

and immediate contact with the radiopharmaceutical. The petitioner contends that this practice results in the unnecessary exposure of this individual to radiation. The petitioner asserts that the design and engineering of syringe radiation shields is not based on sound radiation protection principles. The petitioner further states that current syringe designs violate the fundamental radiation principles of time, shielding, and distance. The petitioner states that syringe radiation shields provide inadequate radiation protection because—

1. They are hand held, thereby placing an administrator in direct and immediate contact with the radioactive substance;
2. They must be light enough so that they are not cumbersome to work with and consequently, they do not incorporate enough shielding to protect administrators adequately; and
3. There is no shielding at the distal or proximal portions of the shield, which results in direct and unnecessary radiation exposure.

The petitioner refers to the provisions of 10 CFR 20.1101(b) that require licensees to use procedures and engineering controls based on sound radiation protection principles to achieve occupational dose rates that are as low as is reasonably achievable (ALARA).

#### The Petitioner's Request

The petitioner requests that the NRC amend its regulations concerning the medical use of byproduct material to prohibit the hand-held administration of radiopharmaceuticals by injection. As an alternative, the petitioner suggests that the NRC require the use of the Angel Shield, a radioactive substance administrator that eliminates the hand-held administration of radiopharmaceuticals by injection. The petitioner believes that radiation exposure rates would be immediately and substantially reduced through the use of the Angel Shield. The petitioner asserts that the Angel Shield reduces radiation exposure by—

1. Eliminating the hand-held injection of radiopharmaceuticals;
2. Encapsulating the syringe within the administrator completely thereby providing 360 degrees of protection;
3. Shielding 100 percent of low-energy emissions (140 keV) and 88 percent of high-energy emissions (511 keV);
4. Allowing for the remote administration of the radiopharmaceutical; and

5. Reducing the number of missed injections and subsequent multiple exposures.

The petitioner explains that the Angel Shield uses 1/2-inch lead walls that completely encapsulate the radiopharmaceutical. The petitioner further explains that the entire administration process is mechanized. This removes the occupational worker from direct and immediate contact with the radioactive substance. As a result, radiation exposure rates are substantially and immediately reduced.

The petitioner contends that the reduction of unnecessary radiation exposure when administering radiopharmaceuticals by injection is of critical importance as the practice of nuclear medicine evolves toward therapeutic applications and the administration of medium and high-energy radiopharmaceuticals. The petitioner states that the one of the NRC's primary duties is to establish regulations on the safe use of nuclear materials. The petitioner contends that prohibiting the hand-held administration of radiopharmaceuticals by injection and requiring the use of the Angel Shield makes the administration of radiopharmaceuticals safer and furthers the goals of ALARA by reducing occupational dose rates.

#### The Petitioner

The petitioner has been a nuclear medicine technologist for over twenty years and has been exposed to radiation on a recurrent daily basis. He invented a radioactive substance administrator, the Angel Shield, to protect himself and others from unnecessary radiation exposure when administering radiopharmaceuticals by injection.

Dated at Rockville, Maryland, this 17th day of August, 1999.

For the Nuclear Regulatory Commission.

**Andrew L. Bates,**

*Acting Secretary of the Commission.*

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## NUCLEAR REGULATORY COMMISSION

### 10 CFR Part 50

[Docket No. PRM-50-66]

#### Nuclear Information and Resource Service; Petition for Rulemaking Denial

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Petition for rulemaking; denial.

**SUMMARY:** The Nuclear Regulatory Commission (NRC) is denying a petition

for rulemaking (PRM-50-66) from the Nuclear Information and Resource Service (NIRS). The petitioner requested that NRC amend its regulations to require licensees of operating nuclear power plant facilities to conduct a full-scale emergency planning exercise that involves coping with a date-sensitive, computer-related failure resulting from a Year 2000 (Y2K) issue. The petitioner requested that NRC take this action to ensure that licensees of nuclear facilities have developed and can implement adequate contingency and emergency plans to address potential major system failures that may be caused by a Y2K computer problem. NRC is denying the petition because the Commission has determined that the actions taken by the licensees to implement systematic and structured Y2K readiness contingency plans for critical Y2K dates in concert with existing required emergency response plans and procedures, and NRC's oversight of the licensees' implementation of these Y2K readiness contingency plans provide reasonable assurance of adequate protection to public health and safety.

**ADDRESSES:** Copies of the petition for rulemaking, the public comments received, and the NRC's letters to the petitioners are available for public inspection or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC, as well as NRC's rulemaking web site at <http://ruleforum.llnl.gov>.

**FOR FURTHER INFORMATION CONTACT:** Matthew Chiramal, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-2845, E-mail address [mxn@nrc.gov](mailto:mxn@nrc.gov).

#### SUPPLEMENTARY INFORMATION:

##### Background

NRC received three related petitions for rulemaking (PRM-50-65, PRM-50-66, and PRM-50-67), each dated December 10, 1998, submitted by the NIRS concerning various aspects of Y2K issues and nuclear safety. This petition (PRM-50-66) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR Part 50 to develop and implement adequate contingency and emergency plans to address potential system failures. The first petition (PRM-50-65) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR Parts 30, 40, 50, and 70 to be Y2K compliant. The third petition (PRM-50-67) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR Parts 50

and 70 to provide reliable sources of backup power.

Because of the nature of these petitions and the date-specific issues they address, the petitioner requested that the petitions be addressed on an expedited schedule.

On January 25, 1999, NRC published a notice of receipt of this petition for rulemaking in the **Federal Register** (64 FR 3791). It was available on the NRC's rulemaking website and NRC Public Document Room. The notice of receipt of petition for rulemaking invited interested persons to submit comments by February 24, 1999.

### The Petition

The petitioner requested that NRC adopt the following text as a rule:<sup>1</sup>

All licensees subject to 10 CFR Part 50 and Appendix E will conduct a full-scale emergency planning exercise (as normally required under 10 CFR 50.47) during 1999. This exercise shall include a component that includes failure of one or more computer or other digital systems (this is popularly known as the "Y2K bug") on January 1, 2000, or other relevant date. Licensees that do not conduct, or that fail, this exercise shall close their facilities licensed under this Part by December 1, 1999, until such time as the licensees have conducted a successful exercise.

NRC shall publish and provide to each licensee, within 30 days of the date of this rule, a Regulatory Guide that outlines potential emergency exercise scenarios. NRC shall publish and provide to each licensee, by December 1, 1999, a Regulatory Guide that describes the various scenarios that have been undertaken and the successful (and unsuccessful) responses to the problems posed.

The petitioner stated that although the probability of the occurrence of Y2K-related events that would require emergency response and the implementation of contingency plans is unknown, it would fall within the range of safety matters for which NRC requires emergency planning exercises. Furthermore, the petitioner asserts that addressing Y2K-related problems will require the use of potentially unfamiliar contingency plans, relying on ingenuity to circumvent failure of essential communications systems or failure of offsite emergency responders to perform their tasks effectively and coping with issues not normally tested during emergency exercises.

The petitioner considers it prudent to require each licensee to conduct an exercise and that each exercise address a different aspect of the Y2K problem. The petitioner suggested that some exercises should test problems initiated by Y2K-related failures and that others should test problems exacerbated by Y2K-related failures. The petitioner believes that this approach would provide some familiarity with the possible range of issues that could develop and create an overall industry capability to effectively address potential Y2K problems.

Under the petitioner's suggested regulation, the licensees would develop exercise scenarios that would be approved by NRC in an expedited fashion, and NRC would publish and distribute regulatory guides that would outline potential emergency response scenarios and describe the scenarios that were tested and the successful responses to the problem posed.

The petitioner stated that these actions would provide reasonable assurance that nuclear power plant licensees have developed and can implement adequate contingency and emergency plans to address major system failures that may be caused by the Y2K problem.

### Public Comments on the Petition

In response to this petition, NRC received 64 comment letters, including 1 letter signed by 25 citizens from the State of Michigan, 3 from nuclear associated industries, 11 from utilities, 13 from private organizations, 1 from the State of Illinois Department of Nuclear Safety, and 35 from private citizens.

Forty-six letters supported the petition, of which 13 were from private organizations, 32 were from private citizens, and one which was signed by 25 citizens of the State of Michigan. Thirty-nine of these 46 letters communicated a brief statement in support of the petition. Seven of the 46 letters, of which 3 were from private individuals and 4 were from private organizations, discussed reasons for supporting the petition.

In some letters, support of the petition was based on belief that actual emergency response exercises will provide invaluable information in addressing Y2K issues because of the complexity of Y2K issues and the lack of experience of licensees of nuclear facilities in responding to such an event.

Others letters stated that all emergency plans rely heavily on offsite sources of help, such as police, fire, and other essential services, but that these services, as well as critical

communications entities, may also be vulnerable to the Y2K problem if they are not properly assessed, remedied, and tested. Some letters cited numerous problems that have occurred in previous emergency planning exercises, irrespective of the Y2K problem. An example stated was the Pilgrim exercise of December 13, 1995, in which the Boston Edison Company was unable to communicate to the proper authorities. Other examples cited the occurrence of lost electrical buses. Some letters communicated the importance of testing and retesting for every conceivable contingency.

Eighteen letters opposed the petition, of which 3 were from private citizens, 3 were from nuclear associated industries, one was from the State of Illinois Department of Nuclear Safety, and 11 were from utilities. The letters opposing the petition stated that the additional emergency planning exercise suggested by the petition is not needed to ensure public health and safety. These letters indicated that NRC analysis and industry testing have confirmed that safety systems will function to shut down a reactor if required, that licensees and NRC are developing contingency plans for key Y2K rollover dates, and that these contingency plans will evaluate specific risk factors and, where appropriate, provide mitigation strategies to allow continued safe operation. These letters stated that this effort provides a rational review and systematic approach to issues that could affect the continued safe operation of a plant within the conditions of its license, which the commenters believe is a more effective approach for ensuring that plants continue to operate and meet commitments.

### Reasons for Denial

Pursuant to 10 CFR 50.47, "Emergency Plans"; 10 CFR 50.54, "Conditions of Licenses," paragraphs (q), (s), and (t); and Appendix E to 10 CFR Part 50, nuclear facilities are required to provide emergency response capabilities that take into account a variety of circumstances and challenges, to exercise their plans periodically to develop and maintain key skills of involved personnel, and to identify deficiencies in the emergency plan and personnel and take appropriate actions to correct identified deficiencies. In accordance with 10 CFR 50.54(q), nuclear power reactor licensees are required to follow and maintain in effect emergency plans that meet the planning standards in 10 CFR 50.47(b) and the requirements of Appendix E to Part 50. In part, licensees are required to train

<sup>1</sup> In preliminary discussion, the petitioner stated, "We also believe that other major fuel cycle facilities should be subject to a similar rule." However, the petitioner provided no supporting reasoning, no regulatory text, and no specific request that NRC adopt such a rule. Therefore, NRC has considered only the specifically requested rule language.

and test their organization and associated equipment to ensure that under all conditions and contingencies, such as power outages and computer and communication failures, appropriate emergency response is available and effective in an emergency.

To accomplish these requirements, licensees conduct numerous exercises and drills throughout the year. Inherent in the nature of emergency response is the realization that in an emergency, equipment may fail, loss of power may occur, personnel may not be available, and weather conditions may cause the emergency or escalate it. It is typical that, in the development of scenarios for exercises and drills, as well as in employee training programs, communication links, plant computers, and display and monitoring equipment are "out of service" or "fail" at inappropriate times. The NRC staff commonly oversees exercises that include these types of problems and the licensee's staff benefits from having to work around this training obstacle when a particular approach has been blocked. The NRC staff has observed licensees resorting to manual and backup systems to respond effectively and overcome these obstacles.

In terms of the effects of the Y2K problem, the NRC staff believes that the Y2K problem is not unique—it is a software error. Although the cause of computer and equipment failure may be different under Y2K, the result and the expected response are the same as situations encountered during many previous emergency exercises and drills. Therefore, there is no need to require licensees to conduct additional exercises to test specifically for potential Y2K failures.

In addition to existing emergency response plans, licensees of operating nuclear power plants and decommissioning power plants where spent fuel is stored at the plant site are preparing and implementing Y2K contingency plans as part of the plant-specific Y2K program. Operating nuclear power plant-specific Y2K contingency plans are based on the guidance in Nuclear Energy Institute/Nuclear Utilities Software Management Group NEI/NUSMG 98-07,<sup>2</sup> "Nuclear Utility Year 2000 Readiness Contingency Planning," dated August 1998, which provides a process and a method for preparing and implementing a facility-specific integrated contingency plan that considers specific risks from

internal and external sources. The Y2K contingency plans are generally built upon existing contingency activities (such as emergency preparedness, disaster recovery, storm damage restoration, grid restoration, and station blackout) and plant emergency procedures, coupled with the consideration that potential Y2K-related failures could affect many systems and components. Among the external events that are considered for contingency planning are—

- the loss of emergency plan equipment and services: pagers, radios, sirens and meteorology information, and
- the loss of essential services: telephone, microwave, water, satellites, networks, security, police, and fire-fighting capability.

The need for simulated exercises, development of special procedures, and Y2K contingency plan specific training is considered in the Y2K contingency planning process. Contingency plan verification is included in NEI/NUSMG 98-07 guidelines to provide confidence that the plans can be executed as intended. The contingency planning efforts, as outlined in NEI/NUSMG 98-07, provide additional training, staffing, and material procurement for occurrences that could happen at any time but that have a higher probability of occurring during the critical Y2K-related dates. Licensees and NRC are currently developing contingency plans for critical Y2K rollover dates. These contingency plans evaluate specific risk factors and, where appropriate, provide mitigation strategies to cope with plant-specific effects of the most probable and serious failures that might be initiated or exacerbated by the Y2K problem.

On May 11, 1998, NRC issued Generic Letter (GL) 98-01, "Year 2000 Readiness of Computer Systems at Nuclear Power Plants." In GL 98-01, NRC requested that all operating nuclear power plant licensees submit written responses regarding their facility-specific Y2K readiness programs in order to obtain confirmation that licensees are addressing the Y2K problem effectively. All licensees have responded to GL 98-01, stating that they have adopted plant-specific programs that are intended to make the plants Y2K ready by July 1, 1999. These programs are patterned on industry guidelines (NEI/NUSMG 97-07, "Nuclear Utilities Year 2000 Readiness") that have been found acceptable by NRC. GL 98-01 also requests a written response, no later than July 1, 1999, confirming that these facilities are Y2K ready, including contingency planning. Licensees who are not Y2K ready by July 1, 1999, must provide a status report and schedule for

the remaining work to ensure timely Y2K readiness.

NRC considers the guidance in NEI/NUSMG 98-07, when properly implemented, as an acceptable approach for licensees to mitigate and manage Y2K-induced events that could occur on Y2K-critical dates.

As part of its oversight of licensee Y2K program activities, NRC staff audited the contingency planning effort of six licensee facilities. These audits were completed during June 1999. These audits focused on the licensee's approach to addressing both internal and external Y2K risks to safe plant operation, based on the guidance in NEI/NUSMG 98-07. The audits at these facilities examined in detail back-up measures the utilities have in place to deal with possible Y2K problems, either on site or off site, including problems with the loss of emergency plan equipment and services (pagers, radios, sirens, and meteorology), the loss of essential services (telephone, microwave, water, satellites, networks, security, police), and the failure of the offsite emergency responders to perform their task effectively.

Additionally, NRC regional staff reviewed Y2K activities at all operating nuclear power plants to verify the status of licensee efforts to ensure that all plants will be able to function safely on January 1, 2000, and beyond. The reviews: (1) verify that all NRC licensees have implemented Y2K program activities; (2) evaluate the progress they have made to ensure that they are on schedule to achieve Y2K readiness; and (3) assess their contingency plans for addressing Y2K-related issues. The regional staff is using guidance prepared by the NRC Headquarters staff that is based on NRC GL 98-01, NEI/NUSMG 97-07, and NEI/NUSMG 98-07. These reviews were completed by July 1999.

The offsite components of emergency preparedness and response, which are the responsibility of States, counties, and municipalities, are already utilized by those governmental entities to address a wide range of events (e.g., grid failures, tornadoes, floods, hurricanes, snowstorms, industrial accidents). These events often involve widespread loss of normal capabilities and services (e.g., loss of electricity and telephone service, blocking of roads) coupled with the need for a multi-capability response. NRC is also working closely with the Federal Emergency Management Agency (FEMA) on its plans to conduct Y2K workshops for the State and local radiological emergency preparedness community. NRC and nuclear facilities licensees will participate in these workshops. NRC is an active member of

<sup>2</sup> NEI/NUSMG 98-07 was preceded by NEI/NUSMG 97-07, "Nuclear Utility Year 2000 Readiness," dated October 1997, which presented a strategy for developing and implementing a nuclear utility Y2K program.

the Emergency Services Sector Working Group for Y2K, which is headed by FEMA. In addition, to facilitate Agreement State efforts to address the Y2K issue, a link to State Government Year 2000 Web sites has been provided by the NRC. NRC will make every effort to share with the States any Y2K issue that may also affect Agreement States or Agreement State licensees.

NIRS has not explained why the approach currently being pursued by the licensees, the nuclear industry, and NRC does not provide reasonable assurance of adequate emergency response capabilities during the transition from 1999 to 2000.

In the case of research and training/test reactors, licensees of these facilities also have established programs to evaluate and correct Y2K deficiencies. Many research reactors will be shut down on January 1, 2000, as the institutions operating them (e.g., universities and laboratories) will be closed for the holiday. Further, these reactors often have passive safety features and low power levels, which ensure minimal potential offsite consequences. In addition, NRC staff concluded that any research reactor in operation on January 1, 2000, could be readily shut down manually using emergency procedures and existing shutdown systems, even if their operational systems should experience a Y2K problem.

### Conclusion

Plant-specific industry planning for Y2K contingencies, which is built upon existing emergency response plans and procedures required by the current emergency preparedness regulations, provides a reasonable assurance that adequate protection measures will be taken in the event of radiological emergency during Y2K critical dates. Imposing a new prescriptive rule as proposed in the petition in an area in which the industry action is already exceeding the actions that address the petitioner's general issues would be counterproductive to the ongoing Y2K readiness efforts of the licensees. Therefore, the additional full-scale emergency planning exercise requested by the NIRS is not necessary to ensure emergency response capabilities to provide reasonable assurance of adequate protection to public health and safety despite the occurrence of Y2K problems.

For these reasons, the Commission denies the petition.

Dated at Rockville, Maryland, this 17th day of August, 1999.

For the Nuclear Regulatory Commission.  
**Andrew L. Bates,**  
*Acting Secretary of the Commission.*  
[FR Doc. 99-21751 Filed 8-20-99; 8:45 am]  
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## NUCLEAR REGULATORY COMMISSION

### 10 CFR Parts 50 and 70

[Docket No. PRM-50-67]

### Nuclear Information and Resource Service; Petition for Rulemaking Denial

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Petition for rulemaking; denial.

**SUMMARY:** The Nuclear Regulatory Commission (NRC) is denying a petition for rulemaking (PRM-50-67) from the Nuclear Information and Resource Service (NIRS). The petitioner requested that the NRC amend its regulations to require that nuclear facilities ensure the availability of backup power sources to power safety systems of reactors and other nuclear facilities in the event of a date-sensitive, computer-related incident resulting from a Year 2000 (Y2K) issue. The petitioner requested that NRC take this action to ensure that reliable backup sources of power are available in the event of a Y2K incident. The Commission agrees that maintaining reliable emergency power is important and has considered the petitioners request as part of its review of existing regulatory requirements and licensee actions to assure reliable emergency power during the Y2K transition. Based on this review, the Commission has determined that existing regulatory requirements, actions taken by the licensees to implement a systematic and structured Y2K readiness program adequately address Y2K issues, and NRC's oversight of the licensees' implementation of these programs provide reasonable assurance of adequate protection to public health and safety. Because the Commission has concluded that existing programs already address the petitioner's concern regarding availability of emergency power, the petition is denied.

**ADDRESSES:** Copies of the petition for rulemaking, the public comments received, and NRC's letters to the petitioners are available for public inspection or copying in NRC Public Document Room, 2120 L Street, NW (Lower Level), Washington, DC, as well as on NRC's rulemaking web site at <http://ruleforum.llnl.gov>.

**FOR FURTHER INFORMATION CONTACT:** Matthew Chiramal, Office of Nuclear Reactor Regulation, US Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-2845, E-mail address [mxc@nrc.gov](mailto:mxc@nrc.gov), or Gary W. Purdy, Office of Nuclear Material Safety and Safeguards, US Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-7897, E-mail address [gwp1@nrc.gov](mailto:gwp1@nrc.gov).

### SUPPLEMENTARY INFORMATION:

#### Background

NRC received three related petitions for rulemaking (PRM-50-65, PRM-50-66, PRM-50-67), each dated December 10, 1998, submitted by the NIRS concerning various aspects of Y2K issues and nuclear safety. This petition (PRM-50-67) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR parts 50 and 70 to provide reliable sources of backup power. The first petition (PRM-50-65) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR parts 30, 40, 50, and 70 to be Y2K compliant. The second petition (PRM-50-66) requested that NRC adopt regulations that would require facilities licensed by NRC under 10 CFR part 50 to develop and implement adequate contingency and emergency plans to address potential system failures. Because of the nature of these petitions and the date-specific issues they address, the petitioner requested that the petitions be addressed on an expedited schedule.

On January 25, 1999, NRC published a notice of receipt of a petition for rulemaking in the **Federal Register** (64 FR 3789). It was available on NRC's rulemaking website and in the NRC Public Document Room. The notice of receipt of a petition for rulemaking invited interested persons to submit comments by February 24, 1999.

#### The Petition

The petitioner requested that NRC adopt the following text as a rule:

The Nuclear Regulatory Commission recognizes that date-sensitive computer programs, embedded chips, and other electronic systems that perform a major role in distributing, allocating, and ensuring electric power throughout the United States may be prone to failure beginning on January 1, 2000. Loss of all alternating current electricity from both the offsite power grid and onsite emergency generators (commonly known as "station blackout") long has been identified by NRC as among the most prominent contributors to risk for atomic reactors.

(1) For these reasons, NRC requires of part 50 and 70 licensees as of December 1, 1999: