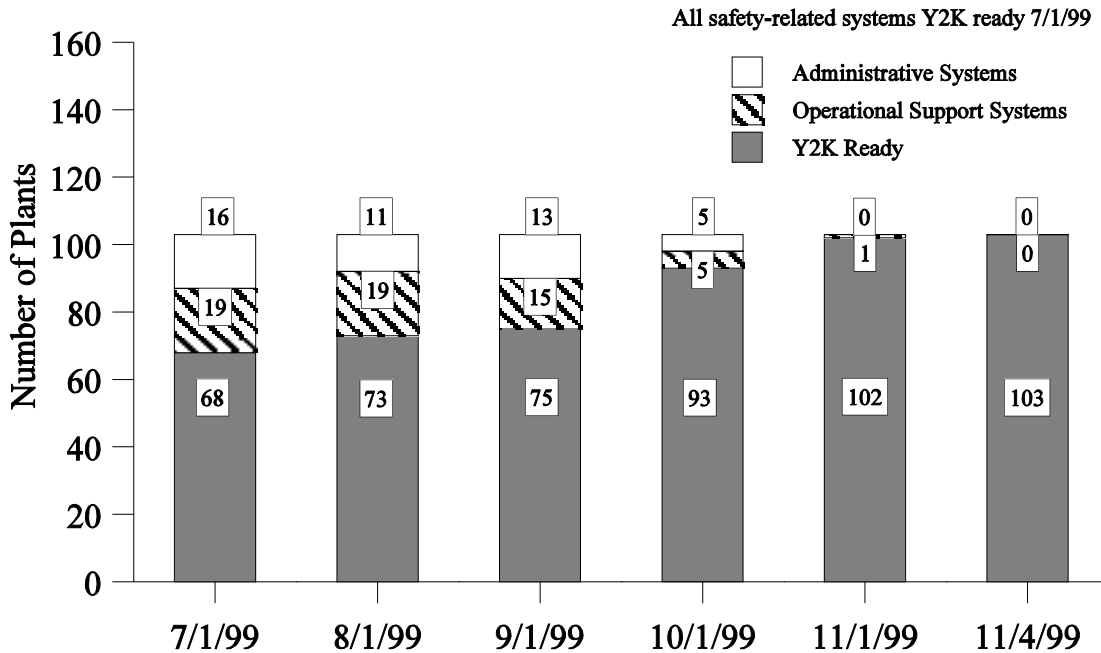
Since 1996, the NRC has been working with nuclear power plant licensees and the Nuclear Energy Institute (NEI), an industry organization, to ensure plant systems are "Year 2000 ready" before the Year 2000 (Y2K). To ensure that potential Y2K issues are identified and corrected, the NRC issued Information Notice (IN) 96-70, "Year 2000 Effect on Computer System Software," on December 24, 1996; Generic Letter (GL) 98-01, "Year 2000 Readiness of Computer Systems at Nuclear Power Plants," on May 11, 1998; and GL 98-01, Supplement 1, "Year 2000 Readiness of Computer Systems at Nuclear Power Plants," on January 14, 1999. IN 96-70 informed all licensees of the potential problems that nuclear facility computer systems and software might encounter during the transition to the new century. In GL 98-01, reference was made to Nuclear Energy Institute/Nuclear Utilities Software Management Group (NEI/NUSMG) 97-07, "Nuclear Utility Year 2000 Readiness," which describes an approach that all licensees have agreed to utilize in addressing the Y2K issues at their facilities. In GL 98-01, the NRC accepted the NEI/NUSMG 97-07 guidance as an appropriate program for nuclear power plant readiness and required that all operating U.S. nuclear power plant licensees submit written responses regarding their facility-specific Y2K readiness programs by July 1, 1999. Licensees that were not ready were requested to submit their schedule for completing their Y2K activities. Supplement 1 to GL 98-01 expanded the scope of the reporting requirements to include the systems that are necessary for continued plant operation and that are not covered by the terms and conditions of the plant's license and NRC regulations.

By July 1, 1999, licensees for all 103 operating nuclear power plants had reported the status of their Y2K readiness to the NRC. Regarding NRC's highest priority—the uninterrupted performance of plant safety systems—all nuclear power plants reported that their efforts were complete and that no remaining Y2K-related problems existed that could directly affect the performance of safety systems or the capability for safe shutdown. Sixty-eight of these plants had also completed the next order of priority as of July 1, stating that all of their computer systems that support plant operation were "Y2K ready." The remaining 35 plants reported that, to be fully Y2K ready, they still had additional work to complete on a few non-safety computer systems or devices. Typically, the remaining Y2K work was awaiting a scheduled plant outage or the delivery of a replacement component. In each case, the licensees with work remaining submitted schedules for completing that work. Final reviews were performed at the 35 plants, as well as at Cooper Nuclear Station. Cooper received a final review because, after having reported being Y2K ready on July 1, 1999, it discovered a potential Y2K issue that required further resolution.

As of November 4, 1999, the NRC received Y2K readiness status reports from licensees indicating that all 103 nuclear power plants are fully Y2K ready—that is, all plant systems involved with safety, power generation, and plant support are now ready to roll over into the Year 2000 without computer problems. The following chart illustrates plant readiness:

ENCLOSURE

Nuclear Power Plant Y2K Readiness



On e of a number of initiatives undertaken by the NRC staff to verify and assess the effectiveness of licensee Y2K readiness programs was the conduct of the following 12 sample audits of licensee Y2K readiness programs:

<u>DATE</u>	<u>PLANT</u>	<u>LOCATION</u>
September 1998	Monticello Seabrook	Minnesota New Hampshire
October 1998	Brunswick Hope Creek Davis-Besse	North Carolina New Jersey Ohio
November 1998	Wolf Creek Watts Bar Limerick	Kansas Tennessee Pennsylvania
December 1998	Waterford	Louisiana
January 1999	Braidwood North Anna WNP-2	Illinois Virginia Washington

The NRC staff determined that this approach was an appropriate means of oversight of licensee Y2K readiness efforts because all licensees had committed to the nuclear power industry's Y2K readiness guidance (NEI/NUSMG 97-07) in their first response to NRC GL 98-01 and because the NRC staff had not found any Y2K problems in safety-related actuation

systems. The sample of 12 licensees included large utilities, such as Commonwealth Edison and Tennessee Valley Authority, as well as small single-unit licensees, such as North Atlantic Energy (Seabrook) and Wolf Creek Nuclear Operating Corporation. Because licensee Y2K programs are corporate-wide, many of the NRC staff audits encompassed more than a single nuclear power plant site because many utilities own more than one nuclear power plant. In all, 42 of 103 operating nuclear power plant units were associated with the Y2K readiness program audits of 12 utilities. The NRC staff selected a variety of types of plants of different ages and locations in this sample in order to obtain the necessary assurance that nuclear power industry Y2K readiness programs were being effectively implemented and that licensees would be on schedule to meet the readiness target date of July 1, 1999, established in GL 98-01. In late January 1999, the NRC staff completed the 12 audits. On the basis of the audit findings, the staff concluded that the audited licensees were in the process of effectively addressing Y2K issues and were undertaking the actions necessary to achieve Y2K readiness in accordance with the GL 98-01 target date. These findings are consistent with those reported by the Department of Energy in a report prepared by the North American Electric Reliability Council on the status of Y2K readiness of the electric power grid.

In an effort to verify and assess the effectiveness of licensee contingency planning, in May and June 1999, NRC audit teams conducted additional comprehensive audits focused on the area of Y2K contingency planning at the following six sites:

Diablo Canyon 1 and 2
Indian Point 2
Palo Verde 1, 2, and 3

Duane Arnold
Oconee 1, 2, and 3
Turkey Point 3 and 4

The auditors reviewed internal facility risks, external risks, individual component/system contingency planning, and integrated contingency planning against industry guidelines of NEI/NUSMG 98-07, "Nuclear Utility Year 2000 Readiness Contingency Planning." As indicated in our audit reports, all six of these plants are acceptably implementing the staff-approved industry guidelines.

In addition to the NRC staff activities previously mentioned, regional NRC inspectors reviewed plant-specific Y2K program implementation and contingency activities at all nuclear power plant facilities. The inspectors used guidance (Temporary Instruction 2515/141) prepared by the NRC headquarters staff that conducted the 12 sample audits and the 6 contingency planning audits. On the basis of the reviews, the staff found that licensees were implementing Y2K programs in accordance with staff-approved industry guidelines.

In September 1999, the NRC issued NUREG-1706, "Year 2000 Readiness in U.S. Nuclear Power Plants," to present the results of the NRC-conducted onsite reviews of licensee Y2K programs at the 103 nuclear power plants, additional staff assessment of followup reviews of 14 plants, and updated information relating to plant-specific reviews.

After receipt of the July 1999 readiness reports and schedules, the NRC monitored progress at those plants that still had remaining work to be performed so as to provide independent verification of the completion of the remaining items, including Y2K contingency plans that specify procedures for dealing with unexpected events. As stated in NRC Press Release No. 99-168, dated August 6, 1999, the staff developed guidance for appropriate regulatory actions to be taken for those facilities that were not Y2K ready by July 1, 1999. As stated in a later press release (No. 99-207) dated September 28, 1999, the NRC sent letters to those utilities

with nuclear power plants that were scheduled to be Y2K ready after September 30, 1999, to verify the status of readiness and the dates when plants will be fully Y2K ready. (As noted above, all of these plants are now Y2K ready.)

Since September 1998, the staff has provided periodic status reports to the Commission and the public (via the NRC Web site) describing its efforts in this area and the progress of nuclear power plant licensees on addressing the Y2K issue.

NRC will continue to oversee the Y2K issue relating to nuclear power plants for the rest of this year and beyond. We believe that all licensees will be able to operate their plants safely during the transition from 1999 to 2000 and beyond, and we do not believe that significant plant-specific action directed by the NRC to address possible Y2K problems is likely to be needed. The NRC remains committed to its oversight of the nuclear power plant licensee's Y2K readiness efforts in order to ensure safe operation of these facilities.

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