

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555

**NRC INFORMATION NOTICE 99-18: UPDATE ON NRC'S YEAR 2000 ACTIVITIES FOR  
MATERIALS LICENSEES AND FUEL CYCLE  
LICENSEES AND CERTIFICATE HOLDERS**

**Addressees:**

All material and fuel cycle licensees and certificate holders.

**Purpose:**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to update addressees regarding NRC's Year 2000 (Y2K) activities and provide sources of Y2K information. It is expected that recipients will review this information for applicability to their facilities and consider actions, as appropriate, to avoid potential problems. However, suggestions contained in this IN are not NRC requirements; therefore, no specific action nor written response is required.

**Description of Circumstances:**

The Y2K problem pertains to the potential inability of computers to correctly recognize dates beyond December 31, 1999. This problem results from computer hardware and/or software that uses two-digit fields to represent the year. These systems may misread the year 2000 and cause the systems to fail, generate faulty data, or act in an incorrect manner. The Y2K problem has the potential to interfere with the proper operation of any computer system, hardware that is microprocessor-based (embedded software), software, or database.

The Y2K problem is urgent because it has a fixed, non-negotiable deadline that is quickly approaching. This matter requires priority attention because of the limited time remaining to assess the magnitude of the problem, assess its associated risks, and implement programs that will achieve a satisfactory resolution of the Y2K problem.

Existing reporting requirements under 10 CFR Part 21 provide for notification to NRC of deficiencies, non-conformances, and failures, such as the Y2K problem, in safety-related systems.

As part of NRC's response to the Y2K problem, NRC assembled a Y2K team to gather more information on the Y2K programs of materials and fuel cycle licensees and certificate holders. During each interview, the licensee or facility representative indicated that they were aware of the Y2K issue and were in various stages of implementing their Year 2000 Readiness Program.

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NRC learned that some early versions of treatment planning systems have Y2K problems, and upgrades for the systems were available. Treatment planning systems are regulated by the U.S. Department of Health and Human Services, Food and Drug Administration (FDA), not NRC, although both agencies are sharing Y2K information. For materials licensees, no Y2K issues for NRC-regulated material were identified by the Y2K team. For fuel cycle facilities, a database was identified, by a facility, that had a Y2K problem. The facility indicated that they would convert to a Y2K-compliant database as part of their Y2K readiness program.

In addition, materials and fuel cycle inspectors have been instructed to confirm receipt of NRC's INs, by materials and fuel cycle licensees and certificate holders; determine whether the licensees and certificate holders have identified any potential problems associated with the Y2K issue; and note any corrective actions taken by the licensees and certificate holders.

Discussion:

NRC staff has several concerns associated with the potential impact of the Y2K problem on materials licensees, primarily because of the variety and types of computer systems and software in use. Licensees need to be aware of Y2K effects on health and safety, as well as regulatory requirements such as record-keeping.

The Y2K problem may affect hardware, software, embedded systems, and networks. Examples of systems that may be affected by the Y2K problem include:

- Treatment planning systems;
- Dose calibrators;
- Nuclear Medicine dose/operational management systems
- Programmable logic controllers;
- Commercial off-the-shelf software and hardware;
- Document control systems;
- Safeguards (Material Control and Accounting and Physical Protection) systems;
- Security computers and systems;
- Plant process (data scan, log, and alarm) display system computers;
- Safety parameter display system computers;
- Emergency response systems;
- Radiation monitoring systems;
- Dosimeters and readers;
- Engineering programs and systems;
- Communication systems;
- Inventory control systems;
- Surveillance and maintenance tracking systems; and
- Control systems.

Applications that have no apparent date manipulation algorithms may still be affected by a Y2K problem. For example, a subroutine that date-stamps the header information in archival tapes, regardless of the rest of the content of the tape, may be affected. In addition, individual systems may be "date-safe," but the integrated operations that the systems support may be vulnerable to the Y2K problem. Therefore, after testing a subsystem for Y2K compliance, a functional test of the entire system should be performed.

As part NRC's Y2K program, the Office of Nuclear Material Safety and Safeguards is monitoring several list servers, manufacturer websites, news articles, Congressional reports, and the President's Y2K Council reports for Y2K issues that may affect materials licensees. Materials inspectors are continuing to make Y2K inquiries during routine inspections. To date, only treatment planning systems, dose calibrators, and a tote position display for an irradiator have been identified through the inspection process as having Y2K problems. NRC has informed the FDA of all treatment planning systems and dose calibrators that have been linked to Y2K problems. Upgrades for these treatment planning systems and dose calibrators are available from manufacturers. Treatment planning systems are regulated by the FDA not the NRC. Materials inspectors have indicated that licensees are aware of the upgrades. The irradiator tote position display is not a safety system. Further, this system is a one-of-a-kind modification made by the licensee (the licensee was authorized by NRC to make the modifications). The licensee is updating the tote position display system to eliminate the Y2K problem. Although no generic Y2K issues for NRC-regulated material used by materials licensees have been identified, materials licensees need to continue implementation of their Y2K readiness programs.

Between September 1997 and October 1998, the major fuel cycle facilities were asked Y2K questions during other inspections. Based on these Y2K inspections, the facilities were aware of the Y2K problem and were adequately addressing Y2K issues.

In June 1998, NRC issued Generic Letter (GL) 98-03, "NMSS Licensees' and Certificate Holders' Year 2000 Readiness Programs," which requested written confirmation by December 31, 1998, from the major fuel cycle facilities that their computer systems were Y2K-ready and that they could operate safely before and after January 1, 2000. The GL also requested that if a facility was not Y2K-ready by December 31, 1998, a status report and schedule for remaining work would be sent to NRC by July 1, 1999.

Each major fuel cycle facility has responded to the GL and stated that they have implemented a Y2K readiness program. No facility stated that they were Y2K-ready by December 31, 1998; however, each facility has indicated that they will be Y2K-ready well before January 1, 2000. There have been no identified risk-significant Y2K concerns for fuel cycle facilities.

Finally, the International Atomic Energy Agency (IAEA) with the cooperation of the World Health Organization (WHO), is holding an International Workshop on "Safety Measures to Address the Year 2000 (Y2K) Issue at Medical Facilities which use Radiation Generators and Radioactive Materials", in Vienna, Austria, on June 28-30, 1999. The workshop will address the experiences of those who have already taken steps to assess and remediate the Y2K problem. The workshop program is largely based on a technical document (TECDOC-1074), published by the IAEA. Authorities in Member

States of the IAEA and WHO and professional societies (radiotherapy, nuclear medicine, medical physics, radiation protection) will be invited by IAEA to participate.

Additional information, registration materials, and a downloadable version of TECDOC-1074 may be found at the IAEA website.

Attachment 1 contains brief descriptions and addresses of selected Y2K websites. Many manufacturers have websites that contain Y2K information regarding their products. Manufacturers' websites may include information on products that are not Y2K-compliant, and the availability of product updates. Government and professional organization websites that may be useful in addressing the Y2K problem are also included.

**Related Generic Communications:**

To alert licensees and certificate holders to the Y2K problem, NRC issued three Information Notices.

IN 96-70, "Year 2000 Effect on Computer System Software," on December 24, 1996 described the potential problems that computer systems and software may encounter as a result of the change from the year 1999 to the year 2000 and how the Y2K issue may affect NRC licensees and certificate holders. IN 96-70 encouraged licensees and certificate holders to examine their uses of computer systems and software well before the year 2000 and suggested that they consider appropriate actions to examine and evaluate their computer systems for Y2K vulnerabilities.

In IN 97-61, "U.S. Department of Health and Human Services Letter, to Medical Device Manufacturers, on the Year 2000 Problem," on August 6, 1997 the staff forwarded licensees an FDA letter sent to medical device manufacturers, regarding the Y2K problem. In the letter, dated June 25, 1997, FDA reminded medical device manufacturers that some computer systems and software applications currently used in medical devices, including embedded microprocessors, may experience problems as a result of the turn to the new century. In addition, the letter indicated that computer-controlled design, production, or quality control processes could be adversely affected.

IN 98-30, "Effect of the Year 2000 Computer Problem on NRC Licensees and Certificate Holders," on August 12, 1998 alerted licensees to systems that may be affected by Y2K and systems known to be affected by the Y2K problem. IN 98-30 encouraged licensees to contact vendors and test their systems for Y2K problems. Finally, IN 98-30 provided elements of a Y2K readiness program.

This information notice requires no specific action nor written response. If you have any questions about the information in this notice, please contact the technical contacts listed below, or the appropriate regional office.

Donald A. Cool, Director  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

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Attachments:

1. Selected Year 2000 Websites
2. List of Recently Issued NMSS Information Notices
3. List of Recently Issued NRC Information Notices

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## SELECTED YEAR 2000 WEBSITES

1. The American Hospital Association conducted a survey of hospital Y2K readiness status. The results of the survey can found at the American Hospital Association's website. <http://www.aha.org/y2k>
2. The American Medical Association website has Y2K information for the medical community. <http://www.ama-assn.org/not-mo/y2k/index.htm>
3. The Federal Communications Commission website provides information regarding the effects of Y2K on the communications and broadcasting industry. <http://www.fcc.gov/year2000/>
4. The Food and Drug Administration has placed reports of Y2K-compliant and non-compliant medical devices on its website. The reports are organized by manufacturer. <http://www.fda.gov/cdrh/yr2000/year2000.html>
5. The General Accounting Office has placed Y2K reports on assessment, testing, and contingency planning on its website. <http://www.gao.gov/y2kr.htm>
6. The Health Care Financing Administration has placed Y2K information for health care claim repayments for Medicare, Medicaid, and Child Health Insurance Programs on its website. The site also includes the Y2K status of health care facilities, Y2K activities, and Y2K help for health care facilities. <http://www.hcfa.gov>
7. The Institution of Electrical Engineers Y2K website provides information on embedded systems. The site explains the use of Y2K risk management techniques. <http://www.iee.org.uk>
8. The intraVision website provides links to Oncology/Radiology commercial sites. <http://www.intravsn.com/vendors.shtml>
9. The International Atomic Energy Agency website provides Y2K information for nuclear safety, waste management, medical facilities, and safeguards/physical protection. <http://www.iaea.org/worldatom/program/y2k>
10. The National Institute of Standards and Technology (NIST) Y2K webpage includes Y2K test programs for small businesses, free software, Y2K standards, Y2K compliance and testing, Y2K hotlines, and Y2K slide shows. <http://www.nist.gov/y2k> At the NIST website for small businesses, "The Conversion 2000: Y2K JumpStart Kit " for jump-starting a Year 2000 project is available. Also, action planning, assessment, and remediation project planning workshops are available. <http://y2khelp.nist.gov>

11. The North American Electric Reliability Council website provides information and guidance on the effect of the Year 2000 problem on the electricity supply for North America. <http://www.nerc.com>
12. The Nuclear Regulatory Commission website provides the status and findings of NRC's Y2K program which includes nuclear power plant audits, Information Notices, Generic Letters, and Y2K links. <http://www.nrc.gov/NRC/NEWS/year2000.html>
13. The President's Council on Year 2000 Conversion website has information regarding Y2K and the Federal government's efforts to prepare its computer systems, links to information on Y2K compliance for critical sectors of the economy, and other Y2K resources. In addition, the Council has established a Y2K consumer information line at 1-888-USA-4-Y2K, which provides free Y2K information to the public. <http://y2k.gov>
14. The Radiation and Health Physics website provides links to radiation detection device manufacturers and dosimetry companies. <http://www.sph.umich.edu/group/eih/UMSCHPS/commercial/>
15. The Rx2000 website is devoted to Y2K medical issues. The site has a pay section and a free section. Information found in the free section includes a provider preparedness model and comparator, Rx2000 list server and discussion forum, health care Y2K articles and publications, Rx2000 downloadable presentations, links, and health care Y2K self-help materials. <http://www.rx2000.org>
16. The Small Business Administration website provides Y2K help for small businesses. The site includes Y2K materials, Y2K activities, and links to other sites. <http://www.sba.gov/y2k>
17. The United Kingdom Year 2000 website provides Y2K Information on software compliance. The reports are organized by manufacturer. <http://www.open.gov.uk/bug2000.htm>
18. The Department of Veterans Affairs (VA) website provides Y2K information and contingency planning for hospitals and the status of VA Y2K efforts. <http://www.va.gov>

Except for its own website, the U.S. Nuclear Regulatory Commission makes no claims regarding the accuracy of the information provided at these websites. The list of sites is provided for use by addressees as a possible source of Y2K information.

LIST OF RECENTLY ISSUED  
 NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
99-11	Incident Involving the Use of Radioactive Iodine-131	4/16/99	All medical use licensees
99-09	Problems Encountered When Manually Editing treatment Data on the Nucletron Microselectron-HDR (New) Model 105-999	3/24/99	All medical licensees authorized to conduct high-dose-rate (HDR) remote after loading brachytherapy treatments
99-06	1998 Enforcement Sanctions as a Result of Deliberate Violations of NRC Employee Protection Requirements	3/19/99	All U. S. Nuclear Regulatory Commission licensees.
99-05	Inadvertent Discharge of Carbon Dioxide Fire Protection System and Gas Migration	3/8/99	All holders of licenses for nuclear power, research, and test reactor, and fuel cycle facilities
99-04	Unplanned Radiation Exposures to Radiographers, Resulting from failures to follow Proper Radiation Safety Procedures	3/8/99	All radiography licensees
99-03	Exothermic Reactions Involving Dried Uranium Oxide Powder (Yellowcake)	1/29/99	All operating uranium recovery facilities that produce oxide powder ( $U_3O_8$ ) (yellowcake)
99-02	Guidance to Users on the Implementation of a New Single-Source Dose-Calculation Formalism and Revised Air-Kerma Strength Standard for Iodine-125 Sealed Sources	1/21/99	All medical licensees authorized to conduct brachytherapy treatments
99-01	Deterioration of High-Efficiency Particulate Air Filters in a Pressurized Water Reactor Containment Fan Cooler Unit	1/20/99	All holders of licences for nuclear power, research and test reactors; and fuel cycle facilities
98-33	NRC Regulations Prohibit Agreements that Restrict or Discourage an Employee from Participating in Protected Activities	8/28/98	All holders of a Nuclear Regulatory Commission license

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Information Notice No.	Subject	Date of Issuance	Issued to
99-17	Problems Associated with Post-Fire Safe-Shutdown Circuit Analyses	6/3/99	All holders of OL for nuclear power reactors, except those who have permanently ceased operations and have certified that the fuel has been permanently removed from the reactor
99-15	Misapplication of 10 CFR Part 71 Transportation Shipping Cask Licensing Basis to 10 CFR Part 50 Design Basis	5/27/99	All holders of operating licenses or construction permits for nuclear power reactors
99-14	Unanticipated Reactor Water Draindown at Quad Cities Unit 2, Arkansas Nuclear One Unit 2 and Fitzpatrick	5/5/99	All holders of licenses for nuclear power, test, and research reactors
99-13	Insights from NRR Inspections of Low-and Medium-Voltage Circuit Breaker Maintenance Programs	4/29/99	All holders of operating licenses for nuclear power reactors
99-12	Year 2000 Computer Systems Readiness Audits	4/28/99	All holders of operating licenses or construction permits for nuclear power plants
99-11	Incidents Involving the Use of Radioactive Iodine-131	4/23/99	All medical use licensees
97-15, Sup 1	Reporting of Errors and Changes in Large-Break/Small-Break Loss-of-Coolant Evaluation Models of Fuel Vendors and Compliance with 10 CFR 50.46(a)(3)	4/16/99	All holders of operating licenses for nuclear power reactors, except those who have permanently cease operations and have certified that fuel has been permanently removed from the reactor

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OL = Operating License  
 CP = Construction Permit