

NUCLEAR REGULATORY COMMISSION

10 CFR Part 34

[Docket No. PRM-34-06]

Organization of Agreement States; Receipt of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; notice of receipt.

SUMMARY: The Nuclear Regulatory Commission (NRC) is publishing for public comment a notice of receipt of a petition for rulemaking, dated November 3, 2005, which was filed with the Commission by Barbara Hamrick, Chair, Organization of Agreement States (OAS). The petition was docketed by the NRC on November 16, 2005, and has been assigned Docket No. PRM-34-06. The petitioner requests that the NRC amend its regulations to require that an individual receive at least 40 hours of radiation safety training before using sources of radiation for industrial radiography, by clarifying the requirements for at least two individuals to be present at a temporary job site, and by clarifying how many individuals are required to meet surveillance requirements. The petitioner also requests that NUREG-1556, Volume 2, be revised to reflect the performance-based changes in the proposed amendments.

DATE: Submit comments by (insert date 75 days after publication in the Federal Register).

Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Please include *PRM-34-06* in the subject line of your comments. Comments on petitions submitted in writing or in electronic form will be made available for public inspection. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed.

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.

E-mail comments to: [SECY@nrc.gov](mailto:SECY@nrc.gov). If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at (301) 415-1966. You may also submit comments via the NRC's rulemaking Web site at <http://ruleforum.llnl.gov>. Address questions about our rulemaking Web site to Carol Gallagher (301) 415-5905; email [cag@nrc.gov](mailto:cag@nrc.gov). Comments can also be submitted via the Federal eRulemaking Portal <http://www.regulations.gov>.

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 am and 4:15 pm Federal workdays. (Telephone (301) 415-1966).

Fax comments to: Secretary, U.S. Nuclear Regulatory Commission at (301) 415-1101.

Publicly available documents related to this petition may be viewed electronically on the public computers located at the NRC's Public Document Room (PDR), Room O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee. Selected documents, including comments, may be viewed and downloaded electronically via the NRC rulemaking Web site at <http://ruleforum.llnl.gov>.

Publicly available documents created or received at the NRC after November 1, 1999, are available electronically at the NRC's Electronic Reading Room at

<http://www.nrc.gov/reading-rm/adams.html>. From this site, the public can gain entry into the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the PDR Reference staff at 1-800-397-4209, 301-415-4737 or by email to [pdrc@nrc.gov](mailto:pdrc@nrc.gov).

FOR FURTHER INFORMATION CONTACT: Michael T. Lesar, Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Telephone: 301-415-7163 or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION:

Petitioner's Interest

The OAS is a non-profit, voluntary, scientific and professional society incorporated in the District of Columbia. The membership of OAS consists of State radiation control program directors and staff from the 33 Agreement States who are responsible for implementation of their respective radioactive material programs. The purpose of the OAS is to provide a mechanism for the Agreement States to work with each other and with the NRC on regulatory issues associated with their respective agreements.

The petitioner states that Agreement States are those States that have entered into an effective regulatory discontinuance agreement with the NRC under Section 274b. of the Atomic Energy Act (Act). The Agreement States regulate most types of radioactive material, including reactor fission byproducts, source material (uranium and thorium) and special nuclear materials

in quantities not sufficient to form a critical mass, in accordance with the compatibility requirements of the Act. The petitioner notes that NRC periodically reviews the performance of each Agreement State to assure compatibility with NRC's regulatory requirements.

The petitioner states that Agreement States issue radioactive material licenses and regulations, and enforce these regulations under the authority of each individual State's laws. The Agreement States exercise their licensing and enforcement programs under direction of their governors in a manner that is compatible with the licensing and enforcement programs of the NRC. The 33 existing Agreement States currently license and regulate approximately 16,800 radioactive material licenses, whereas the NRC regulates approximately 4,400 licensees.

The petitioner states that in the report of the NRC/State Working Group on the National Materials Program, the concept of "Centers of Expertise" was introduced. The concept optimizes resources of federal, State, professional, and industrial organizations and reduces duplicate efforts. The petitioner states that some Agreement States and NRC regions have, over time, developed considerable experience and expertise with specific uses of radioactive materials. Examples of areas of expertise include well logging, industrial radiography, positron emission tomography, and intravascular brachytherapy. The petitioner believes that Agreement States and NRC regions that have developed expertise in specific uses should be identified and used as a resource by other regulatory programs.

The petitioner further states that the Centers of Expertise concerning industrial radiography regulation are the States, specifically those States with a large oil and gas industry because industrial radiography is closely tied to that industry. Texas is one of those States and was a leader in promulgating comprehensive industrial radiography requirements in 1986.

## Background

Section 34.41(a) (the “two-person rule”), published on May 28, 1997 (62 FR 28948), became effective on June 27, 1998. The petitioner states that when this rule was developed, there was strong and sustained support from the States, licensees, and industry for the concept of having at least two qualified individuals present whenever radiography is performed at temporary job sites. The petitioner states that Texas has had a requirement for a two-person crew since 1986, which was adopted at that time along with specific training requirements. The petitioner states that by the effective date of the NRC final rule, seven States were already nationally recognized as having comparable industrial radiography program components and were issuing industrial radiographer certifications.

The petitioner states that NRC's regulations require that “the additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry.” The petitioner believes that the expectation of the two-person rule, as expressed in the May 28, 1997 final rule, is that at a temporary job site the second qualified individual would be able to secure the restricted area and the source, and provide aid as needed. The petitioner states that in the final rule, the Commission stressed that having a second qualified individual is particularly important when radiography is performed where a radiographer alone may not be able to control access to the restricted area. The petitioner also states that, additionally, the second person should be trained to provide a safe working environment for radiography personnel, workers, and other members of the public at a temporary job site.

The petitioner states that safety was the basis for having two individuals at a job site. The petitioner believes that requiring a trainee/assistant to have more extensive training (e.g., completion of a 40-hour radiation safety training course) before handling radiographic

equipment increases the probability that he or she would be able to observe the area and provide assistance if needed. The petitioner states that while there were many comments on the desirability of the trainer/trainee or radiographer/assistant crew combination as opposed to the two radiographer crew, and an acceptance of the requirement that the trainee/assistant be under the direct supervision of the trainer/radiographer, the issue regarding whether both individuals of a two radiographer crew had to be physically present during actual exposures was never addressed by the NRC. The petitioner states that in several States, if a two-person crew consists of two radiographers, one may be in the darkroom while the other is exposing film, provided the surveillance requirement is met.

The petitioner states that during the NRC's 2001 Integrated Materials Performance Evaluation Program (IMPEP) review of the Texas radioactive materials program, the draft IMPEP Report concluded that the Texas implementation of its two-person rule in its Title 25 §289.255(v)(7)(G), was not compatible with the NRC's two-person rule in § 34.41(a), which is designated as a Category B for compatibility purposes.

The petitioner states that Texas indicated in its response to the IMPEP Report that its rules were a comprehensive set of requirements implemented to directly and prescriptively address the identified root causes of the large number of over exposures that occurred in that State before it implemented the requirements in 1986. The petitioner states that Texas made several revisions to its industrial radiography rules that became effective in April 1999. Texas sent the proposed revisions to the NRC for review on October 23, 1998, and received no comments concerning the two-person crew rule. The petitioner believes that the NRC found the Texas rules to be compatible in this area at that time.

The petitioner states that based on the IMPEP evaluation criteria, in 2001, the review team recommended that Texas' performance with respect to the indicator, Legislation and

Program Elements Required for Compatibility, be found satisfactory. The petitioner states that the Management Review Board (MRB) believed that the Texas program presented sufficient information to warrant reconsideration of how the rule could be implemented. Therefore, the petitioner states that in June 2002, the NRC's Office of Nuclear Material Safety and Safeguards coordinated with the Office of State and Tribal Programs, the CRCPD, and the OAS to establish a Working Group (WG) to re-evaluate the two-person rule to assess the effectiveness of the intended outcomes, including experience from past events, and propose a strategy and rule interpretation that best achieves the goal of safety.

The petitioner presented the following observations made by the WG during its review of the final rule:

- Since its effective date, the NRC has consistently implemented the two-person rule to require both qualified individuals to maintain continuous direct visual surveillance when radiographic operations are being conducted.
- The WG interviewed nine Agreement States that are also radiographer certifying States regarding the implementation of their two-person rule. Six of the nine Agreement States allow licensees the flexibility to determine if radiographic operations can be conducted safely when the first radiographer is able to observe operations and prevent intrusion into the restricted area while the second radiographer is involved in a related activity nearby. The three remaining States indicated that they required both radiographers to provide direct visual surveillance during radiographic operations.
- The actual words of the two-person crew requirement read very similarly for each of these certifying States, and each State is committed to the underlying safety objective for the two-person rule. The differences lie in the latitude given by the various states to their licensees in how efficiency in operations can be accomplished without sacrificing

safety. Worksite characteristics are considered, whether it is in a populated or remote area, or is a multi-level structure, and that the darkroom must be close by.

- The nine States interviewed are the Centers of Expertise in the industrial radiography and certification arenas. The Centers of Expertise, concerning industrial radiography regulations, are the States, specifically those States with a large oil and gas industry, because industrial radiography is closely tied to that industry. These nine States, together with Texas, have the clear majority share of the radiography licenses and activity in the U.S. The potential for differences in worksite settings in these States is great. Allowing one of two radiographers to work in the darkroom will not work in all instances. Some of these States have incorporated the opportunity to accommodate these differences in their interpretation of this rule, using a performance-based approach that offers flexibility in the appropriate situations, with accountability to their licensees.
- The WG was not able to attribute events involving industrial radiography to the failure of the two-person rule, much less to isolate the surveillance component of the regulation, because the effectiveness of the two-person rule has not been isolated from the other components in the regulatory framework.
- The WG found that risk information obtained from NUREG/CR-6642 does not support the manner in which the NRC requires the two-person rule to be implemented as a requirement to enhance safety. The WG found that during routine operations, the requirement to have an additional qualified individual present may actually increase overall worker occupational radiation exposure, thereby increasing the overall societal latent cancer risk from routine operations.
- The WG found that using only two persons to provide surveillance of radiography

operations may not always be adequate to prevent unauthorized access to restricted areas by members of the public. However, to be present and to be exposed to the radiation field in instances when radiographic operations are performed at temporary job sites merely to meet the requirements of the two-person rule, would not be considered As Low as is Reasonably Achievable (ALARA).

- When the two-person rule was enacted under the previous compatibility designations, the Statements of Consideration indicated Agreement State compatibility for operational safety standards (i.e., Subpart D - Radiation Safety Requirements, which includes §34.41, as Division 2 Matters of Compatibility). The petitioner states that in 1997, the Joint Working Group on Adequacy and Compatibility transposed those compatibility determinations to the current designations. The petitioner states that while reviewing the compatibility designations, the WG noted a difference in the designations between §§ 34.41 and 34.51 for the same essential objective, surveillance. The petitioner also states that in § 34.41 the surveillance component is designated compatibility Category B, while in § 34.51 it is designated as Category C.

The petitioner states that the WG noted that the final rule, which discusses the requirements for a second qualified individual, also states that this individual should be able to provide assistance when required, rather than whenever radiographic operations are being conducted. The petitioner states that the consensus opinion of the WG provided risk-informed, performance-based implementation guidance for the surveillance component of the two-person rule. The petitioner states that the WG recommended that the NRC issue guidance in a Regulatory Information Summary (RIS), modifying the NRC's current interpretation of the two-person rule, but involving no rulemaking. The RIS would indicate that the second qualified individual must remain at the temporary job site and must be cognizant of the site-specific

circumstances when radiographic operations are in progress. The petitioner states that licensees would have the flexibility to allow the qualified individual to engage in other related activities such as developing film in a nearby darkroom, rather than being required to maintain constant visual surveillance when the radiographer alone, can observe the restricted area and prevent unauthorized entry into it. The petitioner believes that under this option, the NRC and the Agreement States would align inspection and licensing guidance with the RIS. The petitioner states that one member of the WG also provided a differing view, which indicated that another approach was not needed to make the rule more effective. The differing view recommended that the NRC notify the Agreement States to align their implementation to be essentially identical to that of the NRC.

The petitioner states that the MRB did not accept the WG's consensus recommendation or the differing view. Instead, the MRB recommended that the State of Texas, or OAS, file a petition for rulemaking in accordance with §2.802 to revise § 34.41 (a). The petitioner states that the MRB agreed that until the final decision is made on the petition for rulemaking, the staff would defer compatibility findings on the implementation of the surveillance component of the two-person rule in Texas, and any other State that is implementing § 34.41(a) in a similar way.

The petitioner states that the final rulemaking has been interpreted in guidance document NUREG-1556, Volume 2, to mean, "Both individuals must maintain constant surveillance of the operations and be capable of providing immediate assistance to prevent unauthorized entry to the restricted area." The petitioner states that if the temporary job site presents a situation in which the surveillance requirement of § 34.51 is met, the NRC interpretation means that even if a two-person crew consists of two certified radiographers, both must be with the camera; or if one of the members is in the darkroom, radiography cannot be performed. The petitioner believes that the impact of this interpretation on the industry is that

companies must employ an additional third person to develop film in the darkroom while two individuals are exposing film and preventing unauthorized entry, regardless of what the situation warrants. The petitioner also believes that the licensee must use additional time at a job site to expose film and then develop it. Either situation results in added, unnecessary cost to the industry. The petitioner contends that in a temporary job site situation in which the crew consists of two qualified radiographers and the surveillance requirement can be met, the second individual is available to provide immediate assistance, whether in the darkroom or performing other job-related duties nearby.

#### The Proposed Amendment

The petitioner requests that the following amendments be made to the NRC's regulations:

1. Section 34.41(a) would be revised to read as follows:

§ 34.41 Conducting industrial radiographic operations.

(a) Whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or individual(s) who has at a minimum met the requirements of § 34.43(c).

Radiography may not be performed if only one qualified individual is present.

\* \* \* \* \*

2. Section 34.43(a)(1) would be revised to read as follows:

§ 34.43 Training.

(a) \* \* \*

(1) Has successfully completed an accepted course of at least 40 hours on the applicable subjects outlined in paragraph (g) of this section, in addition to a minimum of 2 months of on-the-job training, and is certified through a radiographer certification program by a certifying entity in accordance with the criteria specified in appendix A of this part. (An independent organization that would like to be recognized as a certifying entity shall submit its request to the Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.)

\* \* \* \* \*

3. In § 34.43(c), paragraphs (1), (2), and (3) would be redesignated as (2), (3), and (4), respectively, a new paragraph (c)(1) would be added, and redesignated paragraph (c)(4) would be revised to read as follows:

§ 34.43 Training.

(c) \* \* \*

(1) Has successfully completed the accepted course of at least 40 hours on the applicable subject outlined in paragraph (g) of this section;

\* \* \* \* \*

(4) Has demonstrated understanding of the instructions provided under paragraph (c)(2) of this section by successfully completing a written test on the subjects covered and has demonstrated competence in the use of hardware described in section (c)(3) of this section by successful completion of a practical examination on the use of such hardware.

\* \* \* \* \*

4. Section 34.51 would be revised to read as follows:

§ 34.51 Surveillance.

During each radiographic operation, the radiographer shall ensure continuous direct visual surveillance of the operation to protect against unauthorized entry into a high radiation area, as defined in 10 CFR part 20 of this chapter, except at permanent radiographic installations where all entryways are locked and the requirements of § 34.33 are met.

5. Change guidance document NUREG-1556, Volume 2. In the first paragraph under the Discussion, Temporary Job Sites, change the words "Both individuals must maintain" to "The radiographer must ensure".

Justification

The petitioner considers the requirement for a two-person crew to be an important safety requirement, but believes the surveillance component of that rule is more appropriately implemented and enforced as a performance-based requirement, rather than the current prescriptive interpretation of the rule. The petitioner states that at least six Agreement States are currently implementing this component differently than the NRC. The petitioner believes that a shift in the NRC's focus to a performance-based implementation of the final rule, based on its acceptance of the expertise in this arena derived from the States, would foster a regulatory partnership that benefits the licensed community by minimizing confusion for those licensees who operate in multiple jurisdictions. The petitioner states that more than 10 years of information/data exist to demonstrate that the OAS's recommended implementation of the surveillance component of the rule is viable and achieves the safety goals of the regulation. The petitioner states that the WG's review of the incidents that occurred in Texas from January

1986 through May 2002, indicated that 349 incidents involved industrial radiography at temporary field sites. The petitioner states that of the 349 incidents during this 16-year period, 82 resulted in over exposures >5 rem. Causes of the incidents generally fell into the following categories:

- failure to survey/improper survey - 22 percent
- unable to determine cause - 23 percent
- badge in exposure area/not on individual - 27 percent
- reporting delays from badge processor/heavy workload - 11 percent
- improper work techniques (other than surveys) - 9 percent
- equipment malfunction - 6 percent
- deliberate badge exposure - 2 percent

The petitioner also states that of the 82 incidents that resulted in over exposures >5 rem, 17 occurred from June 1998 (the effective date of the NRC's rule) through May 2002.

Causes for these 17 incidents are categorized as:

- failure to survey/improper survey - 4 incidents
- unable to determine cause - 5 incidents
- badge in exposure area/not on individual - 2 incidents
- reporting delays from badge processor/heavy workload - 5 incidents
- improper work techniques (other than surveys) - 1 incident

The petitioner states that none of the overexposure incidents in Texas were directly attributable to a lapse in safety due to one certified radiographer being unavailable (e.g., in the darkroom), while the other certified radiographer was using the radiographic equipment. The

petitioner states that no negative performance regarding the Texas implementation of the two-person crew requirement surfaced that would warrant a different surveillance strategy.

The petitioner states that the Nuclear Materials Event Database (NMED) information reviewed by the WG did not break down the data to specify what effects the components of the two-person rule had as a cause or a contributing factor (or as a prevention factor) for radiation exposure events involving industrial radiography personnel or members of the public. The petitioner states that, according to the WG report, although NMED contained numerous incidents that involved industrial radiography during a 7-year period from 1995 through 2002, the event descriptions do not correlate the incidents to the two-person rule. The petitioner states that similarly, the WG reviewed data from the Enforcement Action Tracking System (EATS), in which 67 cases occurred that involved industrial radiography during the same 7-year period. The petitioner states that nine cases cited violation of the two-person rule, however, none of the cases involved radiation over exposures to radiography personnel or workers at the site, and other members of the public.

The petitioner agrees with the opinion of the WG, as stated by the petitioner, that the apparent inconsistency in the surveillance component of §§ 34.41(a) and 34.51, along with the conflicting guidance found in NUREG-1556, Volume 2, raise substantial doubts as to whether the NRC's current interpretation of the rule is, in terms of safety, the most desired approach. The petitioner states that the recommended language that amends §34.51 puts the access control responsibility with the radiographer, but allows him the latitude to use additional personnel to control radiographic operations if needed. The petitioner believes that this additional personnel may include persons not qualified as a radiographer or radiographer's assistant, but capable of providing needed support to control access to the restricted area while remaining at the perimeter of the restricted area. The petitioner believes that, as the rule

recommends, the rule does not require two persons to constantly monitor operations, nor does it limit it to two persons. The petitioner believes that the rule allows the radiographer in charge to make that decision. The petitioner states there is no justification for imposing additional costs and negative impact on an industry that has not demonstrated performance that would warrant this cost and impact.

The petitioner states that to assess the additional cost of implementing the two-person crew as the NRC does, Texas contacted several of its licensees who have both Texas and NRC licenses. The petitioner states that the cost of an additional person would be a minimum of \$200 per day (including travel and per diem). The cost of additional time would be \$10-12 per hour (not including overtime pay). The petitioner states that the licensees contacted indicated that an even greater impact of enforcing the two-person crew as the NRC does, would be the lack of availability of industrial radiographic personnel to do the work. The petitioner states that the licensees indicated that not only are there not enough certified radiographers to do the amount of work the companies had at that time (one licensee indicated that an average work week is 65 hours), there is a shortage of people interested in obtaining the training and becoming certified.

#### Conclusion

The petitioner states that, while the OAS agrees with a requirement for a two-person radiography crew at temporary job sites, the organization disagrees with NRC's prescriptive interpretation of the requirements for a two-person crew, the apparent conflict between NRC's surveillance requirement and two-person crew requirement, and NRC's omission of a radiation safety training requirement prior to an individual using sources of radiation.

The petitioner believes that while it was encouraging that the NRC adopted requirements in 1997 similar to those that had previously been adopted by many States, it is

disheartening that the NRC industrial radiography requirements in 10 CFR Part 34 do not address one of the primary factors identified as a root cause of a large number of industrial radiographer over exposures. The petitioner states that the failure to require safety training before using sources of radiation is failing to address one of the root causes of industrial radiography incidents. The petitioner states that current NRC requirements allow a radiographer assistant to use sources of radiation without attending a safety course that addresses the basic radiation topics outlined in rule. The petitioner believes that it is possible for an individual to work for years as a radiographer assistant and never receive radiation safety training. The petitioner states that the NRC regulations merely require that the assistant pass a written exam on the regulation, license, and the licensee's operating and emergency procedures and pass a practical exam on the use of the radiographic equipment. Both written and practical exams are administered by the licensee. The petitioner believes that it is important to remember that not all radiography is conducted by the larger radiography companies who have the resources to establish and oversee adequate and often exemplary training programs. The petitioner states that in contrast to the NRC's minimum training requirements, many of the States' rules require that prior to using sources of radiation, an individual must complete a 40-hour safety course addressing radiation safety fundamentals specified in rule, in addition to passing a licensee-administered written exam on the rules, license conditions, and operating and emergency procedures and passing a licensee-administered practical exam on the use of the equipment. In many States this requirement applies equally to a radiographer's assistant. The petitioner believes it is critical for an individual to receive radiation safety training prior to operating sources of radiation.

The petitioner states that the proposed actions will use risk-informed, performance based requirements to ensure safety of workers and the public, eliminate current compatibility

discrepancies, provide uniformity in regulations nationwide, and ensure consistency in surveillance requirements. Accordingly, the petitioner requests that the NRC amend its regulations concerning radiation safety training before using sources of radiation for industrial radiography, as previously discussed.

Dated at Rockville, Maryland, this 21<sup>st</sup> day of December 2005.

For the Nuclear Regulatory Commission.

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/RA/  
Annette L. Vietti-Cook,  
Secretary of the Commission.